2010 – 2012

Massachusetts

Joint Statewide Three-Year

Gas Energy Efficiency Plan

October 27, 2009

Statewide Three-Year Gas Energy Efficiency Plan

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I. EXECUTIVE SUMMARY

A. The Green Communities Act

An Act Relative to Green Communities, Chapter 169 of the Acts of 2008 ("Green Communities Act" or "Act")[1] was signed into law on July 2, 2008. A bold piece of legislation designed to promote enhanced energy efficiency throughout the Commonwealth, the Green Communities Act requires gas and electric distribution companies and municipal aggregators (together "Program Administrators" or "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." G.L. c. 25, § 21(b)(1). In connection with these energy efficiency plans, the Green Communities Act established a new advisory body, the Energy Efficiency Advisory Council (the "Council"), consisting of eleven voting members of diverse backgrounds and expertise, a non-voting member from the heating oil industry, a non-voting member from the energy efficiency business sector and a non-voting member from each Program Administrator. Pursuant to the Act, the electric and gas Program Administrators, respectively, are required to provide a statewide electric efficiency investment plan and a statewide natural gas efficiency investment plan (each, a "Plan") on or before April 30, 2009. *Id.* The Act further specifies the contents of those plans, which are to be prepared by the Program Administrators in coordination with the Council. *Id.*,§ 21(b)(1)-(2). In meeting that statutory deadline, the Massachusetts gas Program Administrators worked collaboratively to prepare a Plan that represented the collective efforts and objectives of the Program Administrators. On April 30, 2009, the gas Program Administrators, by unanimous consent, submitted a Plan for the Council's review and approval.

[1] A Glossary of defined terms is included as Appendix A.

Since April, the Program Administrators have been engaged in a collaborative process with the Council and its Consultants ("Consultants") and other interested stakeholders to further develop and refine the statewide plans. In accordance with the Act, the Program Administrators are required to file their respective PA-specific three-year plans, "together with the Council's approval or comments and a statement of any unresolved issues, to the Department . . . on or before October 31." G.L. c. 25, § 21(d). In preparing this Plan, the gas Program Administrators have worked with the Council, the Consultants, and interested stakeholders, with the collective intent of delivering a plan that satisfies fully the mandates of the Green Communities Act.[2]

Although this Plan responds to the directives of the Green Communities Act, the Program Administrators are also cognizant of the role that the statewide electric and gas efficiency investment plans occupy in the Commonwealth's broader, historically ambitious energy and environmental statutory scheme. With a series of bold legislative enactments, the Commonwealth of Massachusetts has signaled its commitment to ensuring that the Commonwealth is a worldwide leader in developing the green economy. On August 13, 2008, shortly after the enactment of the Green Communities Act, Governor Deval Patrick signed the Global Warming Solutions Act ("GWSA") and the Green Jobs Act. The GWSA mandates the gradual reduction of greenhouse gas emissions ("GHG") in the Commonwealth, establishing a schedule of emissions goals designed to spur innovation and promote research and development in the area of clean energy. Enacted concurrently, the Green Jobs Act provides a robust funding source for the green technology industry, facilitating economic development and job growth in the clean energy sector. Taken together, these legislative enactments reflect the Commonwealth's commitment to climate protection and its leadership in promoting clean and

[2] Concurrently today, the Massachusetts gas Program Administrators are also submitting an updated statewide natural gas energy efficiency plan.

renewable energy. The Program Administrators welcome the opportunity to design and implement innovative energy efficiency programs that not only advance the objectives of the Green Communities Act, but also promote the parallel goals of decreasing GHGs and promoting job creation in the clean energy sector.

B. D.P.U. 08-50-A

Although the Program Administrators have a well-established and very successful history in developing and implementing energy efficiency programs that are nationally recognized, the Department of Public Utilities (the "Department") recognized that the passage of the Act expanded existing energy efficiency requirements and, in particular, the standards imposed upon electric and gas distribution companies and other Program Administrators. Responding to these new directives, the Department opened an investigation in 2008 into its then-existing Energy Efficiency Guidelines in an effort to clarify those guidelines in light of the Act and to provide more detailed guidance to the Program Administrators in preparing the three-year, statewide plans required pursuant to the Act. During the Department's investigation, it solicited comments from the Program Administrators, governmental bodies, and other interested stakeholders. The resulting Order, Investigation by the Department of Public Utilities on its own Motion into Updating its Energy Efficiency Guidelines Consistent with An Act Relative to Green Communities, D.P.U. 08-50-A (March 16, 2009) ("D.P.U. 08-50-A"), was a comprehensive clarification of the criteria to be applied in demonstrating cost-effectiveness and the process by which three-year energy efficiency plans should be prepared and reviewed.

The Program Administrators have benefited from the guidance of the Department, not only in its Order in D.P.U. 08-50-A, but also by means of the numerous and very productive

D.P.U. 08-50 Working Group sessions convened by the Department and moderated by the Department and the Department of Energy Resources (the "DOER"). The format of today's filing, including the organization of the Plan, all statistical tables, and the bill impact review model, reflect the productive and collaborative process that occurred in the context of the D.P.U. 08-50 Working Group.

C. D.P.U. 08-50-B

Building upon the working group sessions and reports, Department supplemented its 08-50-A Order through the issuance of its Order, Investigation by the Department of Public Utilities on its own Motion into Updating its Energy Efficiency Guidelines Consistent with An Act Relative to Green Communities, D.P.U. 08-50-B (September 26, 2009) ("D.P.U. 08-50-B"). The 08-50-B Order includes further directives clarifying how the electric Program Administrators are to conduct and present their bill impact analysis and evaluation, monitoring and verification measures. The Program Administrators have reviewed the 08-50-B Order and are attempting to ensure that the PA-specific plans to be filed on October 30, 2009 comply with its directives.

D. The Council Process to Date

The Program Administrators are non-voting members of the Council and have participated collaboratively in the Council meetings that have occurred since its inception. The Program Administrators have benefited greatly from the thoughtful input provided by the Council and its Consultants, including the detailed guidance set forth in the Council's March 24, 2009 *Resolution Concerning Its Priorities to Guide the Development, Implementation and Evaluation of the PA Efficiency Plans* (the "Priorities Resolution"). Indeed, the Priorities Resolution is frequently referenced within this Plan. Additionally, the Program Administrators appreciate the degree to which the Council has worked collaboratively with the Program

Administrators to ensure that the Plan complies fully with each of the specific mandates of the Green Communities Act.

Incorporating comments provided by the Council and its Consultants, as well as responding to comments from interested stakeholders, the Program Administrators filed a revised statewide plan for Council review on July 16, 2009. By a resolution approved on July 28, 2009, the Council recognized the progress made by the Program Administrators in developing energy efficiency plans that would meet the mandates of the Green Communities Act. The resolution ("July 28th Resolution") lauded the "unprecedented collaboration among program administrators and acknowledged that the July plans represented a "significant improvement over the April 30 plans," addressing and responding to many Council comments and questions. The July 28th Resolution noted, however, that work remained to improve and further develop certain aspects of the plans in anticipation of the filing of the final statewide plans.

Today's filing, which updates and enhances the filings made on April 30 and July 16, 2009, responds to the comments and contributions of the Council, the Consultants, the various working groups, and other interested parties, and is being submitted as part of the iterative process contemplated by the Green Communities Act. Specifically, the Act provides that following the submission of the April 30 plan, the Program Administrators will:

> provide any additional information requested by the Council that is relevant to the consideration of the [P]lan. The Council shall review the [P]lan and any additional information and shall submit its approval or comments to the electric and natural gas distribution companies and municipal aggregators not later than 3 months after submission of the [P]lan. The electric and natural gas distribution companies and municipal aggregators may make any changes or revisions to reflect the input of the Council.

G.L. c. 25, § 21(c). Consistent with this statutory framework, the gas Program Administrators have participated in an extensive and rigorous series of meetings and discussions with the Council and its Consultants since the April 30 filing. In addition to bi-weekly Council meetings and at least weekly conferences with the Consultants, the Program Administrators have benefited from the work and thoughtful input of a number of specialized working groups. Notably, the D.P.U. 08-50 Working Group sessions have afforded an extremely productive opportunity for the Program Administrators to collaborate with the Department, the DOER, Council Members and members of the public in evaluating and addressing the bill impacts of the energy efficiency programs proposed by the Program Administrators. A variety of additional working groups have been created, allowing the Program Administrators to focus intensive attention on specific issues of concern, such as Combined Heat and Power ("CHP") and multi-family issues. The Program Administrators have been especially cognizant of the concerns articulated by the Council in its July 28th Resolution—as well as concerns raised by interested stakeholders through the public comment process—and the Program Administrators believe that today's filing incorporates those concerns and more comprehensively addresses the goals and statutory prescriptions of the Green Communities Act. The Program Administrators thank the Council members, the Consultants, and other interested parties for their extensive efforts to date, and believe that the Plan has benefited, and will continue to benefit, from the collaborative and iterative process contemplated by the Act.

E. Next Steps

Following the submittal of this Plan, the Council will prepare one or more resolutions indicating support for the Plan as a whole or in part, and discussing remaining concerns, if any, with certain elements of the Plan.

Pursuant to the Act, "The electric and natural gas distribution companies and municipal aggregators shall submit their respective plans, together with the council's approval or comments and a statement of any unresolved issues, to the department every 3 years on or before October 31. The Department shall consider the plans and shall provide an opportunity for interested parties to be heard in a public hearing." G.L. c. 25, § 21(d)(1). The Department will then have a 90-day period to issue its decision on the respective PA-specific plans. *Id.*, §21(d)(2). In particular, the Department is to ensure that such plans identify and capture "all energy efficiency and demand reduction resources that are cost effective or less expensive than supply" and the Department may "approve, modify and approve, or reject and require the resubmission of the plan" based upon its review. *Id.* The Department is also charged with approving a fully reconciling funding mechanism and, in the case of municipal aggregators, a fully reconciling funding mechanism that requires coordination between the distribution company and the municipal aggregator to ensure that program costs are collected, allocated and distributed in a cost effective, fair and equitable manner." *Id.* Each of the Program Administrators will be filing a PA-specific plan on October 30th that is consistent with, and flows out of, the statewide Plan submitted today.

Once their three-year plans are up and running in 2010, the Program Administrators will be required to provide quarterly reports to the Council, and the Council will be required to provide an annual report to the Department. G.L. c. 25, § 22(d).[3] The Department is also required to determine the effectiveness of each Program Administrator's plan on an annual basis. *Id.*, § 21(d)(2). In order to help facilitate this review process, the Program Administrators,

[3] The Plan contemplates that the Program Administrators will file quarterly and annual reports with both the Council and the Department.

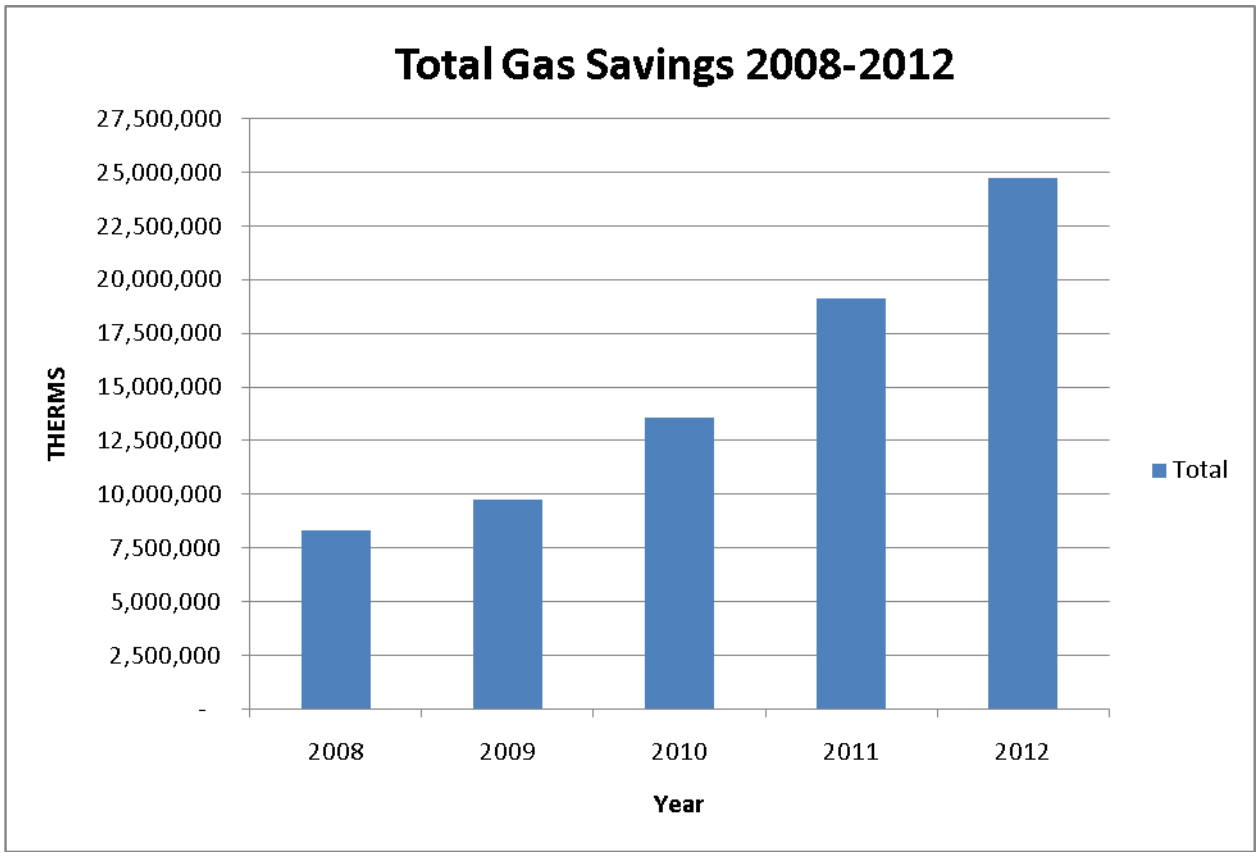
working collaboratively with the Department and the Council, will develop model quarterly and annual reporting templates for use by the Program Administrators.

In sum, the Program Administrators have developed this updated Plan based upon an unprecedented multi-party collaborative process and, as contemplated in the Green Communities Act, plan to continue such collaborative process throughout the three-year term of the Plan.

F. Overview of the Key Aspects of the Plan

1. *Benefits*

As indicated in the table below, the Program Administrators are seeking to increase, very substantially, the level of savings derived from energy efficiency activities, consistent with the bold actions contemplated under the Act. In particular, this Plan calls for cumulative savings on an overall statewide basis of 57,402,198 therms over the three-year period. The ramp-up to achieve these savings is graphically illustrated in the table below. As a result of these savings, CO_2 emissions will be reduced by approximately 5,269,604 million short tons. This achievement is comparable to the environmental benefits achieved by taking approximately 876,000 cars off the road, by annually sequestering carbon in a pine forest roughly the size of the 21 percent of the entire state, or by recycling 1.65 million tons of waste instead of sending it to the landfill.



2. *Cost-Effectiveness*

The Program Administrators have undertaken a preliminary statewide-level screening of the cost-effectiveness of the implementation of the Plan using the Department's Total Resource Cost ("TRC") test. This testing indicates that the plan is cost effective with a statewide benefit/cost ratio ("BCR") of 2.46 over the three years of the plan and is expected to produce net economic benefits of **over $700 million**.

Total Resource Cost Test, 2010-2012				
Sector	**B/C Ratio**	**Net Benefits**	**Benefits**	**Costs**
Residential	**2.19**	**$292,952,218**	**$539,408,963**	**$246,456,745**
Residential New Construction & Major Renovations	1.86	31,533,401	68,272,687	36,739,286
Residential Heating and Water Heating	3.01	206,165,751	308,496,333	102,330,581
MassSAVE	n/a	n/a	n/a	13,851,687

Weatherization Program	1.82	53,501,081	118,675,810	65,174,728
Multifamily Retrofit	2.84	23,633,241	36,471,303	12,838,062
O Power	1.20	1,266,717	7,492,830	6,226,113
Deep Energy Retrofit	n/a	n/a	n/a	2,930,648
Residential Building Practices and Demonstration Program	n/a	n/a	n/a	723,654
Energy Analysis: Internet Audit Program	n/a	n/a	n/a	745,203
Community Based Pilots	n/a	n/a	n/a	374,913
Workforce Development	n/a	n/a	n/a	313,421
Statewide Marketing & Education	n/a	n/a	n/a	1,294,423
EEAC Consultants	n/a	n/a	n/a	1,871,817
DOER Assessment	n/a	n/a	n/a	1,042,208
Low Income	**2.07**	**$68,215,075**	**$132,039,836**	**$63,824,761**
Low-Income Single Family Retrofit	2.03	47,039,106	92,496,629	45,457,523
Low-Income MultiFamily Retrofit	2.46	23,457,232	39,543,207	16,085,975
Statewide Marketing & Education	n/a	n/a	n/a	624,892
Low-Income Energy Affordability Network Funding	n/a	n/a	n/a	1,235,100
DOER Assessment	n/a	n/a	n/a	421,272
Commercial & Industrial	**2.98**	**$340,464,970**	**$512,147,533**	**$171,682,563**
C&I New Construction & Major Renovation	3.51	124,674,424	174,248,293	49,573,870
C&I Retrofit	2.87	211,791,127	325,079,639	113,288,512
C&I Direct Install	4.37	9,887,108	12,819,600	2,932,492
Workforce Development	n/a	n/a	n/a	372,521
Business Energy Analyzer	n/a	n/a	n/a	1,086,883
Deep Energy Retrofit	n/a	n/a	n/a	1,535,754
Statewide Marketing & Education	n/a	n/a	n/a	772,175
EEAC Consultants	n/a	n/a	n/a	1,196,624
DOER Assessment	n/a	n/a	n/a	923,731
GRAND TOTAL	**2.46**	**$701,632,263**	**$1,183,596,332**	**$481,964,069**

3. *Progress Toward Green Community Act Requirements and Goals*

Consistent with the Act, this Plan seeks to capture all available cost-effective energy efficiency for the three-year period beginning January 1, 2010 with the consideration of factors and concerns noted at the Council, including, but not limited to, bill impacts, environmental benefits, and the need for a reasonable ramp-up schedule. In determining the level of savings to achieve in order to satisfy this mandate, the Program Administrators considered and weighed multiple factors, including: (1) the terms of the Act; (2) the directives of the Council, including the Council's Priorities Resolution, the July 28th Resolution and the

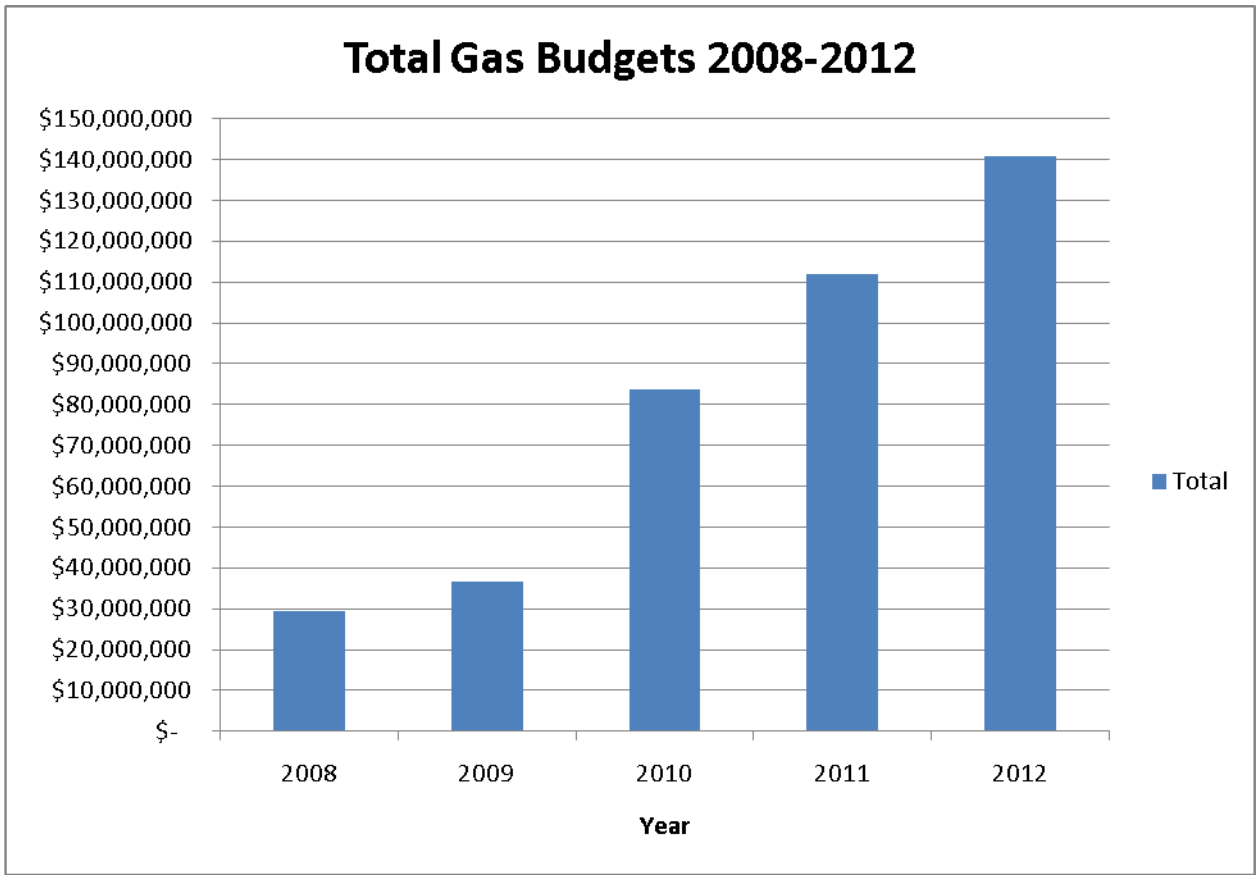
Resolution of October 13, 2009 (the "October 13th Resolution"); (3) the Department's Order in D.P.U. 08-50-A (including preliminary bill impact considerations); (4) the Assessment of All Available Cost-Effective Electric and Gas Savings: Energy Efficiency and CHP adopted by the Council on July 14 (the "Assessment"); and (5) their own experience in implementing nationally-recognized energy efficiency programs for over two decades. The Program Administrators met collaboratively on a frequent basis to determine the appropriate savings goals and budgets to propose in this Plan. The Program Administrators also engaged in a very productive and rigorous series of discussions with the Council, culminating in the October 13th Resolution, which established approved statewide savings targets, performance incentives, and, after collaborative work with the Council and its Consultants, program costs. The goals approved in the October 13th Resolution are incorporated in this statewide plan and represent an unprecedented collaboration on the part of the Program Administrators, Council, and its Consultants. As a result of this iterative and collaborative process, and after considering the directives of the Council, the Program Administrators have achieved an unprecedented statewide unanimous consensus with respect to the savings goals, proposed budget levels, and implementation strategies set forth herein.

Among other areas of emphasis, the Plan seeks to maximize the usage of competitive procurement processes. The Plan also seeks to support the development of an enhanced energy services delivery infrastructure in Massachusetts. An important ancillary benefit of this effort will be job creation throughout the Commonwealth in the energy efficiency services sector. Indeed, the Program Administrators estimate that 778 jobs will be created in the Commonwealth over the next three years as a result of the implementation of the Plan. This job creation benefit has been an important focus of the Council and the Program Administrators.

Another unique aspect of the Plan is the level of coordination and integration of effort among the Program Administrators, as well as with the low-income program delivery network. The Plan seeks to enhance program designs in order to provide a seamless experience for customers seeking services from both gas and electric companies. Such coordination by the Program Administrators should allow for the achievement of deeper and broader levels of savings at customer homes and facilities, all in a more cost-effective manner. In turn, these increased savings levels, over time, will help the Program Administrators reduce their costs of providing services and provide economic and environmental benefits to all customers.

4. *Program Budgets*

The summary table below sets forth the ramp-up of energy efficiency expenditures contemplated for the implementation of this Plan. As indicated below, the Program Administrators are proposing a phased ramp-up to the 2012 annual statewide expenditure level of $140,739,963, which represents an increase of 377 percent of past (2008) annual expenditures on energy efficiency. Total three-year expenditures are projected to be $336,398,050. This ramp-up is necessary in order to ensure that a trained delivery infrastructure is in place so that high quality services continue to be provided to customers. The ramp-up also will help provide smoother bill impacts with respect to implementation of the Plan. While the expenditures on energy efficiency under the Plan are significant and will result in certain increased elements of customer bills, the net present economic value of the benefits to be achieved under the Plan is $701,632,263. The magnitude of these benefits helps demonstrate the value of the increased energy efficiency expenditures called for in this Plan. The Program Administrators' sensitivity to issues of bill impacts is highlighted in Section II.E of the Plan.



5. *Highlights of Program Design Strategies*

The Plan sets forth detailed strategies for coordinated program implementation in the residential, low-income, and commercial and industrial ("C&I") sectors. The detailed plans in the program description section of the Plan represent the results of collaboration and cooperation among the Program Administrators (both gas and electric), Council members, other interested parties, and the Consultants. Notably, the proposed low-income programs were developed in collaboration with the low-income weatherization and fuel assistance program network, and build upon the current successful collaborative approach to program delivery to this important customer sector. The program designs reflect comprehensive strategies that provide for: 1) greater consistency in offerings throughout the state; 2) an enhanced customer experience, including seamless delivery strategies that integrate gas and electric efforts; 3) an expanded,

diverse, and well-trained workforce; 4) the delivery of state-of-the-art new technologies and 5) a new model for addressing low-income customers living in multi-family dwellings, regardless of their rate class or whether they rent or own their home.

6. *Evaluation and Monitoring*

Recognizing that the increased savings and expenditures proposed under the Plan need to be subject to rigorous evaluation and monitoring, the Program Administrators have proposed a comprehensive and transparent approach to evaluation and monitoring. The Program Administrators seek to undertake evaluation and monitoring activities in a transparent and carefully constructed manner consistent with the Council's September 8, 2009 Resolution on Evaluation, Measurement and Verification ("EM&V Resolution"). This new process will allow the Program Administrators, working with the Council, to measure savings resulting from programs, enhance the quality of program delivery, and ensure that the programs are effectively addressing various barriers. This Plan also sets forth specific initial areas for study and evaluation, using a "research area" approach that integrates gas and electric evaluation activities into core areas of attention (*e.g.* residential new construction, residential retrofit and low-income).

7. *Cost Recovery and Performance Incentives*

Cost recovery, including the recovery of lost base revenue ("LBR") and performance incentives (or through implementation of a Department-approved decoupled rate structure), is a critical element of the Plan. The Plan sets forth the proposals on cost recovery that seek to utilize existing recovery mechanisms that have worked well in the field for many years and that are well understood by most customers. The Plan seeks to ensure that, prior to the collection of

funds from customers, the Program Administrators have fully accessed other potential available sources of funding. The Plan allows the Program Administrators the opportunity to recover their costs and be made economically whole for aggressively pursuing sales-reducing energy efficiency efforts, as well as to earn a reasonable return associated with this investment based upon their actual performance and achievement. In this regard, based on the October 13th Resolution, the Program Administrators have set savings targets that provide for an incentive pool of $4.0 million in 2010, $4.5 million in 2011, and $5.5 million in 2012, for a total three-year incentive pool of $14 million. Program Administrators can earn higher incentives by exceeding performance targets, but the amount of the statewide incentive pool is capped at 125% of the incentive amount related to the achievement of target savings levels for each Program Administrator in 2010. Future discussions will determine whether there will be a cap in incentives for 2011 and 2012, and if so, the appropriate level. Incentive targets will be allocated among the individual Program Administrators according to their respective target savings goals, as opposed to the levels of their budgets.

8. *Mid-Term Revisions*

Consistent with the Department's Order in D.P.U. 08-50-A, the Plan provides objective standards that enable the Program Administrators to retain flexibility to make ongoing revisions and enhancements after the adoption of the Plan in order to reflect in-the-field conditions, more accurate information on costs and savings of programs, technological advances, financing opportunities, and state-of-the-art new technologies. In particular, in the event that targets for outside funding are not achieved by certain dates as set forth in this Plan, the Program Administrators are permitted reasonable flexibility to modify savings goals and budgets by specific stipulated dates in order to reflect the actual outside funding levels achieved. In general,

the Program Administrators will retain the flexibility to adjust spending and add or subtract program measures; however, Program Administrators will not add a new program or terminate an existing program or change a program budget by more than twenty percent without prior approval by the Department, with the opportunity for full participation by the Council.

9. *Economic Development and Job Growth*

An important element of the Plan is the economic impact of energy efficiency on the Commonwealth and its citizens, including the job creation and retention benefits of energy efficiency programs. The Program Administrators have taken economic and job growth impacts into account as they have developed the Plan, and anticipate, based on the budgets, savings goals, and programs detailed herein, the creation of 7,775 job years (corresponding to 778 jobs), and approximately $370 million in Gross State Product. One way that energy efficiency affects consumers and businesses is by reducing energy costs, thereby allowing the money saved to be spent elsewhere, thus stimulating the economy. Additionally, energy efficiency programs create a wide variety of jobs, many of them tied to local communities. The Program Administrators are committed to job training for emerging clean energy industries, as well as sustainable funding of energy efficiency programs in order to maintain a consistent work force. The following chart illustrates estimated job growth related to the Plan over the three-year Plan.

	2010	**2011**	**2012**
Jobs Created	194	257	327

10. *Summary*

In sum, the Plan represents an unprecedented collaboration among all the Program Administrators in Massachusetts, both gas and electric, as well as diverse interested parties, and

fully complies with the bold initiatives required under the Green Communities Act. The Program Administrators thank the Council, its Consultants, and other interested participants in the plan development process for all their efforts, analysis, and suggestions to date. The Program Administrators look forward to working cooperatively with the Council and other interested parties in reviewing this Plan and ensuring that Massachusetts customers are provided with programs that are marked by excellence and innovation, and that produce economic and environmental benefits throughout Massachusetts.

II. THE THREE-YEAR PLAN

A. Core Benefits: Energy Savings, Greenhouse Gas Reductions, Net Economic Benefits and Progress Towards Green Communities Act Requirements and Goals

1. *Energy Savings*

The savings goals and program budgets set forth in this Plan are presented on an aggregate, statewide program-level basis within three major customer sectors (residential, low-income, and C&I). In the PA-specific filings, each Program Administrator is setting forth its own recommended savings and budget levels for the three-year period commencing January 1, 2010, consistent with the overall goals and budgets developed in the statewide Plan review process. The Program Administrators note that this phased process complies with the Act, which first requires the development of a joint statewide plan by all Program Administrators in April 2009, followed in October 2009 by individual PA-specific plans, after the Council has concluded its review of the statewide plans. *See* G.L. c. 25, §§ 21(b)-21(d).

In developing today's proposed statewide goals and budgets, each Program Administrator was tasked with submitting to the full group of Program Administrators its own updated PA-specific proposed savings goals and budgets for the three-year period. These proposals were

subject to a review process that allowed for adjustments to be made by all Program Administrators based not only on peer review, but also upon (a) the presentations made at the Council meetings by the Consultants, (b) Council discussions regarding the savings goals and budgets advanced by the Program Administrators in their April 30 and July 16 filings and (c) discussions and negotiations with the Council's Consultants. The savings goals and budgets presented on a statewide basis by the Program Administrators today represent the results of that iterative process. The aggregate savings goals and budgets presented individually by the Program Administrators in their individual, PA-specific filings are generally targeted on, and flow out of, the overall goals developed in the statewide Plan review process.[4] The following table summarizes, on a per-program basis, by year and in total, the annual savings goals proposed by the Program Administrators in this Plan.

YEAR	PROGRAM	TOTAL THERMS	% Increase from 2008	% Increase from 2009
Baseline 1-2008	**TOTAL**	**8,332,899**		
Baseline 2-2009	**TOTAL**	**9,729,104**	**17%**	
2010	**Residential (total)**	**6,504,911**		
	Residential New Construction & Major Renovations	586,803		
	Residential Heating and Water Heating	3,312,696		
	MassSAVE	7,851		
	Weatherization Program	1,144,517		
	Multifamily Retrofit	356,194		
	O Power	1,096,850		
	Deep Energy Retrofit	-		
	Residential Building Practices and Demonstration Program	-		
	Energy Analysis: Internet Audit Program	-		
	Workforce Development	-		

[4] The Act provides that Program Administrators are not required to make all changes or revisions recommended by the Council in filing their October PA-specific plans. *See* G.L. c. 25, § 21(c)-(d)(1).

	Low Income (total)	**912,102**		
	Low-Income Single Family Retrofit	520,011		
	Low-Income Multifamily Retrofit	392,091		
	Commercial & Industrial (total)	**6,181,084**		
	C&I New Construction & Major Renovation	1,961,592		
	C&I Retrofit	3,991,652		
	C&I Direct Install	227,840		
	Workforce Development	-		
	Business Energy Analyzer	-		
	Deep Energy Retrofit	-		
	GRAND TOTAL	**13,598,098**	**63%**	**40%**
2011	**Residential (total)**	**9,233,555**		
	Residential New Construction & Major Renovations	692,177		
	Residential Heating and Water Heating	4,649,034		
	MassSAVE	12,556		
	Weatherization Program	1,588,508		
	Multifamily Retrofit	491,280		
	O Power	1,800,000		
	Deep Energy Retrofit	-		
	Residential Building Practices and Demonstration Program	-		
	Energy Analysis: Internet Audit Program	-		
	Workforce Development	-		
	Low Income (total)	**1,083,764**		
	Low-Income Single Family Retrofit	588,854		
	Low-Income Multifamily Retrofit	494,910		
	Commercial & Industrial (total)	**8,779,986**		
	C&I New Construction & Major Renovation	2,511,325		
	C&I Retrofit	5,875,469		
	C&I Direct Install	393,191		
	Workforce Development	-		
	Business Energy Analyzer	-		
	Deep Energy Retrofit	-		
	GRAND TOTAL	**19,097,305**	**129%**	**96%**
2012	**Residential (total)**	**11,377,476**		
	Residential New Construction & Major Renovations	855,061		
	Residential Heating and Water Heating	5,298,995		

	MassSAVE	20,408		
	Weatherization Program	1,878,052		
	Multifamily Retrofit	684,959		
	O Power	2,640,000		
	Deep Energy Retrofit	-		
	Residential Building Practices and Demonstration Program	-		
	Energy Analysis: Internet Audit Program	-		
	Workforce Development	-		
	Low Income (total)	**1,405,804**		
	Low-Income Single Family Retrofit	799,834		
	Low-Income Multifamily Retrofit	605,971		
	Commercial & Industrial (total)	**11,923,515**		
	C&I New Construction & Major Renovation	3,241,945		
	C&I Retrofit	8,179,380		
	C&I Direct Install	502,190		
	Workforce Development	-		
	Business Energy Analyzer	-		
	Deep Energy Retrofit	-		
	GRAND TOTAL	**24,706,795**	**196%**	**154%**
THREE YEAR TOTAL: 2010-2012	**Residential (total)**	**27,115,942**		
	Residential New Construction & Major Renovations	2,134,041		
	Residential Heating and Water Heating	13,260,726		
	MassSAVE	40,815		
	Weatherization Program	4,611,077		
	Multifamily Retrofit	1,532,433		
	O Power	5,536,850		
	Deep Energy Retrofit	0		
	Residential Building Practices and Demonstration Program	0		
	Energy Analysis: Internet Audit Program	0		
	Workforce Development	0		
	Low Income (total)	**3,401,671**		
	Low-Income Single Family Retrofit	1,908,698		
	Low-Income Multifamily Retrofit	1,492,972		
	Commercial & Industrial (total)	**26,884,584**		
	C&I New Construction & Major Renovation	7,714,862		
	C&I Retrofit	18,046,501		
	C&I Direct Install	1,123,221		

	Workforce Development	0		
	Business Energy Analyzer	0		
	Deep Energy Retrofit	0		
	GRAND TOTAL	**57,402,198**		

2. *Environmental Benefits*

In addition to economic benefits, efficiency resources bring significant environmental benefits that reduce air pollution and improve air quality in Massachusetts and in the region. The efficiency programs and initiatives included in this Plan are aimed at reducing the amount of electricity and natural gas required to run the Commonwealth's economy. By reducing the amount of energy consumed in all sectors of the economy, important air and water benefits are delivered. Decreasing energy consumption results in less demand for energy from fossil fuel powered plants and natural gas pipelines. By reducing plant operation time, emissions of air pollutants and greenhouse gases can be reduced.

Generating electricity from non-renewable fossil fuels (*e.g.*, coal, oil, natural gas) produces nitrogen and sulfur oxides—two of the six "criteria pollutants" defined by the Clean Air Act and identified as air quality indicators by the U.S. Environmental Protection Agency ("EPA"). Nitrogen oxides are precursors to ozone, a primary component of summer smog. Nitrogen and sulfur oxides in particulate form reduce visibility, are associated with public health problems such as asthma, and are linked to acid rain. Curbing the amount of energy needed to run power plants reduces the amount of nitrogen and sulfur oxide pollution emitted into the atmosphere.

In addition to providing cleaner air and water for Massachusetts, the Plan will provide climate benefits by reducing energy consumption—both the natural gas needed to heat homes, schools, and businesses, and the fuels needed to run power plants. Massachusetts has taken bold action, by adopting the GWSA which calls for economy-wide reductions in GHGs starting in 2020 and other efforts (such as enhancements in the transportation sector).

Collectively, the programs contained in this three-year Plan are expected to provide three-year cumulative annual savings of 57,402,198 therms and lifetime savings of 897,481,544 therms. Avoiding the consumption of 57,402,198 therms of natural gas in Massachusetts homes and businesses represents reductions of approximately 316,375 million short tons of CO_2 emissions annually. In addition, these programs will provide non-gas benefits such as reductions in demand for electricity, fuel oil and water use.

Under climate cap-and-trade programs such as the GWSA and a potential federal program, investment in energy efficiency is recognized as the most effective cost-containment and consumer protection tool. Investing in energy efficiency lowers energy consumption, which reduces GHGs and the demand for allowances. The result is a lower price for carbon allowances and lower overall cost of the cap and trade program.

3. *Net Benefits and Cost Effectiveness Summary with Summary Table*

The Program Administrators have projected the expected benefits and costs associated with this statewide Plan consistent with the requirements of the Department's Order in D.P.U. 08-50-A. In this Order, "the Department reaffirms that the Total Resource Cost test is the appropriate test for evaluation of the cost-effectiveness of ratepayer-funded energy efficiency programs."

To conduct the TRC test, Program Administrators routinely update their benefit/cost screening models to reflect new assumptions relating to program costs and benefits, the discount rate, the general rate of inflation, and avoided costs. To this end, the Program Administrators contracted with Synapse Energy Economics to provide an updated avoided cost study, which was completed on August 21, 2009. In general, the benefit categories in the TRC test include the value of energy savings, gas and electric system benefits, and other measurable benefits (for

example, participant resource benefits, participant non-resource benefits, and benefits due to measurable market effects).

Costs included in the TRC test include all Program Administrator costs and program participant costs. Program Administrator costs include program implementation expenses, evaluation costs, proposed performance incentives, and the tax liability for performance incentives.[5] Program participant costs include initial costs incurred by customers as a result of their participation in the program.

The benefit/cost screening model uses all of this data to calculate the present value of the program benefits and costs, and then calculates ratios of these values to produce BCRs for the TRC test. The present value of costs and benefits is calculated over the expected duration of the useful life of the measures installed through the program.

The table below summarizes the expected benefits, costs, and BCR for the portfolio of programs the Program Administrators propose to implement over the three-year period. For more detailed information see tables in Section II.D below.

[5] Performance incentives are not applicable to the Cape Light Compact. Please see D.P.U. 08-50-A at 51.

Total Resource Cost Test, 2010-2012				
Sector	**B/C Ratio**	**Net Benefits**	**Benefits**	**Costs**
Residential	**2.19**	**$292,952,218**	**$539,408,963**	**$246,456,745**
Residential New Construction & Major Renovations	1.86	31,533,401	68,272,687	36,739,286
Residential Heating and Water Heating	3.01	206,165,751	308,496,333	102,330,581
MassSAVE	n/a	n/a	n/a	13,851,687
Weatherization Program	1.82	53,501,081	118,675,810	65,174,728
Multifamily Retrofit	2.84	23,633,241	36,471,303	12,838,062
O Power	1.20	1,266,717	7,492,830	6,226,113
Deep Energy Retrofit	n/a	n/a	n/a	2,930,648
Residential Building Practices and Demonstration Program	n/a	n/a	n/a	723,654
Energy Analysis: Internet Audit Program	n/a	n/a	n/a	745,203
Community Based Pilots	n/a	n/a	n/a	374,913
Workforce Development	n/a	n/a	n/a	313,421
Statewide Marketing & Education	n/a	n/a	n/a	1,294,423
EEAC Consultants	n/a	n/a	n/a	1,871,817
DOER Assessment	n/a	n/a	n/a	1,042,208
Low Income	**2.07**	**$68,215,075**	**$132,039,836**	**$63,824,761**
Low-Income Single Family Retrofit	2.03	47,039,106	92,496,629	45,457,523
Low-Income MultiFamily Retrofit	2.46	23,457,232	39,543,207	16,085,975
Statewide Marketing & Education	n/a	n/a	n/a	624,892
Low-Income Energy Affordability Network Funding	n/a	n/a	n/a	1,235,100
DOER Assessment	n/a	n/a	n/a	421,272
Commercial & Industrial	**2.98**	**$340,464,970**	**$512,147,533**	**$171,682,563**
C&I New Construction & Major Renovation	3.51	124,674,424	174,248,293	49,573,870
C&I Retrofit	2.87	211,791,127	325,079,639	113,288,512
C&I Direct Install	4.37	9,887,108	12,819,600	2,932,492
Workforce Development	n/a	n/a	n/a	372,521
Business Energy Analyzer	n/a	n/a	n/a	1,086,883
Deep Energy Retrofit	n/a	n/a	n/a	1,535,754
Statewide Marketing & Education	n/a	n/a	n/a	772,175
EEAC Consultants	n/a	n/a	n/a	1,196,624
DOER Assessment	n/a	n/a	n/a	923,731
GRAND TOTAL	**2.46**	**$701,632,263**	**$1,183,596,332**	**$481,964,069**

4. *Progress Towards Green Communities Act Requirements and Goals*

i. Acquisition and Assessment of All Available Cost-Effective Energy Efficiency and Demand Reduction Resources

The Green Communities Act provides that the Plan "shall provide for the acquisition of *all available* energy efficiency and demand reduction resources that are cost effective or less expensive than supply." G.L. c. 25, § 21(d) (emphasis added). The Act does not define the term

"all available energy efficiency". For the Program Administrators, determining the optimal proposal in this regard constituted a core task in assembling the Plan. Indeed, today's filing sets forth an update of the first three-year Plan filing ever conducted by any Program Administrator under the Green Communities Act, and the Program Administrators expect that, over time, helpful precedent and further guidelines will be developed with respect to this fundamental aspect of the Act. The Program Administrators have engaged in numerous, iterative discussions with the Council and its Consultants in order to ensure the Act's mandates are satisfied. The Program Administrators note that, while the Act requires the acquisition of "all available" energy efficiency, the Act does not require an exact numeric level of cost-effective energy efficiency and demand-reduction resources to be acquired under the Plan nor does it define the term "available"; likewise, what may be deemed to be the amount of "all available" efficiency today may not be the same as what becomes available three or six years from now because of technological advances and market changes. That said, the Program Administrators respectfully submit that this Plan, which calls for an increase, by 2012, in annual savings of almost triple 2008 levels and increased expenditures on energy efficiency programs of over 4.5 times greater than 2008 expenditures, falls squarely within the appropriate range of bold effort contemplated under the Green Communities Act. In developing this proposal and assessing the issue of the acquisition of all available cost-effective energy efficiency under the Act, the Program Administrators referred to six primary sources, which are outlined below.

First, the Program Administrators referred to the mandates of the Green Communities Act, in particular G.L. c. 25, § 25(b), which specifies that the Plans should provide for a "*sustained* and integrated statewide energy efficiency effort." (Emphasis added). The Program Administrators interpret the use of the term "sustained" in the Act as indicating a clear desire by

the General Court that the energy efficiency efforts being undertaken pursuant to the Plan constitute steps in a multi-year, sustained effort rather than a short-term, and likely highly leveraged, effort to obtain all available cost-effective energy efficiency in a three or even a six-year period.

Second, the Program Administrators referred to, and carefully reviewed, the Council's Priorities Resolution, and subsequently engaged in numerous discussions with the Council and its Consultants, which resulted in the negotiated targets and savings goals set forth in the October 13th Resolution. Today's filing seeks to be expressly consistent with the October 13th Resolution with respect to savings goals.

Third, the Program Administrators also referred to the Department's order in D.P.U. 08-50-A. The Department noted in D.P.U. 08-50-A that, consistent with the Green Communities Act, the consideration of rate impacts of energy efficiency programs must be factored into the development of the Plans. More specifically, in D.P.U. 08-50-A, the Department stated that the Green Communities Act requires the Department to:

> "consider the effect of rate increases on residential and commercial customers" when reviewing proposals for increased funding of energy efficiency activities. G.L. c. 25, § 19(a). The assessment of rate impacts from the energy efficiency programs will be important to the Department, and we expect that it will be of importance to many of the Massachusetts energy efficiency stakeholders. Therefore, consistent with the Act, and consistent with the Department's traditional review of any change in rates, charges and tariffs subject to our jurisdiction, we will require Program Administrators to include in their three-year energy efficiency plans a comprehensive and well-documented assessment of rate impacts and average bill impacts associated with their energy efficiency activities. . . The Department does not expect there to be any "bright line" or single standard that can be used to determine whether a particular rate or average bill impact associated with a particular energy efficiency plan is acceptable. Instead, we expect Program Administrators to present a comprehensive estimate of how energy efficiency programs are likely to impact customers' rates and

> average bills, and describe why the estimated impacts are appropriate in light of the expected benefits of the energy efficiency programs.

D.P.U. 08-50-A at 56-57 (quotations in text). As set forth in Section II.E, of the Plan, the Program Administrators have analyzed billing impacts in proposing this Plan and believe that the Plan appropriately balances the need for bold action, with the need to avoid rate continuity issues and the possible negative effects that bill impact concerns could have on the overall success of the Plan.

Fourth, Program Administrators referred to the Assessment presented at the Council's meeting on June 23, 2009. The Assessment is included in Appendix F. The Program Administrators submit that the Assessment helps them and the Council address the requirements of the Act, and that it is appropriate for inclusion in the Plan at this time as an initial presentation, subject to the qualifications and discussion below. As noted above, the Program Administrators submit that use of the term "available" energy efficiency in the Act (as opposed to "achievable" or "potential") mandates consideration of bill and rate impacts of energy efficiency programs in the development of three-year Plans, and believe that a consideration of bill impacts must be factored into the establishment of the savings goals for the Plan. Importantly, the Council Resolution of July 14, 2009 expressly recognizes the need to consider bill impacts in establishing savings goals for the Plan. *See* Appendix F. While the Assessment is a useful tool and guidepost, it was not developed in order to address bill impacts with specificity. Additionally, savings goals of "about" three percent of annual load set forth in the Assessment are at the very high, aggressive end of the spectrum of reasonableness for a long-term analysis (*i.e.*, ten-year period). The Program Administrators note that for the upcoming three-year period, savings forecasts must also reflect additional short-term factors, such as contractor infrastructure constraints, the current economic downturn, and equipment availability. (Commendably, the

Assessment expressly recognizes the need for a ramp-up to the savings levels set forth therein, and avoids fixing an exact numeric standard, and judiciously utilizes the word "about" in setting forth its three percent estimate.) The goals outlined in the Assessment are also at the aggressive end of the spectrum, in part because they do not reflect several other issues that negatively affect savings. Such considerations include:

- The history of successful energy efficiency activity in Massachusetts, which, while commendable, also makes increased energy efficiency more difficult than in other states cited in the Assessment;
- Current economic trends, which include decreased retail activity, decreased residential new construction permits (down approximately 41 percent from 2007 to 2008) and business shut-downs or ramp-downs, all of which decrease available savings opportunities;
- The impact of stimulus funding on new energy efficiency efforts, which will make it more difficult for Program Administrators to generate savings independently; and
- The Assessment's use of 0.3 to 0.5 percent annual savings from CHP, which figures appear high based on activities undertaken to date by the Program Administrators.

The Program Administrators note that achieving exact precision in any assessment of all available energy efficiency is not cost-effective, and thus in their comments on the Assessment they recommend the adoption of a broader range of results (two percent to three percent savings) than are set forth in the Assessment. That said, the Assessment has served as a valuable tool for the Program Administrators and all Council members, and the Program Administrators appreciate the efforts of all Council members and the Consultants in developing the Assessment.[6]

[6] As noted in Section II.H, the Programs Administrators recommend that a detailed technical potential study be performed during the course of the initial three-year Plan and that an updated assessment of all available energy efficiency be prepared in connection with the next three-year plan to take effect in 2013. In the next assessment, the Program Administrators would seek to address the issues described in this Plan, and focus on more Massachusetts-specific data, which should become more fully developed over the next several years.

Fifth, in developing their target savings for the Plans, the Program Administrators referred to, among others, the following primary studies and analyses of technical potential: the NEEP 2005 study of "Economically Achievable Energy Efficiency Potential in New England"; the "Massachusetts Residential Appliance Saturation Survey" conducted by Opinion Dynamics Corporation; "Natural Gas Energy Efficiency Potential in Massachusetts" by GDS Associates, Inc., and Summit Blue Consulting, April 2009; and the Federal Energy Regulatory Commission's April 3, 2009 "Electric Market Overview: Energy Efficiency Resource Standards and Goals." These studies have helped the Program Administrators identify and determine cost-effective achievable savings levels. These studies are referenced in the Bibliography attached as Appendix C and are available on the Council's website www.ma-eeac.org (the "Website").

Sixth, the Program Administrators reviewed and discussed their own experience in implementing nationally-recognized energy efficiency programs over the past two decades. The Program Administrators met collaboratively on a frequent and intense basis to determine the appropriate savings goals and budgets to propose in this Plan, and carefully considered comments and feedback on the initial April 30 Plan filing and subsequent July 16 Plan. Without limiting the foregoing, each Program Administrator was required to make projections for its individual service area, and was given the opportunity to comment on other Program Administrators' projections and statewide projections.

As a result of this iterative and ongoing process, and after consideration of all these factors and, in particular, the October 13th Resolution, the Program Administrators, acting by unanimous consensus, are submitting this updated Plan. In the following sections, the Program Administrators provide a more detailed discussion of certain issues regarding assessing all available, cost-effective energy efficiency.

ii. Further Discussion of the Program Administrators' Assessment Activities and of Key Barriers and Challenges

For purposes of this statewide Plan, the Program Administrators have also assessed "the estimated lifetime cost, reliability and magnitude of all available energy efficiency and demand reduction resources that are cost-effective or less expensive than supplied." G.L. c. 25 § 21(b)(2) (emphasis added). In particular, the Program Administrators have specifically set forth the estimated costs associated with the available energy efficiency proposed for the Plan. *See* Section II.D. Based upon many years of experience and study, the Program Administrators have also assessed the reliability of energy efficiency resources and note that energy efficiency resources have proven to produce persistent savings and be reliable over the extended life of installed measures; indeed, energy efficiency has been a notably reliable part of the services that Program Administrators have provided over many years. The Program Administrators have similarly provided an assessment of the magnitude of the benefits and costs associated with obtaining these resources. *See* Section II.D. Without limiting future assessment activities, the Program Administrators recommend that a comprehensive technical potential study be performed during the period 2010-2012 that targets both electric and gas end uses. Such a technical potential study will be a useful tool in future assessments under the Act.

iii. Key Factors, Challenges and Market Barriers

This Massachusetts statewide Plan aggressively advances energy efficiency in the Commonwealth and positions Massachusetts as the national leader in energy efficiency investments. The Green Communities Act requires that electric and natural gas resource needs shall first be met through all available energy efficiency and demand reduction resources that are cost effective or less expensive than supply. In this sub-section of the Plan, the Program Administrators discuss certain key factors, challenges and market barriers that have factored into their assessment of the achievable level of energy efficiency set forth in the Plan.

- **Electric and natural gas resource needs shall first be met through all available energy efficiency and demand reduction resources that are cost effective or less expensive than supply.**
    - The Program Administrators recognize that energy efficiency investments are the fastest way to address growing energy demands. Efficiency programs can be scaled and implemented in a short period of time, often in one to three years. Energy efficiency programs and demand reduction programs reduce demand for energy, thereby also reducing GHGs. In addition to emission reductions and energy savings, demand-side management also brings benefits of lower water use and reduced environmental damage from fossil fuel extraction. The programs and initiatives contained in this Plan outline bold action and are intended to serve as the first resource by which to meet overall energy demand. The Program Administrators developed this Plan leveraging knowledge and expertise they have gained over the past two decades delivering nationally-recognized energy efficiency

programs that have provided energy consumers with significant savings.

- **The acquisition plan for all available cost-effective energy efficiency recognizes the significant barriers that must be overcome in order to achieve the aggressive goals outlined in the plan.**
    - The significant ramp-up of energy efficiency savings outlined in this Plan provides a strong foundation to rapidly provide the Commonwealth and its residents (including businesses and low-income customers) with all realistically achievable energy efficiency. This Plan, which strives to obtain all realistically achievable energy efficiency, is also grounded in an understanding of market barriers and deliberately strives to address significant market barriers and policy concerns.
- **Market Barriers**

To be successful in energy efficiency, the programs must bridge the four major market barriers of awareness, availability, accessibility, and affordability. These barriers affect customers' adoption of energy efficiency measures and the ability of Program Administrators to achieve and obtain savings. This Plan outlines many initiatives that Program Administrators feel are critical in bridging these four major market barriers.

- **Awareness** is a barrier that historically was not confronted on a grand scale, given capped budgets, marketing, and outreach. This Plan recognizes that enhanced public education, marketing, and outreach, including community-based measures, will be needed to achieve deeper and broader penetration. Deeper penetration refers to the promotion of additional cost-effective technologies and strategies to capture comprehensive, whole-building savings among the traditional

base of expected program participants. This deeper penetration requires raising participants' awareness and understanding of the value of investing in additional measures that create increased savings per participant. In addition to expanding marketing and incentive strategies, this Plan incorporates other strategies to overcome awareness barriers, with the goal of dramatically increasing the level of participation among eligible customers, *i.e.*, making participation broader. Broader penetration can include outreach to traditionally hard-to-reach customer groups, including economically marginalized communities and groups where English is not the first language.

- **Availability** is a barrier when manufacturers either do not produce or do not effectively market significant quantities of energy efficiency products. Availability may be constrained also by limited workforce or delivery mechanisms. The challenge for manufacturing in the energy efficiency sector is to respond not only to the Commonwealth's efficiency increases, but also to increases across the nation. This challenge is compounded by the current economic crisis, which has hindered manufacturing from making additional investments. From a workforce perspective, Program Administrators recognize that additional workforce must be trained and deployed to effectively deliver the programs. This is not an insignificant barrier.

- **Accessibility** is another market barrier which refers to the customers' access to the product. To mitigate this barrier, Program Administrators must connect with mid-stream market actors, such as distribution retailers, to help ensure that products are displayed and stocked in sufficient quantity. The program descriptions set forth in this Plan provide for work with key market actors, and include campaigns for training and marketing, as well as community mobilization outreach strategies.

- **Affordability** is a market barrier resulting from the initial cost of energy efficiency solutions. With the current economic environment, Program Administrators are concerned that affordability is a major barrier and one that is more difficult to predict as customer buying patterns have changed dramatically with the advent of more limited credit. The Plans attempt to mitigate this barrier through the use of incentives and loan mechanisms, as well as through the use of on-bill and other broadly accessible financing mechanisms.

- **Policy Concerns**

  In addition to market barriers, it is important to also understand the policy concerns that need to be addressed to secure all achievable energy efficiency. These include economic, sustainability, and regulatory concerns.

  - **Economic** obstacles are particularly relevant in today's environment. The Program Administrators recognize the Plan's tremendous value, but also understand that it is important to consider the rate impacts of the ramp-up of these programs. Given the societal sensitivity to the cost of the programs, this Plan discusses the associated expected bill impacts of program implementation. Detailed bill impact analyses for each Program Administrator are also being provided in a supplement to this filing and also will be set forth in the PA-specific Plans to be filed in October and will contain the information required by the Department's orders in D.P.U. 08-50-A and D.P.U. 08-50-B.

  - **Sustainability** of the programs is an important consideration for the Plan. Many advocates, including the Program Administrators, stress that in achieving all available energy efficiency, the annual efforts must also strive to be sustainable for the long term. This sustainability is vital to support the health of the economy, and the growth of the workforce and infrastructure needed to ensure the long-term benefits of these efforts.

  - **Regulatory Concerns** include the support of strong regulatory frameworks that complement the Program Administrators' ramp-up of programs. These frameworks create a healthy regulatory infrastructure by which Program Administrators can confidently advance programs knowing that there is clarity in the regulatory rules and process and the opportunity to align shareholder objectives with public policy objectives. The Program Administrators will look to the Council, the DOER, the Department, and other interested stakeholders for a continuation of their strong record of clear guidance and consistent policy making.

- **Assessing technical potential**

As noted above, the Program Administrators used multiple resources to build a robust understanding of the potential for all available cost-effective energy efficiency and demand-reduction resources. These resources include the Assessment, the materials and data amassed by the Consultants, the NEEP 2005 study of "Economically Achievable Energy Efficiency Potential in New England", the 2009 "Massachusetts Residential Appliance Saturation Survey" conducted by Opinion Dynamics Corporation, "Natural Gas Energy Efficiency Potential in Massachusetts" by GDS Associates, Inc., and Summit Blue Consulting, April 2009, and the Federal Energy Regulatory Commission's April 3, 2009 "Electric Market Overview and Energy Efficiency Resource Standards and Goals." *See* Appendix C and the Website.

These studies all are grounded in the definition of technical potential as "the complete penetration of all measures analyzed in applications where they are deemed technically feasible from an engineering perspective. The Technical Potential does not necessarily take into account cost-effectiveness, budget constraints, or whether homeowners or businesses are willing to undertake energy saving actions or investments."[7]

Economically Achievable Energy Efficiency Potential is defined as that portion of the technical potential that is cost-effective (either from a customer, societal, or total resources perspective). This three-year Plan aggressively targets all cost-effective energy-efficiency resources, but the Plan is also grounded by

[7] Economically Achievable Energy Efficiency Potential in New England, May 2005; prepared by Optimal Energy, Inc. for Northeast Energy Efficiency Partnership, Inc.

realistic constraints to achievable program implementation such as market and policy barriers. Such barriers lead to this Plan's focus on obtaining all available or realistically achievable potential in a manner that allows for a sustained effort and that does not create unacceptable short-term bill impacts.

Realistically achievable potential takes "into account impediments to program implementation, including financial, political, and regulatory barriers that are likely to limit the amount of savings that might be achieved through energy efficiency and demand response programs."[8] It, therefore, recognizes both the market and policy barriers. After almost two decades of successfully implementing energy efficiency programs, the Program Administrators have an in-depth understanding of these barriers and were able to integrate their knowledge of both market and policy concerns with the various technical potential studies used to inform this Plan. The program incentive design, delivery models, and support infrastructure developed by the Program Administrators and discussed in Section II.F of this Plan are grounded in a careful review of different types of potential.

5. *Demand Response Issues*

The Program Administrators are working to incorporate Demand Response ("DR") measures in all offerings, as appropriate, over the term of this Plan. A number of these resources are detailed in the program descriptions found in Section II.F below. In addition, as technical assessment studies are undertaken for customers, the studies will also address how to make the proposed energy efficiency measures demand responsive through automation of end-use devices

[8] Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U.S. (2010-2030), January 2009; Electric Power Research Institute.

such as thermostats and modifying gas management algorithms within any energy management software for Heating, Ventilation, and Air Conditioning ("HVAC"), and other process applications. In addition, the studies would identify other options available for customers to manage their gas use in the event that the customer takes advantage of varying pricing options from energy suppliers. In short, enabling an energy efficiency measure to be demand responsive will be less expensive if it is done at the time the measure is installed versus having to retrofit or re-program energy management software in the future.

6. *Competitive Procurement*

Historically, the Program Administrators have utilized the competitive procurement process to retain contractors and vendors to perform activities including, but not limited to: audit delivery; quality control; monitoring and evaluation; marketing; and website design. The Program Administrators are committed to utilizing competitive procurement practices to the fullest extent throughout the implementation of this Plan. Therefore, consistent with past practice, the Program Administrators anticipate that they will issue Requests for Proposals ("RFPs") to engage the appropriate third-party vendors to provide energy efficiency services, will consider the input and direction of the Council and its Consultants with respect to the retention of necessary consultants, and, where necessary, will work collaboratively to ensure that energy efficiency services have been procured in a manner that minimizes cost to the ratepayers, while maximizing the associated benefits of that investment. The Program Administrators recognize, however, that there are firms who may be qualified to perform some, but not all of the tasks generally included in the contracts for program delivery services. To further the job growth and retention goals of the Act, the Program Administrators will work to expand the pool of qualified program vendors to promote the entry of new market actors into subcontractor roles,

while ensuring and make transparent the subcontractor bidding process and the selection criteria used to evaluate proposals. One area of special focus will be increasing the number of qualified weatherization contractors through expanded training opportunities.

7. *The Special Inclusion of Blackstone Gas*

Blackstone Gas Company ("Blackstone") is a natural gas distribution company currently serving approximately 1307 residential and 135 commercial and industrial customers in Blackstone and a portion of Bellingham and Wrentham, Massachusetts. Currently, Blackstone does not have any energy efficiency programs other than the audit program offered pursuant to the Massachusetts Residential Conservation Service G.L. c. 164 App. §§ 2-1 et seq. As a result of the Green Communities Act, Blackstone will be implementing cost-effective energy conservation programs to its residential, low-income and small commercial and industrial customers. Because of the very small size of its customer base, Blackstone will coordinate with other Program Administrators to implement it energy efficiency programs. Additionally, Blackstone has applied for membership in GasNetworks® to address managing vendor agreements for the purchase of goods and/or services related to energy efficiency natural gas programs. Although Blackstone has a very small customer base, the special inclusion of Blackstone in the statewide plan reflects the spirit of the Green Communities act to expand energy efficiency efforts.

8. *Gas and Electric Program Integration and Coordination; Seamless Delivery*

i. Background/General Overview

In this section of the Plan, which is common to both the statewide electric Plan and the statewide gas Plan, the Program Administrators describe the approaches contemplated under the

Plans to provide seamless program delivery from the customer's perspective and an optimal level of program integration, collaboration, and coordination. In preparing this section, the Program Administrators primarily referred to three sources: (1) the Green Communities Act; (2) the Council's Priorities Resolution; and (3) each Program Administrator's individual in-field experience. In compiling this section of the Plan, the Program Administrators also took note of presentations from the Consultants to the Council, individual Councilor's remarks at Council meetings, and input from various parties in program design working groups and internal discussions. Based upon this review, the Program Administrators propose the following methodology to integrate and coordinate gas and electric program offerings in an enhanced manner, with the ultimate (and related) goals of simplifying participation for customers and increasing energy savings in a cost-effective manner. The Program Administrators note that they will continue to work through the various issues associated with program integration in a collaborative fashion with the Council and its Consultants throughout the three-year period referenced in the Plan.

a) *The Act*

The core provisions of the Act that relate to program integration are set forth below. The Act is explicit that gas programs are to be administered by the gas Program Administrators and electric programs are to be administered by electric Program Administrators. In particular, with respect to electric programs, the Act provides:

> *The programs shall be administered by the electric distribution companies and by municipal aggregators* with energy plans certified by the Department under Subsection (b) of Section 164 of Chapter 164.
>
> . . . In authorizing such programs, the Department shall ensure that they are delivered in a cost-effective manner capturing all available efficiency

> opportunities, minimizing administrative costs to the fullest extent practicable and utilizing competitive procurement processes to the fullest extent practicable.

G.L. c. 25, § 19(a) (emphasis added).

Similarly, with respect to gas programs, the Act provides:

> The Department may approve and fund gas energy efficiency programs proposed by gas distribution companies including, but not limited to, demand side management programs. Energy efficiency activities eligible for funding under this section shall include combined heat and power and geothermal heating and cooling projects. Funding may be supplemented by funds authorized by Section 21. *The programs shall be administered by the gas distribution companies*. In authorizing such programs, the Department shall ensure that they are delivered in a cost-effective manner capturing all available efficiency opportunities, minimizing administrative costs to the fullest extent practicable and utilizing competitive procurement processes to the fullest extent practicable.

G.L. c. 25, § 19(a) (emphasis added).

The Act goes further with respect to integration and coordination and specifically provides:

> The Council shall, as part of the approval process by the Department, seek to maximize net economic benefits through energy efficiency and load management resources and to achieve energy, capacity, climate and environmental goals through *a sustained and integrated statewide energy efficiency effort*. . .
>
> The Council shall, as part of its review of plans, examine opportunities *to offer joint programs* providing similar efficiency measures that save more than 1 fuel resource *or to coordinate programs* targeted at saving more than one fuel resource. Any costs for joint programs shall be allocated equitably among the efficiency programs.

G.L. c. 25, § 22(b) (emphasis added).

This statutory background establishes the clear intention of the General Court for the Plans to build upon the expertise developed by the Program Administrators; the statutory

language makes clear also that the gas and electric Program Administrators are ultimately responsible for the implementation of gas and electric programs, respectively, under the Act. The Council is tasked with seeking to achieve a "sustained and integrated statewide energy efficiency effort" and ensuring that opportunities "to offer joint programs" and "to coordinate programs" are fully examined. The Program Administrators' proposals set forth below seek to build upon, and are consistent with, this explicit statutory guidance.

b) *The Council's Priorities Resolution*

In its Priorities Resolution adopted on March 24, the Council provided guidance to the Program Administrators in terms of its goals regarding program integration and seamless delivery. Most specifically, in Section 2 of its Priorities Resolution, the Council stated:

> In order to plan for the successful on-going attainment of the savings goals derived from the Green Communities Act, the PAs are be expected to develop strategies to provide comprehensive treatment and to acquire deep savings in customer facilities. *The Council also expects the PAs to develop and implement a comprehensive outreach, communication, and marketing strategy to inform and encourage program participation* and to support the development of the infrastructure necessary to provide these efficiency services.

Priorities Resolution, Section 2 (emphasis added).

> In Section 22 of its Priorities Resolution, the Council further stated that:
>
> *The PAs shall strive to maximize seamless delivery to the customer, without duplication or complexity, regardless of a given property's rate class, territory or utility type by*:
>
> - Simplifying the number of programs in which a property can participate and instead develop comprehensive single-point programs that take a whole building approach to energy savings, while seamlessly integrating electric and gas efficiency measures into one program.

- Streamlining program administration so every "property" is required to fill out only one application that encompasses gas and electric programs and is blind to a property's rate class or territory.

- Developing consistency and coordination across service territories so that entities with multiple locations across the Commonwealth receive program services (gas, electric and some renewable) in a manner that reduces administrative burdens.

- Implementing inter-utility, inter-fuel type, and inter-rate class funding mechanisms which enable single point programs for properties that are served by two PAs, properties that have multiple rate class meters, and/or properties that are participating in whole-building approach programs.

- *Including a shared chapter in the gas and electric plans that describes how programs specifically integrate gas and electric initiatives to maximize overall utility savings*.

See Priorities Resolution, Section 22 (emphasis added).

The Program Administrators have sought to be responsive to these priorities in their proposals, noting that a number of these goals will be approached in a phased effort that will necessarily take time to succeed fully. Where the Program Administrators have points of amplification with respect to certain of these specific goals of the Council, they are set forth below. Further, the Program Administrators have established target dates for certain core integration milestones, which are noted in Section II.A.8.iv below.

c) *The Experience of the Program Administrators*

Gas and electric Program Administrators have historically engaged in coordinated and integrated activities to serve common customers. In the C&I sector, such activities, while productive, have been less formal and have been approached on an individual basis, typically involving extensive efforts to serve large customers in a coordinated fashion. These efforts have

resulted in some notable successes throughout the Commonwealth.[9] The Program Administrators seek to build on these successes and the lessons learned in these projects as they move to a more standardized approach to integration and coordination. In the residential sector, the Program Administrators, working cooperatively with the DOER, have fully coordinated and integrated several activities, most notably in the development and operation of the Residential Conservation Services ("RCS") audit program under the "MassSAVE" umbrella. The residential new construction program and statewide low-income program are award-winning approaches to statewide consistency and market development of whole building performance in both the new construction and retrofit markets. The Program Administrators are seeking to leverage on this experience and create higher quality and more comprehensive approaches geared to providing a seamless experience from the customer's perspective.

ii. Benefits of Enhanced Integration and Coordination

The core potential benefits of increased integration and coordination of gas and electric programs include:

- Enhanced customer service, including fuel-blind recommendations and priorities for energy savings and simplified application processes.
- Simplified consistent messaging to customers and other market actors.
- Economies and efficiency in program delivery.
- Capturing more comprehensive savings at participating facilities.
- Improved cost-effectiveness analysis that ensures all energy and non-energy benefits are identified and accounted for.

[9] Examples of successful joint gas and electric projects include, without limitation, the Hampden County Sheriff's Office Project, the Greater Lawrence Sanitary District Project, and the Medfield Schools Project.

- Improved BCRs that reflect benefits of both gas and electric measures.

By ensuring that customers understand all of the options for energy efficiency available to them through both gas and electric program offerings, the Program Administrators believe that customers will be encouraged to implement a more comprehensive package of measures, thereby maximizing energy savings. Once the programs are fully implemented, customers and the practitioners designing buildings will have knowledge of, and access to, the wide array of program offerings accessible to them through one convenient systems selection process.

iii. Specific Approaches and Actions Regarding Gas and Electric Program Integration and Coordination

In order to achieve enhanced program integration and coordination, the Program Administrators propose the following approaches and activities. As noted above, these efforts will be refined and further developed as the Program Administrators continue their implementation planning for the programs included in the Plan. The Program Administrators will be including updates on their integration efforts in their progress reporting.

a) *Definitions and Terminology for Integration Efforts*

Both the Green Communities Act and the Council's Priorities Resolution use the terms "integration" and "coordination" without any particular distinction. In an effort to achieve a common understanding of these terms, the Program Administrators have developed the following working definitions. *Integration* refers to taking previously separate entities and blending them into a unified whole (*i.e.*, the multi-family program offers both gas and electric measures, and within each fuel, measures that are that are traditionally considered "residential" and those that are considered "C&I" are all available through this single program). By

distinction, *coordination* denotes organizing two or more separate entities so that they align to achieve a common goal. For example, the Program Administrators will integrate their marketing efforts to prevent customer confusion, but will also coordinate regional variations to maximize their effectiveness. Throughout the Plan, the Program Administrators use both of these paradigms, as appropriate, to deliver a seamless experience for program participants.

b) *Specific Building Blocks for Integration Applications*

While the strategies for achieving integration may vary between programs, the Program Administrators will utilize a common set of building blocks that apply to multiple end-uses and fuel sources to address integration/coordination issues, as well as applying consistent prescriptive applications where appropriate, regardless of technology. In so doing, the Program Administrators will develop a consistent incentive structure and design (*e.g.*, percentage of incremental cost), so that they may offer customers a package of measures for gas and electric energy efficiency opportunities. The success of the Program Administrators in addressing this strategic goal (with collaborative assistance of the Council's Consultants through the course of many working group meetings) is perhaps best demonstrated by the integrated gas and electric program designs reflected with the unanimous consent of <u>all</u> gas and electric Program Administrators in both this gas Plan and in the electric Plan being simultaneously filed today.

Additionally, the Program Administrators continue to develop a single set of program rules for application regardless of fuel type (*e.g.*, technical assistance co-pay offer, TRC cost-effectiveness guidelines, payback limits, eligibility). Further, gas Program Administrators will include the savings associated with those measures that save oil in the screening for cost-effectiveness in accordance with the Department's D.P.U. 08-50 screening guidelines.

The Program Administrators intend to develop a common customer experience that can be monitored, measured, and enhanced over time, and, as such, will develop this integration experience based on a single set of common assumptions for prescriptive measures and project screening, thereby allowing both electric and gas measures to be evaluated consistently. The Program Administrators note, however, that differences will remain with respect to transmission and distribution ("T&D") avoided capacity costs and utility-specific line losses, given how those cost categories are unique to gas and electric. With respect to efforts or initiatives that are end-use or measure specific (*e.g.*, Cool Choice and certain outreach efforts to trade allies and manufacturers), there will appropriately be some gas and electric differences due to the end uses associated with the measures. However, where possible, the Program Administrators are committed to integrating these initiatives.

Each Program Administrator will be able to provide the data required for jointly assessing the new integrated/coordinated programs as they are implemented. In analyzing upstream marketing and distribution strategies for a single integrated approach, the Program Administrators will focus on increased consistency and integration with trade allies, manufacturers, market actors, and market channels, and will develop guidelines for allocating program costs and savings among different fuel customers for joint programs where benefits accrue to each energy system.

Lastly, the Program Administrators will work to develop consistent messaging to customers regarding program offerings and the availability of measures for both gas and electric measures. The Program Administrators will work collaboratively to coordinate and implement to the fullest extent possible an integration and coordination strategy during the initial three-year Plan periods.

c) *Enhanced Program Designs For Integration/Coordination*

The Program Administrators, through various working group structures, have utilized the building blocks described above to develop enhanced program designs which specifically address the integration/coordination issues outlined in the Act and the Council's Priority Resolution. These integrated designs collaboratively developed through a working group process with the Council's Consultants are set forth in Section II.F. The Program Administrators respectfully submit that this level of integrated effort, on a statewide basis that is supported by each gas and electric Program Administrator, has not been surpassed in the United States.

Our unique example of cutting edge integration techniques is found in the new, collaboratively developed multi-family program (a key focus of many Councilors). At the cornerstone of the multi-family integration model is the provision of a "Multi-Family Market Integrator" function. The main responsibility of the Multi-Family Market Integrator will be to manage a project in a seamless manner for the customer. Given that one size does not fit all in this market, the working group developed a model that is scalable and thus able to support projects that run the gamut from simple to very complex. Throughout the project lifecycle, customers will be able to turn to the Multi-family Market Integrator to facilitate responses to their inquiries, thus eliminating the need for customers to directly contact multiple parties.

Currently, all program design teams plan to continue to work to ensure that: a) all Program Administrators remain abreast of the key energy efficiency activities of other Program Administrators; b) energy efficiency implementation activities and efforts by all Program Administrators are integrated and coordinated to the optimal extent; c) statewide marketing and media campaigns are developed with easy-to-understand communications for all customers; and d) best practices and integration/coordination efforts in other jurisdictions are reviewed and

discussed to maximize collaboration efforts and build on the experiences in other regions. In so doing, the Program Administrators have committed to the ongoing process of collaboration and integration in a manner that will ultimately result in program offerings for customers that offer as much "one-stop shopping" as is practically feasible.

d) *Specific Program Integration and Coordination Challenges*

While the Program Administrators fully support the integration and coordination goals set forth in both the Act and the Council's Priorities Resolution, there is a general recognition of the substantial time required to accomplish these joint objectives. The Program Administrators note that completing the integration/coordination efforts is a time intensive process given the number of programs involved, the existing variances between Program Administrator offerings, and number of program design elements (measures, incentives, delivery mechanisms) that must be addressed. In addition, the Program Administrators will need to issue RFPs and review any responsive bids for the services required to support the enhanced program designs associated with the Plan. This too will take time.

Lastly, the Program Administrators are committed to performing due diligence with respect to best practices both within and outside of Massachusetts. So doing will allow the Program Administrators to maximize expected savings and will provide new information on those measures that are seeing success in the marketplace. The Program Administrators will continue to research best practices throughout the three-year period, and will review current studies and findings before making the substantive programmatic changes contemplated by both the Act and the Council's Priority Resolutions.

e) *Integrated Marketing Efforts*

The Program Administrators have worked collaboratively with DOER and other interested parties to establish a comprehensive integrated public outreach and education marketing initiative. Section II.G provides a more thorough discussion of the marketing and education initiatives that have been developed to promote the program goals set forth in this Plan.

As discussed elsewhere in this Plan, a critical key component of integration and seamless delivery is consistent messaging. The establishment of a statewide website (marketing portal) and marketing approach to make customers aware of program offerings will minimize the market confusion that could result from competing advertising campaigns that may otherwise overlap in the mass media. The Program Administrators have initiated a process to develop and operate a central web-based site that allows customers to gain access to all relevant information, applications, and forms, and expect that the site will be operational in 2010. Additionally, individual Program Administrators (and, likely, the GasNetworks group on a collaborative basis for gas Program Administrators) will coordinate complementary marketing initiatives to reinforce and support the overall statewide marketing strategy as well as address unique local conditions and/or sub-markets in their service areas. These individual activities will be undertaken in consultation with other Program Administrators in order to maintain good communications, promote the statewide efforts, and avoid inconsistent messaging.

f) *Other Core Principles*

In developing integrated/coordinated programs, Program Administrators will emphasize and adhere to several core principles. First, the gas and electric Program Administrators commit to coordinate and integrate their activities and pool their knowledge and expertise so that

customers enjoy a seamless process. Second, the Program Administrators will work to ensure that customers will be able to turn to their local gas or electric company or other Program Administrator (for example, the Cape Light Compact) for the provision of energy efficiency services. Third, Program Administrators will also ensure that low-income customers will be able to turn to their local low-income weatherization and fuel assistance program network in addition to their local Program Administrators for accurate and up-to-date information regarding energy efficiency program opportunities and initiatives.

As integration and coordination efforts increase, it is important that customers (perhaps most pointedly a large C&I customer) retain the ability to contact their dedicated account representative for help in developing customized services that best meet that customer's needs. Indeed, to ensure maximum customer uptake, multiple customer channels should be preserved, including direct contact with the Program Administrator. Program Administrators have established strong, long-term relationships with customers, and maintain a robust understanding of their business requirements; this provides a natural opportunity to promote programs in a customized fashion that is meaningful to customers, particularly large customers. The Program Administrators will leverage these important relationships in the delivery of energy efficiency services, but will also ensure that regardless of the point of entry, customers will have available to them a seamless program offering without the need to contact multiple parties.

Further, Program Administrators will maintain the ability to provide direct and responsive service to any customer (from a small residential customer to the largest industrial customer) who reaches out to them for assistance. In these instances, the Program Administrator contacted will work with any other Program Administrator (or their vendor) serving the same territory to encourage the customer to pursue additional efficiency opportunities. The Program

Administrators recognize that some customers will only undertake a single or limited set of measures at a given point in time; however, a positive experience for that particular customer will help to ensure their participation in future energy efficiency undertakings.

Program Administrators require the flexibility to continue to create innovative processes and programs. Increased integration should in no way inhibit the innovations of Program Administrators, particularly with respect to the development and implementation of pilot programs. Program Administrators should be able to propose innovative pilot efforts that are not fully coordinated or integrated with other statewide activities. Indeed, a key goal of such pilots is that they yield data as to whether the approach explored in the pilot should be implemented on a larger, statewide scale.

As Program Administrators successfully increase their integration efforts, they will need to document the costs and savings associated with this integration, whether from manual or automated solutions, and will also need to quantify any increased efficiencies associated with these efforts. Therefore, a full understanding of costs and benefits will enable Program Administrators to provide a more seamless experience from the perspectives of vendors and market actors, as well as customers.

iv. Conclusion

The Program Administrators have developed a core, consistent set of statewide programs and strategies that can be delivered to customers in an integrated fashion that ensures seamless service, regardless of whether the customer is served by a combined gas/electric utility, municipal aggregator, by different gas and electric utilities, or has facilities or projects in multiple Program Administrator service areas. While there may be limited areas or initiatives where some diversity in approach will be appropriate based on unique service territory

characteristics, or will be useful in supporting local economic and infrastructure development objectives (*e.g.*, utilizing multiple, local/geographically dispersed service providers and equipment suppliers) or developing a longer term approach (*e.g.*, utilizing different incentive structures for certain new programs in different areas for a finite time period to see if one of several approaches has better success), the Program Administrators anticipate that such variances will be limited. The findings associated with these individual efforts will be documented and circulated to all Program Administrators for discussion purposes, as well as provided in the individual PA-specific filings.

Over the course of the next three years, the Program Administrators expect to see unprecedented consistency in participation requirements, available core services and measures, conditions, exclusions, and limits, and incentive amounts and/or calculations. To demonstrate the Program Administrators' commitment to this goal, the table below provides the anticipated key milestones that the Program Administrators intend to work towards for the integration of applicable programs.

Target Milestone Date	**Measures Associated with Target**
November 15, 2009	Review and Develop Screening and Diagnostic Visit Criterion for Residential Retrofit Program
January 1, 2010	Integration of Marketing and Outreach Efforts and Delivery to Customer for C&I Lost Opportunity Program and Large C&I Retrofit programs
January 1, 2010	Establish Track Enhancements for C&I Lost Opportunity Program and Large C&I Retrofit programs
January 1, 2011	Investigate and Evaluate Financing Options for Large C&I Retrofit Program

9. *Progress Toward Other Massachusetts Policy Goals/Requirements*

Although this Plan is directed primarily at the mandates of the Green Communities Act, the Program Administrators are cognizant of the role that the statewide electric and gas efficiency investment plans occupy in the Commonwealth's broader, historically ambitious statutory scheme and policy goals. As noted in the Executive Summary, on August 13, 2008, shortly following the enactment of the Green Communities Act, Governor Patrick signed the GWSA and the Green Jobs Act. Taken together, these legislative enactments reflect the Commonwealth's commitment to climate protection and its leadership in promoting clean and renewable energy. The Program Administrators welcome the continued opportunity to design and implement innovative programs that promote the Commonwealth's goals of promoting energy efficiency, decreasing GHGs, and spurring job creation in the clean energy sector.

B. Funding Sources

The Program Administrators project funding the energy efficiency efforts described herein from collections from the fully reconciling funding mechanism required under the Act and discussed in Section II.J below. The Program Administrators will also explore other possible means of funding these efforts, such as economic stimulus funds.

1. *Other Funding Sources; Potential Outside Capital and Expanded On-Bill Financing Opportunities*

In developing the programs detailed in this Plan, the Program Administrators have explored, and will continue to explore, the acquisition of new outside capital (*e.g.*, bond issuances, third-party funding) and the expansion of existing on-bill financing options, in the interest of making energy efficiency programs more financially accessible to customers. Through the discussions of program working groups, the Program Administrators have focused

on expanding existing on-bill financing as part of the program offerings and program delivery under the Plan, as well as considering potential new sources of outside capital that may be available for the financing of energy efficiency programs. The objective is to identify, analyze, and implement additional funding sources and mechanisms over the three-year period that will make energy efficiency programs more attractive to customers, while minimizing bill impacts, in order to achieve (or even surpass) the ambitious savings goals proposed by the Program Administrators in this Plan. With that in mind, the Program Administrators, with the support of the Council, have set aggressive targets for outside financing, and have factored in such outside financing in their savings goals.

The Program Administrators regard outside capital and on-bill financing as an important tool in reducing or removing financial barriers that may prevent or delay customers' investments in energy efficiency measures. Such financing mechanisms can help address barriers associated with the potentially substantial up-front costs of installing energy efficiency measures and the difficulties customers may encounter in securing financing independently.[10] Customers—from residential to large C&I—may refrain from installing cost-effective energy efficiency measures due to concerns regarding the financial commitment involved. For example, customers may be deterred by the potentially considerable up-front costs associated with energy efficiency measures or they may be discouraged by the interest and transaction costs associated with independent financing; likewise, customers may face barriers related to creditworthiness or the prospect of having to repay a loan before the full savings associated with the measure has been realized. In confronting these barriers, outside capital and on-bill financing can: (1) assist

[10] For a more extended analysis of considerations surrounding on-bill financing, *see* State of New York Public Service Commission, Case 07-M-0548, "Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard (EEPS)", Working Group VI—On-Bill Financing, Final Report (Dec. 19, 2008).

customers in identifying a financing source; (2) facilitate and expedite the lending process; and (3) provide an administratively easy method for the customer to repay the financing, particularly in the instance where the repayment is included in utility bills the customer already receives.

In addition to current practices of on-bill financing, the Program Administrators are exploring various new outside sources of funding for energy efficiency efforts. Third-party funding could include traditional lending sources (such as banks) or non-traditional sources (such as retailers and other private entities), with the Program Administrator acting to bring customers together with lenders in order to effect a loan for an energy efficiency project. Outside capital might also be raised through the sale of tax-exempt bonds or other government initiatives. There are other possible approaches under discussion nationally as well, including possible strategies that would use a federal "backstop" on loans.

In order to help foster outside funding efforts, the DOER has convened an On-Bill Financing Working Group (the "OBF Working Group") that is reviewing multiple technical, legal, and regulatory issues related to on-bill financing. The DOER has also convened informal working sessions to discuss possible outside funding approaches and initiatives. The Program Administrators plan to continue to participate actively in these important, multi-party efforts.

The Program Administrators emphasize that, in all instances, to the extent that financing efforts are expanded to derive funding from outside sources, the Program Administrators need to address a variety of legal and practical factors, depending upon the structure being proposed, prior to implementation. For example, the Program Administrators must always ensure that programs comply with all applicable lending and debt collection laws and regulations. The expansion of financing options also presents concerns relating to customer creditworthiness. Historically, the Program Administrators' on-bill financing programs have not required

additional credit checks for customers who are current in their bills. However, as programs are expanded on a very large-scale basis, additional measures might be required to determine creditworthiness and to address the consequences of increased delinquency and non-payment. Similar challenges have been met before and are by no means insurmountable, but they merit careful analysis to ensure that the administrative costs are reasonable and that the funding mechanisms are viable, cost-effective, and promote the overall objectives of the Act. In addition, careful scrutiny needs to be applied to the overall debt levels borne by customers. The Program Administrators seek to ensure that they do not promote financing mechanisms that would cause customers to become over-leveraged. Many of these issues will be explored in the OBF Working Group.

While the Program Administrators seek to ensure that outside funding does not negatively impact customers, they also believe in the benefits of outside capital and funding sources, and are committed to working with the Council, the Commonwealth, and interested stakeholders in seeking to obtain significant outside capital to finance energy efficiency measures for customers over the next three years. As the complex process of analyzing potential outside funding and capital sources is still in the early stages, the Program Administrators have committed to savings goals in 2010 that include already-known levels of outside financing, such as the HEAT Loan Program. *See* Table II.D.4.ii. Moreover for 2010 the Program Administrators anticipate determined levels of financing will be identified to support the first year ramping up of spending and savings goals. The Plan expressly contemplates that the Program Administrators will be in a position to offer expanded energy efficiency programs that are supported by a larger amount of outside funding by 2011, and the gas Program Administrators, in conjunction with DOER and the Consultants, have set target levels of

$20,000,000 of outside funding for that year. Building on the anticipated knowledge to be gained through the OBF Working Group and through actual program implementation in 2011, the Program Administrators have set target levels of outside funding at $40,000,000 for 2012. For planning purposes, the Program Administrators are assuming that sixty percent (60%) of the outside funding will be available in the form of funds/grants that would directly off-set program costs, similar to FCM and RGGI funds, with the other forty percent (40%) of funding forming a loan or similar pool that would provide capital to customers, which would be repaid through on-bill or other mechanisms. The successful achievement of these targets for outside financing (both dollar targets and the 60%/40% allocation of outside funds) are embedded in the savings goals and bill impact analyses for 2011 and 2012 set forth in this Plan.

Because the target levels of outside financing are reflected in the savings goals and bill impacts analyses, if such target levels of outside capital are not achieved by September 1, 2010, the Program Administrators would re-file 2011 and 2012 goals and budgets on or about September 30, 2010 with consideration, *inter alia*, of the bill impacts resulting from the inability to obtain outside capital at these levels. Similarly, if the then-current target levels of outside capital for 2012 are not achieved by September 1, 2011, the Program Administrators would re-file 2012 goals and budgets on or about September 30, 2011 with the same considerations.

In sum, Program Administrators are dedicated to exploring, analyzing, and implementing sources and mechanisms for outside funding and capital sources, as well as expanding existing on-bill financing offerings. The Program Administrators have set ambitious targets for the acquisition of outside financing. Nevertheless, due to the complexity of establishing this aggressive outside financing system, limitations on the ability of the Program Administrators to accurately forecast the success of their efforts, and fluctuations in the economy, the Program

Administrators are given reasonable flexibility to make mid-term modifications to the Plan; thus, revised budget and savings goals will be re-filed if such outside financing targets are not met by the above-referenced target dates. The Program Administrators will work to achieve the aggressive outside funding targets set forth in this Plan, but, as discussed at Council meetings, will need partners in this effort. The Program Administrators are committed to working collaboratively with the Council, the Commonwealth, and other interested parties to seek to meet the targets for new sources of outside capital that can be used to help finance energy efficiency efforts.

C. Program Budgets and Budget Categories

The program budgets set forth in Table II.C.1 below are presented on an aggregate, statewide basis, by program, within the three major customer sectors (residential, low-income, and C&I). These budgets reflect an unprecedented rapid increase in the energy efficiency funding in the Commonwealth needed to support the aggressive savings goals outlined in this Plan. For example, the statewide budget for the residential sector increases 54 percent from 2010 to 2012. In the low-income sector, the budget increases 69 percent from 2010 to 2012. Similarly, the C&I budget increases 83 percent.

In the PA-specific filings being filed on October 30, each Program Administrator will set forth its individual proposed budget levels for the three-year period commencing January 1, 2010, consistent with the overall goals developed in the statewide Plan review process.

Budget categories

Consistent with the DOER's 225 CMR 11.00 "Guidelines Energy Efficiency Oversight and Coordination" dated June 2004, the Program Administrators have developed their budgets using the following categories:

- **Program Planning and Administration ("PP&A")**. The funds in the PP&A budget category provide for all in-house and outsourced costs associated with planning activities and program administration.

- **Marketing and Advertising**. This budget provides funds for all in-house and outsourced costs associated with marketing activities such as the development and implementation of advertising campaigns that inform customers about energy efficient products and services and other special energy education efforts.

- **Participant Incentive**. The budget dollars in this category fund customer incentive costs (*e.g.*, rebates) needed to overcome market barriers.

- **Sales, Technical Assistance & Training**. The function of the dollars budgeted in this category is to provide for all in-house and outsourced costs associated with implementation activities, including inspections and technical assistance, and all costs related to delivery of the program.

- **Evaluation & Market Research**. Budgeted dollars in this category fund all in-house and outsourced costs associated with evaluation activities, including costs related to cost-effectiveness evaluation, market research (*e.g.*, baseline studies, market assessments, surveys), impact and process evaluation reports, and other costs clearly associated with evaluating the program.

- **Performance Incentive.** This budget category funds the performance incentive that can be earned by gas distribution companies if they meet established goals.

1. *Budget Summary Table*

Program Administrator Budget, 2010									
Program	**Program Costs**								
	Program Planning and Administration	**Marketing and Advertising**	**Participant Incentive**	**Sales, Technical Assistance & Training**	**Evaluation and Market Research**	**Total Program Costs**	**Performance Incentive**	**Lost Base Revenue**	**Total Budget**
Residential (total)	$5,600,794	$1,771,738	$29,035,160	$5,978,714	$1,349,319	$43,735,726	$2,109,174	$2,752,392	$48,597,292
Residential New Construction & Major Renovations	451,205	274,911	3,717,870	504,179	171,370	5,119,535	235,971		5,355,506
Residential Heating and Water Heating	1,478,029	777,409	11,411,184	1,646,828	446,285	15,759,735	1,018,287		16,778,022
MassSAVE	517,206	187,265	307,125	2,428,997	216,080	3,656,673	0		3,656,673
Weatherization Program	1,376,747	218,463	10,677,648	541,051	281,507	13,095,417	468,388		13,563,805
Multifamily Retrofit	278,274	61,757	1,782,226	314,975	78,623	2,515,855	127,724		2,643,579
O Power	92,817	0	346,251	370,000	31,782	840,850	258,804		1,099,654
Deep Energy Retrofit	166,153	18,030	579,108	47,251	71,741	882,283	0		882,283
Residential Building Practices and Demonstration Program	23,520	0	150,000	5,000	17,900	196,420	0		196,420
Energy Analysis: Internet Audit Program	198,149	10,748	0	0	20,900	229,797	0		229,797
Community Based Pilots	28,230	5,000	63,750	18,000	11,400	126,380	0		126,380
Workforce Development	5,433	0	0	99,000	1,731	106,163	0		106,163
Statewide Marketing & Education	145,855	218,155	0	0	0	364,010	0		364,010
EEAC Consultants	488,582	0	0	1,716	0	490,298	0		490,298
DOER Assessment	350,594	0	0	1,716	0	352,310	0		352,310
Low Income (total)	$2,522,056	$450,578	$10,585,541	$2,190,141	$367,722	$16,116,037	$428,167	$98,109	$16,642,313
Low-Income Single Family Retrofit	1,671,424	233,334	7,888,662	1,541,618	260,668	11,595,707	257,289		11,852,996
Low-Income MultiFamily Retrofit	359,450	82,114	2,696,879	643,598	107,054	3,889,095	170,878		4,059,973
Statewide Marketing & Education	35,568	135,130	0	0	0	170,698	0		170,698
Low-Income Energy Affordability Network Funding	313,008	0	0	4,774	0	317,782	0		317,782
DOER Assessment	142,605	0	0	150	0	142,755	0		142,755
Commercial & Industrial (total)	$3,586,257	$944,149	$12,377,104	$1,952,901	$613,348	$19,473,759	$1,806,248	$1,852,405	$23,132,413

C&I New Construction & Major Renovation	1,133,191	318,222	4,801,759	709,844	226,366	7,189,382	608,883		7,798,265
C&I Retrofit	1,479,830	334,795	7,190,838	925,270	312,669	10,243,402	1,134,194		11,377,596
C&I Direct Install	152,225	75,088	136,507	148,558	30,474	542,853	63,172		606,025
Workforce Development	27,955	2,133	0	96,500	1,429	128,018	0		128,018
Business Energy Analyzer	50,575	112,500	0	50,120	21,300	234,495	0		234,495
Deep Energy Retrofit	24,067	11,997	248,000	21,110	21,109	326,284	0		326,284
Statewide Marketing & Education	101,930	89,413	0	0	0	191,343	0		191,343
EEAC Consultants	306,253	0	0	750	0	307,003	0		307,003
DOER Assessment	310,230	0	0	750	0	310,980	0		310,980
GRAND TOTAL	**$11,709,107**	**$3,166,466**	**$51,997,805**	**$10,121,756**	**$2,330,389**	**$79,325,522**	**$4,343,589**	**$4,702,906**	**$88,372,017**
	$11,709,107								

Program Administrator Budget, 2011

Program	Program Costs								
	Program Planning and Administration	**Marketing and Advertising**	**Participant Incentive**	**Sales, Technical Assistance & Training**	**Evaluation and Market Research**	**Total Program Costs**	**Performance Incentive**	**Lost Base Revenue**	**Total PA Costs**
Residential (total)	$6,534,947	$2,166,165	$41,380,993	$7,098,996	$2,388,816	$59,569,916	$2,302,611	$3,694,606	$65,567,132
Residential New Construction & Major Renovations	370,560	289,693	4,577,279	520,126	258,287	6,015,945	186,669		6,202,615
Residential Heating and Water Heating	1,719,589	969,072	16,133,093	2,127,573	952,630	21,901,957	1,075,510		22,977,467
MassSAVE	572,384	220,000	375,388	3,158,673	292,705	4,619,149	0		4,619,149
Weatherization Program	1,739,687	311,847	15,550,838	644,897	563,252	18,810,520	491,153		19,301,673
Multifamily Retrofit	324,868	66,775	2,492,929	430,948	141,729	3,457,250	122,963		3,580,213
O Power	196,650	0	1,291,000	20,000	36,900	1,544,550	426,316		1,970,866
Deep Energy Retrofit	174,673	21,930	696,717	61,434	82,936	1,037,689	0		1,037,689
Residential Building Practices and Demonstration Program	28,466	0	200,000	10,000	23,900	262,366	0		262,366
Energy Analysis: Internet Audit Program	207,371	20,558	0	0	22,800	250,729	0		250,729
Community Based Pilots	28,230	5,000	63,750	18,000	11,400	126,380	0		126,380
Workforce Development	5,061	0	0	102,000	2,277	109,338	0		109,338
Statewide Marketing & Education	184,794	261,290	0	0	0	446,085	0		446,085
EEAC Consultants	630,053	0	0	2,673	0	632,726	0		632,726

DOER Assessment	352,559	0	0	2,673	0	355,232	0		355,232
Low Income (total)	$3,522,212	$570,697	$13,335,303	$2,956,951	$564,967	$20,950,131	$376,680	$104,705	$21,431,516
Low-Income Single Family Retrofit	2,306,240	290,202	9,756,992	1,971,938	407,220	14,732,593	221,480		14,954,073
Low-Income MultiFamily Retrofit	613,491	123,026	3,578,311	979,462	157,747	5,452,036	155,201		5,607,237
Statewide Marketing & Education	52,176	157,469	0	0	0	209,644	0		209,644
Low-Income Energy Affordability Network Funding	407,281	0	0	5,376	0	412,657	0		412,657
DOER Assessment	143,025	0	0	175	0	143,200	0		143,200
Commercial & Industrial (total)	$4,072,283	$1,252,659	$17,615,203	$2,796,777	$1,213,548	$26,950,470	$1,839,169	$2,292,211	$31,081,850
C&I New Construction & Major Renovation	1,241,712	427,325	6,287,916	1,028,828	425,868	9,411,650	575,814		9,987,464
C&I Retrofit	1,631,677	438,012	10,618,710	1,278,783	676,102	14,643,284	1,179,301		15,822,584
C&I Direct Install	189,763	98,446	347,577	247,166	42,083	925,035	84,054		1,009,088
Workforce Development	27,232	2,087	0	97,000	1,868	128,187	0		128,187
Business Energy Analyzer	71,400	168,750	0	84,000	32,400	356,550	0		356,550
Deep Energy Retrofit	35,630	16,932	361,000	59,000	35,226	507,788	0		507,788
Statewide Marketing & Education	152,995	101,107	0	0	0	254,102	0		254,102
EEAC Consultants	410,129	0	0	1,000	0	411,129	0		411,129
DOER Assessment	311,745	0	0	1,000	0	312,745	0		312,745
GRAND TOTAL	**$14,129,441**	**$3,989,521**	**$72,331,499**	**$12,852,724**	**$4,167,331**	**$107,470,516**	**$4,518,460**	**$6,091,523**	**$118,080,499**
	$14,129,441								

Program Administrator Budget, 2012

Program	Program Costs								
	Program Planning and Administration	**Marketing and Advertising**	**Participant Incentive**	**Sales, Technical Assistance & Training**	**Evaluation and Market Research**	**Total Program Costs**	**Performance Incentive**	**Lost Base Revenue**	**Total PA Costs**
Residential (total)	$7,676,803	$2,498,848	$48,910,950	$9,225,073	$2,553,832	$70,865,506	$2,718,782	$4,835,179	$78,419,467
Residential New Construction & Major Renovations	371,315	315,131	5,767,653	539,333	292,251	7,285,683	221,027		7,506,710
Residential Heating and Water Heating	1,941,901	1,167,726	18,331,526	2,723,300	920,678	25,085,131	1,158,096		26,243,228
MassSAVE	648,631	248,161	475,383	4,209,036	378,953	5,960,164	0		5,960,164
Weatherization Program	2,168,331	356,422	18,118,704	778,882	640,474	22,062,814	583,589		22,646,403
Multifamily Retrofit	401,651	71,753	3,483,178	558,211	169,478	4,684,271	163,416		4,847,687

O Power	341,025	0	2,253,500	20,000	42,800	2,657,325	592,653		3,249,978
Deep Energy Retrofit	144,738	19,133	417,256	49,415	45,756	676,297	0		676,297
Residential Building Practices and Demonstration Program	29,000	0	0	220,000	24,900	273,900	0		273,900
Energy Analysis: Internet Audit Program	218,733	29,938	0	0	24,900	273,571	0		273,571
Community Based Pilots	28,230	5,000	63,750	18,000	11,400	126,380	0		126,380
Workforce Development	4,560	0	0	102,000	2,242	108,802	0		108,802
Statewide Marketing & Education	232,618	285,584	0	0	0	518,201	0		518,201
EEAC Consultants	792,718	0	0	3,448	0	796,166	0		796,166
DOER Assessment	353,352	0	0	3,448	0	356,800	0		356,800
Low Income (total)	$4,153,146	$731,794	$17,556,238	$3,876,082	$680,769	$26,998,029	$494,422	$137,534	$27,629,985
Low-Income Single Family Retrofit	2,802,356	390,165	13,054,271	2,672,875	494,952	19,414,619	299,660		19,714,279
Low-Income MultiFamily Retrofit	602,943	152,886	4,501,967	1,196,962	185,818	6,640,576	194,763		6,835,339
Statewide Marketing & Education	75,012	188,743	0	0	0	263,755	0		263,755
Low-Income Energy Affordability Network Funding	529,020	0	0	6,069	0	535,089	0		535,089
DOER Assessment	143,815	0	0	175	0	143,990	0		143,990
Commercial & Industrial (total)	$4,623,005	$1,687,999	$25,836,628	$3,743,889	$1,444,864	$37,336,386	$2,326,838	$3,151,501	$42,814,724
C&I New Construction & Major Renovation	1,367,628	586,790	8,458,921	1,422,336	488,036	12,323,711	697,700		13,021,411
C&I Retrofit	1,854,277	586,475	16,668,232	1,716,141	846,082	21,671,206	1,527,732		23,198,938
C&I Direct Install	222,573	132,584	434,474	357,412	44,128	1,191,172	101,406		1,292,577
Workforce Development	26,336	2,035	0	97,000	1,822	127,194	0		127,194
Business Energy Analyzer	85,680	253,125	0	126,000	46,400	511,205	0		511,205
Deep Energy Retrofit	23,825	11,199	275,000	23,000	18,397	351,420	0		351,420
Statewide Marketing & Education	226,493	115,791	0	0	0	342,283	0		342,283
EEAC Consultants	502,015	0	0	1,000	0	503,015	0		503,015
DOER Assessment	314,179	0	0	1,000	0	315,179	0		315,179
GRAND TOTAL	**$16,452,954**	**$4,918,641**	**$92,303,816**	**$16,845,044**	**$4,679,465**	**$135,199,921**	**$5,540,042**	**$8,124,214**	**$148,864,177**
	$16,452,954								

Program Administrator Budget, 2010 - 2012									
Program	**Program Costs**								
	Program Planning and Administration	**Marketing and Advertising**	**Participant Incentive**	**Sales, Technical Assistance & Training**	**Evaluation and Market Research**	**Total Program Costs**	**Performance Incentive**	**Lost Base Revenue**	**Total PA Costs**
Residential (total)	$19,812,544	$6,436,751	$119,327,103	$22,302,783	$6,291,967	$174,171,148	$7,130,567	$11,282,177	$192,583,891
Residential New Construction & Major Renovations	1,193,080	879,734	14,062,802	1,563,638	721,909	18,421,163	643,667		19,064,830
Residential Heating and Water Heating	5,139,519	2,914,208	45,875,803	6,497,701	2,319,593	62,746,823	3,251,893		65,998,716
MassSAVE	1,738,221	655,426	1,157,895	9,796,706	887,737	14,235,986	0		14,235,986
Weatherization Program	5,284,765	886,733	44,347,190	1,964,830	1,485,233	53,968,750	1,543,130		55,511,881
Multifamily Retrofit	1,004,794	200,285	7,758,332	1,304,134	389,830	10,657,376	414,103		11,071,479
O Power	630,492	0	3,890,751	410,000	111,482	5,042,725	1,277,773		6,320,498
Deep Energy Retrofit	485,564	59,092	1,693,081	158,100	200,433	2,596,270	0		2,596,270
Residential Building Practices and Demonstration Program	80,986	0	350,000	235,000	66,700	732,686	0		732,686
Energy Analysis: Internet Audit Program	624,253	61,244	0	0	68,600	754,097	0		754,097
Community Based Pilots	84,690	15,000	191,250	54,000	34,200	379,140	0		379,140
Workforce Development	15,054	0	0	303,000	6,249	324,304	0		324,304
Statewide Marketing & Education	563,267	765,029	0	0	0	1,328,296	0		1,328,296
EEAC Consultants	1,911,352	0	0	7,837	0	1,919,190	0		1,919,190
DOER Assessment	1,056,505	0	0	7,837	0	1,064,342	0		1,064,342
Low Income (total)	$10,197,413	$1,753,069	$41,477,083	$9,023,173	$1,613,458	$64,064,197	$1,299,270	$312,389	$65,675,856
Low-Income Single Family Retrofit	6,780,021	913,701	30,699,926	6,186,432	1,162,840	45,742,920	778,428		46,521,348
Low-Income MultiFamily Retrofit	1,575,884	358,026	10,777,157	2,820,023	450,618	15,981,708	520,841		16,502,549
Statewide Marketing & Education	162,755	481,342	0	0	0	644,097	0		644,097
Low-Income Energy Affordability Network Funding	1,249,309	0	0	16,219	0	1,265,528	0		1,265,528
DOER Assessment	429,444	0	0	500	0	429,944	0		429,944
Commercial & Industrial (total)	$12,281,545	$3,884,807	$55,828,934	$8,493,567	$3,271,760	$83,760,614	$5,972,255	$7,070,614	$96,803,483
C&I New Construction & Major Renovation	3,742,531	1,332,337	19,548,596	3,161,008	1,140,270	28,924,743	1,882,397		30,807,140
C&I Retrofit	4,965,784	1,359,282	34,477,780	3,920,193	1,834,853	46,557,892	3,841,227		50,399,119

C&I Direct Install	564,561	306,119	918,558	753,136	116,685	2,659,059	248,631		2,907,690
Workforce Development	81,524	6,255	0	290,500	5,120	383,399	0		383,399
Business Energy Analyzer	207,655	534,375	0	260,120	100,100	1,102,250	0		1,102,250
Deep Energy Retrofit	83,521	40,128	884,000	103,110	74,732	1,185,492	0		1,185,492
Statewide Marketing & Education	481,418	306,311	0	0	0	787,729	0		787,729
EEAC Consultants	1,218,397	0	0	2,750	0	1,221,147	0		1,221,147
DOER Assessment	936,154	0	0	2,750	0	938,904	0		938,904
GRAND TOTAL	**$42,291,502**	**$12,074,628**	**$216,633,120**	**$39,819,524**	**$11,177,185**	**$321,995,959**	**$14,402,092**	**$18,665,180**	**$355,063,230**

2. *Summary Table Showing Percentage Increases from 2008-2012*

This table shows an alternative presentation to the budget data, and includes data showing percentage increases in budgets from 2008 and 2009 to each year of the Plan, without the inclusion of LBR amounts.

YEAR	PROGRAM	Program Planning and Administration	Marketing and Advertising	Participant Incentive	Sales, Technical Assistance & Training	Evaluation and Market Research	Performance Incentives	TOTAL	% Increase from 2008	% Increase from 2009
Baseline 1-2008	**TOTAL**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**$29,513,182**		
Baseline 2-2009	**TOTAL**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**$36,518,230**	**24%**	
2010	**Residential (total)**	$5,600,794	$1,771,738	$29,035,160	$5,978,714	$1,349,319	$2,109,174	**$45,844,900**		
	Residential New Construction & Major Renovations	451,205	274,911	3,717,870	504,179	171,370	235,971	5,355,506		
	Residential Heating and Water Heating	1,478,029	777,409	11,411,184	1,646,828	446,285	1,018,287	16,778,022		
	MassSAVE	517,206	187,265	307,125	2,428,997	216,080	0	3,656,673		
	Weatherization Program	1,376,747	218,463	10,677,648	541,051	281,507	468,388	13,563,805		
	Multifamily Retrofit	278,274	61,757	1,782,226	314,975	78,623	127,724	2,643,579		
	O Power	92,817	0	346,251	370,000	31,782	258,804	1,099,654		
	Deep Energy Retrofit	166,153	18,030	579,108	47,251	71,741	0	882,283		
	Residential Building Practices and Demonstration Program	23,520	0	150,000	5,000	17,900	0	196,420		
	Energy Analysis: Internet Audit Program	198,149	10,748	0	0	20,900	0	229,797		
	Community Based Pilots	28,230	5,000	63,750	18,000	11,400	0	126,380		
	Workforce Development	5,433	0	0	99,000	1,731	0	106,163		
	Statewide Marketing & Education	145,855	218,155	0	0	0	0	364,010		
	EEAC Consultants	488,582	0	0	1,716	0	0	490,298		
	DOER Assessment	350,594	0	0	1,716	0	0	352,310		
	Low Income (total)	$2,522,056	$450,578	$10,585,541	$2,190,141	$367,722	$428,167	**$16,544,204**		
	Low-Income Single Family Retrofit	1,671,424	233,334	7,888,662	1,541,618	260,668	257,289	11,852,996		
	Low-Income Multifamily Retrofit	359,450	82,114	2,696,879	643,598	107,054	170,878	4,059,973		
	Statewide Marketing & Education	35,568	135,130	0	0	0	0	$170,698		
	Low-Income Energy Affordability Network Funding	313,008	0	0	4,774	0	0	317,782		
	DOER Assessment	142,605	0	0	150	0	0	142,755		

	Commercial & Industrial (total)	$3,586,257	$944,149	$12,377,104	$1,952,901	$613,348	$1,806,248	**$21,280,007**		
	C&I New Construction & Major Renovation	1,133,191	318,222	4,801,759	709,844	226,366	608,883	7,798,265		
	C&I Retrofit	1,479,830	334,795	7,190,838	925,270	312,669	1,134,194	11,377,596		
	C&I Direct Install	152,225	75,088	136,507	148,558	30,474	63,172	$606,025		
	Workforce Development	27,955	2,133	0	96,500	1,429	0	128,018		
	Business Energy Analyzer	50,575	112,500	0	50,120	21,300	0	234,495		
	Deep Energy Retrofit	24,067	11,997	248,000	21,110	21,109	0	326,284		
	Statewide Marketing & Education	101,930	89,413	0	0	0	0	191,343		
	EEAC Consultants	306,253	0	0	750	0	0	307,003		
	DOER Assessment	310,230	0	0	750	0	0	310,980		
	GRAND TOTAL	**$11,709,107**	**$3,166,466**	**$51,997,805**	**$10,121,756**	**$2,330,389**	**$4,343,589**	**$83,669,111**	**183%**	**129%**
2011	**Residential (total)**	$6,534,947	$2,166,165	$41,380,993	$7,098,996	$2,388,816	$2,302,611	**$61,872,526**		
	Residential New Construction & Major Renovations	370,560	289,693	4,577,279	520,126	258,287	186,669	6,202,615		
	Residential Heating and Water Heating	1,719,589	969,072	16,133,093	2,127,573	952,630	1,075,510	22,977,467		
	MassSAVE	572,384	220,000	375,388	3,158,673	292,705	0	4,619,149		
	Weatherization Program	1,739,687	311,847	15,550,838	644,897	563,252	491,153	19,301,673		
	Multifamily Retrofit	324,868	66,775	2,492,929	430,948	141,729	122,963	3,580,213		
	O Power	196,650	0	1,291,000	20,000	36,900	426,316	1,970,866		
	Deep Energy Retrofit	174,673	21,930	696,717	61,434	82,936	0	1,037,689		
	Residential Building Practices and Demonstration Program	28,466	0	200,000	10,000	23,900	0	262,366		
	Energy Analysis: Internet Audit Program	207,371	20,558	0	0	22,800	0	250,729		
	Community Based Pilots	28,230	5,000	63,750	18,000	11,400	0	126,380		
	Workforce Development	5,061	0	0	102,000	2,277	0	109,338		
	Statewide Marketing & Education	184,794	261,290	0	0	0	0	446,085		
	EEAC Consultants	630,053	0	0	2,673	0	0	632,726		
	DOER Assessment	352,559	0	0	2,673	0	0	355,232		
	Low Income (total)	$3,522,212	$570,697	$13,335,303	$2,956,951	$564,967	$376,680	**$21,326,811**		
	Low-Income Single Family Retrofit	2,306,240	290,202	9,756,992	1,971,938	407,220	221,480	14,954,073		
	Low-Income Multifamily Retrofit	613,491	123,026	3,578,311	979,462	157,747	155,201	5,607,237		
	Statewide Marketing & Education	52,176	157,469	0	0	0	0	209,644		
	Low-Income Energy Affordability Network Funding	407,281	0	0	5,376	0	0	412,657		
	DOER Assessment	143,025	0	0	175	0	0	143,200		
	Commercial & Industrial (total)	$4,072,283	$1,252,659	$17,615,203	$2,796,777	$1,213,548	$1,839,169	**$28,789,639**		
	C&I New Construction & Major Renovation	1,241,712	427,325	6,287,916	1,028,828	425,868	575,814	9,987,464		

	C&I Retrofit	1,631,677	438,012	10,618,710	1,278,783	676,102	1,179,301	15,822,584		
	C&I Direct Install	189,763	98,446	347,577	247,166	42,083	84,054	1,009,088		
	Workforce Development	27,232	2,087	0	97,000	1,868	0	128,187		
	Business Energy Analyzer	71,400	168,750	0	84,000	32,400	0	356,550		
	Deep Energy Retrofit	35,630	16,932	361,000	59,000	35,226	0	507,788		
	Statewide Marketing & Education	152,995	101,107	0	0	0	0	254,102		
	EEAC Consultants	410,129	0	0	1,000	0	0	411,129		
	DOER Assessment	311,745	0	0	1,000	0	0	312,745		
	GRAND TOTAL	**$14,129,441**	**$3,989,521**	**$72,331,499**	**$12,852,724**	**$4,167,331**	**$4,518,460**	**$111,988,976**	**279%**	**207%**
2012	**Residential (total)**	$7,676,803	$2,498,848	$48,910,950	$9,225,073	$2,553,832	$2,718,782	**$73,584,288**		
	Residential New Construction & Major Renovations	371,315	315,131	5,767,653	539,333	292,251	221,027	7,506,710		
	Residential Heating and Water Heating	1,941,901	1,167,726	18,331,526	2,723,300	920,678	1,158,096	26,243,228		
	MassSAVE	648,631	248,161	475,383	4,209,036	378,953	0	5,960,164		
	Weatherization Program	2,168,331	356,422	18,118,704	778,882	640,474	583,589	22,646,403		
	Multifamily Retrofit	401,651	71,753	3,483,178	558,211	169,478	163,416	4,847,687		
	O Power	341,025	0	2,253,500	20,000	42,800	592,653	3,249,978		
	Deep Energy Retrofit	144,738	19,133	417,256	49,415	45,756	0	676,297		
	Residential Building Practices and Demonstration Program	29,000	0	0	220,000	24,900	0	273,900		
	Energy Analysis: Internet Audit Program	218,733	29,938	0	0	24,900	0	273,571		
	Community Based Pilots	28,230	5,000	63,750	18,000	11,400	0	126,380		
	Workforce Development	4,560	0	0	102,000	2,242	0	108,802		
	Statewide Marketing & Education	232,618	285,584	0	0	0	0	518,201		
	EEAC Consultants	792,718	0	0	3,448	0	0	796,166		
	DOER Assessment	353,352	0	0	3,448	0	0	356,800		
	Low Income (total)	$4,153,146	$731,794	$17,556,238	$3,876,082	$680,769	$494,422	**$27,492,451**		
	Low-Income Single Family Retrofit	2,802,356	390,165	13,054,271	2,672,875	494,952	299,660	19,714,279		
	Low-Income Multifamily Retrofit	602,943	152,886	4,501,967	1,196,962	185,818	194,763	6,835,339		
	Statewide Marketing & Education	75,012	188,743	0	0	0	0	$263,755		
	Low-Income Energy Affordability Network Funding	529,020	0	0	6,069	0	0	535,089		
	DOER Assessment	143,815	0	0	175	0	0	143,990		
	Commercial & Industrial (total)	$4,623,005	$1,687,999	$25,836,628	$3,743,889	$1,444,864	$2,326,838	**$39,663,224**		
	C&I New Construction & Major Renovation	1,367,628	586,790	8,458,921	1,422,336	488,036	697,700	13,021,411		
	C&I Retrofit	1,854,277	586,475	16,668,232	1,716,141	846,082	1,527,732	23,198,938		
	C&I Direct Install	222,573	132,584	434,474	357,412	44,128	101,406	$1,292,577		

	Workforce Development	26,336	2,035	0	97,000	1,822	0	127,194		
	Business Energy Analyzer	85,680	253,125	0	126,000	46,400	0	511,205		
	Deep Energy Retrofit	23,825	11,199	275,000	23,000	18,397	0	351,420		
	Statewide Marketing & Education	226,493	115,791	0	0	0	0	342,283		
	EEAC Consultants	502,015	0	0	1,000	0	0	503,015		
	DOER Assessment	314,179	0	0	1,000	0	0	315,179		
	GRAND TOTAL	**$16,452,954**	**$4,918,641**	**$92,303,816**	**$16,845,044**	**$4,679,465**	**$5,540,042**	**$140,739,963**	**377%**	**285%**
THREE YEAR TOTAL: 2010-2012	**Residential (total)**	$19,812,544	$6,436,751	$119,327,103	$22,302,783	$6,291,967	$7,130,567	**$181,301,715**		
	Residential New Construction & Major Renovations	1,193,080	879,734	14,062,802	1,563,638	721,909	643,667	19,064,830		
	Residential Heating and Water Heating	5,139,519	2,914,208	45,875,803	6,497,701	2,319,593	3,251,893	65,998,716		
	MassSAVE	1,738,221	655,426	1,157,895	9,796,706	887,737	0	14,235,986		
	Weatherization Program	5,284,765	886,733	44,347,190	1,964,830	1,485,233	1,543,130	55,511,881		
	Multifamily Retrofit	1,004,794	200,285	7,758,332	1,304,134	389,830	414,103	11,071,479		
	O Power	630,492	0	3,890,751	410,000	111,482	1,277,773	6,320,498		
	Deep Energy Retrofit	485,564	59,092	1,693,081	158,100	200,433	0	2,596,270		
	Residential Building Practices and Demonstration Program	80,986	0	350,000	235,000	66,700	0	732,686		
	Energy Analysis: Internet Audit Program	624,253	61,244	0	0	68,600	0	754,097		
	Community Based Pilots	84,690	15,000	191,250	54,000	34,200	0	379,140		
	Workforce Development	15,054	0	0	303,000	6,249	0	324,304		
	Statewide Marketing & Education	563,267	765,029	0	0	0	0	1,328,296		
	EEAC Consultants	1,911,352	0	0	7,837	0	0	1,919,190		
	DOER Assessment	1,056,505	0	0	7,837	0	0	1,064,342		
	Low Income (total)	$10,197,413	$1,753,069	$41,477,083	$9,023,173	$1,613,458	$1,299,270	**$65,363,466**		
	Low-Income Single Family Retrofit	6,780,021	913,701	30,699,926	6,186,432	1,162,840	778,428	46,521,348		
	Low-Income Multifamily Retrofit	1,575,884	358,026	10,777,157	2,820,023	450,618	520,841	16,502,549		
	Statewide Marketing & Education	162,755	481,342	0	0	0	0	644,097		
	Low-Income Energy Affordability Network Funding	1,249,309	0	0	16,219	0	0	1,265,528		
	DOER Assessment	429,444	0	0	500	0	0	429,944		
	Commercial & Industrial (total)	$12,281,545	$3,884,807	$55,828,934	$8,493,567	$3,271,760	$5,972,255	**$89,732,869**		
	C&I New Construction & Major Renovation	3,742,531	1,332,337	19,548,596	3,161,008	1,140,270	1,882,397	30,807,140		
	C&I Retrofit	4,965,784	1,359,282	34,477,780	3,920,193	1,834,853	3,841,227	50,399,119		
	C&I Direct Install	564,561	306,119	918,558	753,136	116,685	248,631	2,907,690		
	Workforce Development	81,524	6,255	0	290,500	5,120	0	383,399		
	Business Energy Analyzer	207,655	534,375	0	260,120	100,100	0	1,102,250		

Deep Energy Retrofit	83,521	40,128	884,000	103,110	74,732	0	1,185,492		
Statewide Marketing & Education	481,418	306,311	0	0	0	0	787,729		
EEAC Consultants	1,218,397	0	0	2,750	0	0	1,221,147		
DOER Assessment	936,154	0	0	2,750	0	0	938,904		
GRAND TOTAL	**$42,291,502**	**$12,074,628**	**$216,633,120**	**$39,819,524**	**$11,177,185**	**$14,402,092**	**$336,398,050**		

D. Net Benefits And Cost Effectiveness Analysis

The gas Program Administrators have used the TRC test, as required and approved by the Department in its Order in D.P.U. 08-50-A, to analyze the cost effectiveness of the gas energy efficiency programs proposed in this Plan on an aggregate, by sector basis for the years 2010, 2011 and 2012.

1. *General Cost/Benefit Variables*

The general costs and benefits included in a TRC test by the gas Program Administrators are summarized below:

i. Benefits

a) *Energy System Benefits*

Avoided Gas Supply Costs. The avoided gas supply cost factors used in these cost-effectiveness determinations are based on "Avoided Costs of Gas Delivered to Retail Customers: Northern And Central New England" as published in Appendix D-4 in the "Avoided Energy Supply Costs in New England: 2009 Report" August 21, 2009, prepared for the Avoided-Energy-Supply-Component (AESC) Study Group, by Synapse Energy Economics, Inc.[11]

b) *Program Participant Benefits*

Participant Resource Benefits. To account for reduced consumption of gas, electricity, water, and other resources as a result of the implementation of energy efficiency programs and calculated as the product of (a) the reduction in consumption of gas, electricity, water, and other

[11] The Study Group which oversaw the study consisted of gas and electric program administrators in all six New England states, who sponsored the study, as well as other interested stakeholders.

resources, and (b) avoided costs factors for each of these resources. To the greatest extent practical, common assumptions regarding savings per measure/participant and measure lives have been used with sources identified and documented.

Participant Non-Resource Benefits including: reduced costs for operation and maintenance associated with efficient equipment or practices; the value of longer equipment replacement cycles and/or productivity improvements associated with efficient equipment; reduced environmental and safety costs (*i.e.*, those for changes in a waste stream or disposal of lamp ballasts or ozone-depleting chemicals); and reduced disconnections for inability to pay.

ii. Costs

a) *Energy System Costs*

Program Administrative Costs including: payments to vendors for energy efficient equipment and services; payments to contractors to plan for and/or install energy efficient equipment; rebates or incentives paid to program participants or vendors for energy efficient equipment and/or services; costs to check for proper functioning and maintenance of installed equipment; costs to market energy efficient equipment and services to customers and to seek participation in energy efficiency programs; and costs to develop, plan, administer, monitor, and evaluate energy efficiency programs.

Performance incentives have also been included as a cost, on a pre-tax basis, in the cost effectiveness screening model.

b) *Program Participant Costs*

All initial expenses incurred by program participants as a result of their participation in energy efficiency programs including: net cost of the energy efficient equipment (*e.g.*; incremental participant costs); cost to plan for and install the energy efficient equipment; and cost of the energy efficiency services (*i.e.*, inspections for proper equipment functioning).

iii. Discount Rate

In accordance with D.P.U. 08-50-A, benefits and costs have been stated in present value terms, using a discount rate of 3.66 percent (equal to the average twelve-month yield on 10-year U.S. Treasury Bonds for the 2008 calendar year).

2. *Summary Table*

The Program Administrators present the following tables in accordance with the Plan filing procedures developed by the D.P.U. 08-50 Working Group.

i. By Program, B/C Ratio, net benefits, total benefits, total costs, PA costs, customer costs

Total Resource Cost Test, 2010				
Sector	**B/C Ratio**	**Net Benefits**	**Benefits**	**Costs**
Residential	`	**$69,132,871**	**$133,039,869**	**$63,906,999**
Residential New Construction & Major Renovations	1.74	7,862,938	18,443,949	10,581,011
Residential Heating and Water Heating	2.83	48,454,461	74,876,330	26,421,869
MassSAVE	n/a	n/a	n/a	3,656,673
Weatherization Program	1.86	13,989,958	30,197,061	16,207,103
Multifamily Retrofit	2.66	5,092,695	8,169,722	3,077,026
O Power	1.23	253,154	1,352,808	1,099,654
Deep Energy Retrofit	n/a	n/a	n/a	998,283
Residential Building Practices and Demonstration Program	n/a	n/a	n/a	196,420
Energy Analysis: Internet Audit Program	n/a	n/a	n/a	229,797
Community Based Pilots	n/a	n/a	n/a	126,380

Workforce Development	n/a	n/a	n/a	106,164
Statewide Marketing & Education	n/a	n/a	n/a	364,010
EEAC Consultants	n/a	n/a	n/a	490,298
DOER Assessment	n/a	n/a	n/a	352,310
Low Income	**2.13**	**$18,619,705**	**$35,163,910**	**$16,544,206**
Low-Income Single Family Retrofit	2.11	13,129,685	24,982,681	11,852,996
Low-Income MultiFamily Retrofit	2.51	6,121,255	10,181,229	4,059,974
Statewide Marketing & Education	n/a	n/a	n/a	170,698
Low-Income Energy Affordability Network Funding	n/a	n/a	n/a	317,782
DOER Assessment	n/a	n/a	n/a	142,755
Commercial & Industrial	**2.76**	**$74,036,516**	**$116,048,502**	**$42,011,986**
C&I New Construction & Major Renovation	3.36	30,334,746	43,192,279	12,857,533
C&I Retrofit	2.61	43,471,760	70,403,344	26,931,584
C&I Direct Install	3.91	1,825,131	2,452,880	627,748
Workforce Development	n/a	n/a	n/a	128,017
Business Energy Analyzer	n/a	n/a	n/a	234,495
Deep Energy Retrofit	n/a	n/a	n/a	423,284
Statewide Marketing & Education	n/a	n/a	n/a	191,342
EEAC Consultants	n/a	n/a	n/a	307,003
DOER Assessment	n/a	n/a	n/a	310,980
GRAND TOTAL	**2.32**	**$161,789,091**	**$284,252,282**	**$122,463,190**

Total Resource Cost Test, 2011

Sector	B/C Ratio	Net Benefits	Benefits	Costs
Residential	**2.19**	**$100,452,134**	**$184,895,439**	**$84,443,305**
Residential New Construction & Major Renovations	1.85	10,166,443	22,118,795	11,952,352
Residential Heating and Water Heating	3.02	72,308,415	108,057,051	35,748,636
MassSAVE	n/a	n/a	n/a	4,510,719
Weatherization Program	1.78	17,757,329	40,592,403	22,835,074
Multifamily Retrofit	2.78	7,433,683	11,606,506	4,172,824
O Power	1.23	450,345	2,399,156	1,948,811
Deep Energy Retrofit	n/a	n/a	n/a	1,134,366
Residential Building Practices and Demonstration Program	n/a	n/a	n/a	259,430
Energy Analysis: Internet Audit Program	n/a	n/a	n/a	247,923
Community Based Pilots	n/a	n/a	n/a	124,966
Workforce Development	n/a	n/a	n/a	105,655
Statewide Marketing & Education	n/a	n/a	n/a	435,465
EEAC Consultants	n/a	n/a	n/a	619,280
DOER Assessment	n/a	n/a	n/a	347,804
Low Income	**1.98**	**$20,447,490**	**$41,341,236**	**$20,893,746**
Low-Income Single Family Retrofit	1.93	13,618,832	28,279,451	14,660,618
Low-Income MultiFamily Retrofit	2.38	7,577,062	13,061,785	5,484,724
Statewide Marketing & Education	n/a	n/a	n/a	203,880
Low-Income Energy Affordability Network Funding	n/a	n/a	n/a	404,223

DOER Assessment	n/a	n/a	n/a	140,301
Commercial & Industrial	**3.00**	**$110,113,819**	**$165,137,350**	**$55,023,532**
C&I New Construction & Major Renovation	3.50	40,161,135	56,227,573	16,066,438
C&I Retrofit	2.91	68,526,904	104,404,093	35,877,189
C&I Direct Install	4.41	3,485,121	4,505,684	1,020,563
Workforce Development	n/a	n/a	n/a	124,497
Business Energy Analyzer	n/a	n/a	n/a	352,560
Deep Energy Retrofit	n/a	n/a	n/a	620,999
Statewide Marketing & Education	n/a	n/a	n/a	249,611
EEAC Consultants	n/a	n/a	n/a	403,966
DOER Assessment	n/a	n/a	n/a	307,707
GRAND TOTAL	**2.44**	**$231,013,442**	**$391,374,025**	**$160,360,583**

Total Resource Cost Test, 2012

Sector	B/C Ratio	Net Benefits	Benefits	Costs
Residential	**2.26**	**$123,686,506**	**$221,792,948**	**$98,106,441**
Residential New Construction & Major Renovations	1.95	13,504,020	27,709,943	14,205,923
Residential Heating and Water Heating	3.13	85,402,876	125,562,952	40,160,076
MassSAVE	n/a	n/a	n/a	5,684,295
Weatherization Program	1.83	21,753,795	47,886,347	26,132,552
Multifamily Retrofit	2.99	11,106,863	16,695,075	5,588,212
O Power	1.18	563,219	3,740,866	3,177,648
Deep Energy Retrofit	n/a	n/a	n/a	797,998
Residential Building Practices and Demonstration Program	n/a	n/a	n/a	267,804
Energy Analysis: Internet Audit Program	n/a	n/a	n/a	267,483
Community Based Pilots	n/a	n/a	n/a	123,567
Workforce Development	n/a	n/a	n/a	101,602
Statewide Marketing & Education	n/a	n/a	n/a	494,948
EEAC Consultants	n/a	n/a	n/a	762,239
DOER Assessment	n/a	n/a	n/a	342,094
Low Income	**2.10**	**$29,147,881**	**$55,534,690**	**$26,386,809**
Low-Income Single Family Retrofit	2.07	20,290,589	39,234,497	18,943,908
Low-Income MultiFamily Retrofit	2.49	9,758,915	16,300,193	6,541,278
Statewide Marketing & Education	n/a	n/a	n/a	250,313
Low-Income Energy Affordability Network Funding	n/a	n/a	n/a	513,094
DOER Assessment	n/a	n/a	n/a	138,216
Commercial & Industrial	**3.09**	**$156,314,635**	**$230,961,680**	**$74,647,045**
C&I New Construction & Major Renovation	3.62	54,178,543	74,828,442	20,649,899
C&I Retrofit	2.98	99,792,462	150,272,202	50,479,739
C&I Direct Install	4.56	4,576,856	5,861,036	1,284,181
Workforce Development	n/a	n/a	n/a	120,007
Business Energy Analyzer	n/a	n/a	n/a	499,828
Deep Energy Retrofit	n/a	n/a	n/a	491,471
Statewide Marketing & Education	n/a	n/a	n/a	331,222
EEAC Consultants	n/a	n/a	n/a	485,655

DOER Assessment	n/a	n/a	n/a	305,044
GRAND TOTAL	**2.55**	**$309,149,022**	**$508,289,318**	**$199,140,296**

Total Resource Cost Test, 2010-2012				
Sector	**B/C Ratio**	**Net Benefits**	**Benefits**	**Costs**
Residential	**2.19**	**$292,952,218**	**$539,408,963**	**$246,456,745**
Residential New Construction & Major Renovations	1.86	31,533,401	68,272,687	36,739,286
Residential Heating and Water Heating	3.01	206,165,751	308,496,333	102,330,581
MassSAVE	n/a	n/a	n/a	13,851,687
Weatherization Program	1.82	53,501,081	118,675,810	65,174,728
Multifamily Retrofit	2.84	23,633,241	36,471,303	12,838,062
O Power	1.20	1,266,717	7,492,830	6,226,113
Deep Energy Retrofit	n/a	n/a	n/a	2,930,648
Residential Building Practices and Demonstration Program	n/a	n/a	n/a	723,654
Energy Analysis: Internet Audit Program	n/a	n/a	n/a	745,203
Community Based Pilots	n/a	n/a	n/a	374,913
Workforce Development	n/a	n/a	n/a	313,421
Statewide Marketing & Education	n/a	n/a	n/a	1,294,423
EEAC Consultants	n/a	n/a	n/a	1,871,817
DOER Assessment	n/a	n/a	n/a	1,042,208
Low Income	**2.07**	**$68,215,075**	**$132,039,836**	**$63,824,761**
Low-Income Single Family Retrofit	2.03	47,039,106	92,496,629	45,457,523
Low-Income MultiFamily Retrofit	2.46	23,457,232	39,543,207	16,085,975
Statewide Marketing & Education	n/a	n/a	n/a	624,892
Low-Income Energy Affordability Network Funding	n/a	n/a	n/a	1,235,100
DOER Assessment	n/a	n/a	n/a	421,272
Commercial & Industrial	**2.98**	**$340,464,970**	**$512,147,533**	**$171,682,563**
C&I New Construction & Major Renovation	3.51	124,674,424	174,248,293	49,573,870
C&I Retrofit	2.87	211,791,127	325,079,639	113,288,512
C&I Direct Install	4.37	9,887,108	12,819,600	2,932,492
Workforce Development	n/a	n/a	n/a	372,521
Business Energy Analyzer	n/a	n/a	n/a	1,086,883
Deep Energy Retrofit	n/a	n/a	n/a	1,535,754
Statewide Marketing & Education	n/a	n/a	n/a	772,175
EEAC Consultants	n/a	n/a	n/a	1,196,624
DOER Assessment	n/a	n/a	n/a	923,731
GRAND TOTAL	**2.46**	**$701,632,263**	**$1,183,596,332**	**$481,964,069**

3. *Costs Tables*

i. Costs Summary Table

2010				
Programs	**Program Costs**	**Performance Incentive**	**Participant Costs**	**Total Resource Costs**
Residential	**$43,735,726**	**$2,109,174**	**$18,062,099**	**$63,906,999**
Residential New Construction & Major Renovations	5,119,535	235,971	5,225,505	10,581,011
Residential Heating and Water Heating	15,759,735	1,018,287	9,643,847	26,421,869
MassSAVE	3,656,673	0	0	3,656,673
Weatherization Program	13,095,417	468,388	2,643,298	16,207,103
Multifamily Retrofit	2,515,855	127,724	433,448	3,077,026
O Power	840,850	258,804	0	1,099,654
Deep Energy Retrofit	882,283	0	116,001	998,283
Residential Building Practices and Demonstration Program	196,420	0	0	196,420
Energy Analysis: Internet Audit Program	229,797	0	0	229,797
Community Based Pilots	126,380	0	0	126,380
Workforce Development	106,163	0	0	106,164
Statewide Marketing & Education	364,010	0	0	364,010
EEAC Consultants	490,298	0	0	490,298
DOER Assessment	352,310	0	0	352,310
Low Income	**$16,116,037**	**$428,167**	**$0**	**$16,544,206**
Low-Income Single Family Retrofit	11,595,707	257,289	0	11,852,996
Low-Income MultiFamily Retrofit	3,889,095	170,878	0	4,059,974
Statewide Marketing & Education	170,698	0	0	170,698
Low-Income Energy Affordability Network Funding	317,782	0	0	317,782
DOER Assessment	142,755	0	0	142,755
Commercial & Industrial	**$19,473,759**	**$1,806,248**	**$20,731,979**	**$42,011,986**
C&I New Construction & Major Renovation	7,189,382	608,883	5,059,268	12,857,533
C&I Retrofit	10,243,402	1,134,194	15,553,987	26,931,584
C&I Direct Install	542,853	63,172	21,724	627,748
Workforce Development	128,018	0	0	128,017
Business Energy Analyzer	234,495	0	0	234,495
Deep Energy Retrofit	326,284	0	97,000	423,284
Statewide Marketing & Education	191,343	0	0	191,342
EEAC Consultants	307,003	0	0	307,003
DOER Assessment	310,980	0	0	310,980
GRAND TOTAL	**$79,325,522**	**$4,343,589**	**$38,794,078**	**$122,463,190**

2011				
Programs	**Program Costs**	**Performance Incentive**	**Participant Costs**	**Total Resource Costs**
Residential	**$58,481,831**	**$2,261,319**	**$23,714,374**	**$84,443,305**
Residential New Construction & Major Renovations	5,868,509	182,008	5,901,835	11,952,352

Residential Heating and Water Heating	21,558,015	1,057,626	13,132,995	35,748,636
MassSAVE	4,521,773	0	0	4,510,719
Weatherization Program	18,451,430	479,687	3,903,957	22,835,074
Multifamily Retrofit	3,388,248	120,454	664,122	4,172,824
O Power	1,527,266	421,545	0	1,948,811
Deep Energy Retrofit	1,022,902	0	111,464	1,134,366
Residential Building Practices and Demonstration Program	259,430	0	0	259,430
Energy Analysis: Internet Audit Program	247,923	0	0	247,923
Community Based Pilots	124,966	0	0	124,966
Workforce Development	105,991	0	0	105,655
Statewide Marketing & Education	436,977	0	0	435,465
EEAC Consultants	619,992	0	0	619,280
DOER Assessment	348,409	0	0	347,804
Low Income	**$20,561,195**	**$367,269**	**$0**	**$20,893,746**
Low-Income Single Family Retrofit	14,459,241	215,410	0	14,660,618
Low-Income MultiFamily Retrofit	5,352,114	151,859	0	5,484,724
Statewide Marketing & Education	204,488	0	0	203,880
Low-Income Energy Affordability Network Funding	404,800	0	0	404,223
DOER Assessment	140,553	0	0	140,301
Commercial & Industrial	**$26,456,047**	**$1,805,320**	**$26,764,066**	**$55,023,532**
C&I New Construction & Major Renovation	9,232,964	564,251	6,269,223	16,066,438
C&I Retrofit	14,371,505	1,158,159	20,347,525	35,877,189
C&I Direct Install	912,388	82,911	25,264	1,020,563
Workforce Development	124,884	0	0	124,497
Business Energy Analyzer	352,560	0	0	352,560
Deep Energy Retrofit	498,945	0	122,054	620,999
Statewide Marketing & Education	250,405	0	0	249,611
EEAC Consultants	404,313	0	0	403,966
DOER Assessment	308,082	0	0	307,707
GRAND TOTAL	**$105,499,073**	**$4,433,909**	**$50,478,440**	**$160,360,583**

2012				
Programs	**Program Costs**	**Performance Incentive**	**Participant Costs**	**Total Resource Costs**
Residential	**$68,259,107**	**$2,621,389**	**$27,255,366**	**$98,106,441**
Residential New Construction & Major Renovations	6,931,631	210,092	7,064,200	14,205,923
Residential Heating and Water Heating	24,307,220	1,119,813	14,733,043	40,160,076
MassSAVE	5,707,224	0	0	5,684,295
Weatherization Program	21,189,075	554,965	4,388,511	26,132,552
Multifamily Retrofit	4,507,730	157,056	923,426	5,588,212
O Power	2,598,185	579,463	0	3,177,648
Deep Energy Retrofit	651,813	0	146,186	797,998
Residential Building Practices and Demonstration Program	267,804	0	0	267,804
Energy Analysis: Internet Audit Program	267,483	0	0	267,483
Community Based Pilots	123,567	0	0	123,567
Workforce Development	102,262	0	0	101,602
Statewide Marketing & Education	498,192	0	0	494,948
EEAC Consultants	763,639	0	0	762,239

DOER Assessment	343,283	0	0	342,094
Low Income	**$25,992,942**	**$469,476**	**$0**	**$26,386,809**
Low-Income Single Family Retrofit	18,690,891	283,284	0	18,943,908
Low-Income MultiFamily Retrofit	6,397,322	186,192	0	6,541,278
Statewide Marketing & Education	251,648	0	0	250,313
Low-Income Energy Affordability Network Funding	514,371	0	0	513,094
DOER Assessment	138,710	0	0	138,216
Commercial & Industrial	**$35,898,300**	**$2,239,167**	**$36,513,510**	**$74,647,045**
C&I New Construction & Major Renovation	11,854,288	670,125	8,125,486	20,649,899
C&I Retrofit	20,803,358	1,470,271	28,206,110	50,479,739
C&I Direct Install	1,159,890	98,771	25,520	1,284,181
Workforce Development	120,756	0	0	120,007
Business Energy Analyzer	499,828	0	0	499,828
Deep Energy Retrofit	335,078	0	156,394	491,471
Statewide Marketing & Education	332,985	0	0	331,222
EEAC Consultants	486,336	0	0	485,655
DOER Assessment	305,782	0	0	305,044
GRAND TOTAL	**$130,150,349**	**$5,330,032**	**$63,768,877**	**$199,140,296**

2010 - 2012

Programs	Program Costs	Performance Incentive	Participant Costs	Total Resource Costs
Residential	**$170,476,663**	**$6,991,883**	**$69,031,839**	**$246,456,745**
Residential New Construction & Major Renovations	17,919,674	628,071	18,191,541	36,739,286
Residential Heating and Water Heating	61,624,971	3,195,725	37,509,885	102,330,581
MassSAVE	13,885,670	0	0	13,851,687
Weatherization Program	52,735,923	1,503,040	10,935,766	65,174,728
Multifamily Retrofit	10,411,833	405,234	2,020,996	12,838,062
O Power	4,966,300	1,259,813	0	6,226,113
Deep Energy Retrofit	2,556,998	0	373,650	2,930,648
Residential Building Practices and Demonstration Program	723,654	0	0	723,654
Energy Analysis: Internet Audit Program	745,203	0	0	745,203
Community Based Pilots	374,913	0	0	374,913
Workforce Development	314,416	0	0	313,421
Statewide Marketing & Education	1,299,179	0	0	1,294,423
EEAC Consultants	1,873,929	0	0	1,871,817
DOER Assessment	1,044,001	0	0	1,042,208
Low Income	**$62,670,174**	**$1,264,912**	**$0**	**$63,824,761**
Low-Income Single Family Retrofit	44,745,838	755,983	0	45,457,523
Low-Income MultiFamily Retrofit	15,638,531	508,929	0	16,085,975
Statewide Marketing & Education	626,834	0	0	624,892
Low-Income Energy Affordability Network Funding	1,236,953	0	0	1,235,100
DOER Assessment	422,018	0	0	421,272
Commercial & Industrial	**$81,828,106**	**$5,850,736**	**$84,003,721**	**$171,682,563**
C&I New Construction & Major Renovation	28,276,634	1,843,258	64,555,578	49,573,870
C&I Retrofit	45,418,265	3,762,624	64,107,622	113,288,512
C&I Direct Install	2,615,131	244,854	72,508	2,932,492

Workforce Development	373,657	0	0	372,521
Business Energy Analyzer	1,086,883	0	0	1,086,883
Deep Energy Retrofit	1,160,306	0	375,448	1,535,754
Statewide Marketing & Education	774,733	0	0	772,175
EEAC Consultants	1,197,651	0	0	1,196,624
DOER Assessment	924,845	0	0	923,731
GRAND TOTAL	**$314,974,943**	**$14,107,530**	**$153,035,560**	**$481,964,069**

NOTE: Program costs in 2010$, Total Resource Costs are NPV.

4. *Benefits/Savings Tables*

i. Benefits Summary Table by program: disaggregation of total benefits into benefits components

Gas Benefits, 2010 (Lifetime $)														
Program	Gas	Electric			Non-Gas Non-Electric*									TOTAL TRC Benefits
					Resource							Non-Resource	TOTAL	
		Summer Capacity	Winter Capacity	Energy	No. 2 Distillate	No. 4 Fuel Oil	No. 6 Fuel Oil	Propane	Wood	Water	Kerosene			
Residential	**$132,693,546**	**$82,003**	**$14,406**	**$296,941**	**$0**	**$0**	**$0**	**$0**	**$0**	**$28,214**	**$0**	**$0**	**$28,214**	**$133,115,111**
Residential New Construction & Major Renovations	18,025,948	82,003	14,406	296,941	0	0	0	0	0	24,651	0	0	24,651	18,443,949
Residential Heating and Water Heating	74,876,330	0	0	0	0	0	0	0	0	0	0	0	0	74,876,330
MassSAVE	75,241	0	0	0	0	0	0	0	0	0	0	0	0	75,241
Weatherization Program	30,193,498	0	0	0	0	0	0	0	0	3,563	0	0	3,563	30,197,061
Multifamily Retrofit	8,169,722	0	0	0	0	0	0	0	0	0	0	0	0	8,169,722
O Power	1,352,808	0	0	0	0	0	0	0	0	0	0	0	0	1,352,808
Deep Energy Retrofit	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Residential Building Practices and Demonstration Program	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Analysis: Internet Audit Program	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Workforce Development	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Low Income	**$22,909,977**	**$585**	**$0**	**$320,543**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$11,932,805**	**$11,932,805**	**$35,163,910**
Low-Income Single Family Retrofit	13,646,535	585	0	320,543	0	0	0	0	0	0	0	11,015,018	11,015,018	24,982,681
Low-Income Multifamily Retrofit	9,263,443	0	0	0	0	0	0	0	0	0	0	917,787	917,787	10,181,229
Commercial & Industrial	**$114,457,530**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,590,972**	**$0**	**$0**	**$1,590,972**	**$116,048,502**
C&I New Construction & Major Renovation	43,192,279	0	0	0	0	0	0	0	0	0	0	0	0	43,192,279
C&I Retrofit	69,620,899	0	0	0	0	0	0	0	0	782,445	0	0	782,445	70,403,344
C&I Direct Install	1,644,353	0	0	0	0	0	0	0	0	808,527	0	0	808,527	2,452,880
Workforce Development	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Business Energy Analyzer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deep Energy Retrofit	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRAND TOTAL	**$270,061,054**	**$82,589**	**$14,406**	**$617,484**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,619,186**	**$0**	**$11,932,805**	**$13,551,990**	**$284,327,523**

Gas Benefits, 2011 (Lifetime $)														
Program	Gas	Electric			Non-Gas Non-Electric*									TOTAL TRC Benefits
					Resource							Non-Resource	TOTAL	
		Summer Capacity	Winter Capacity	Energy	No. 2 Distillate	No. 4 Fuel Oil	No. 6 Fuel Oil	Propane	Wood	Water	Kerosene			
Residential	**$184,363,756**	**$117,971**	**$18,736**	**$359,512**	**$0**	**$0**	**$0**	**$0**	**$0**	**$35,463**	**$0**	**$0**	**$35,463**	**$184,895,439**
Residential New Construction & Major Renovations	21,594,185	117,971	18,736	359,512	0	0	0	0	0	28,391	0	0	28,391	22,118,795
Residential Heating and Water Heating	108,057,051	0	0	0	0	0	0	0	0	0	0	0	0	108,057,051
MassSAVE	121,528	0	0	0	0	0	0	0	0	0	0	0	0	121,528
Weatherization Program	40,585,331	0	0	0	0	0	0	0	0	7,072	0	0	7,072	40,592,403
Multifamily Retrofit	11,606,506	0	0	0	0	0	0	0	0	0	0	0	0	11,606,506
O Power	2,399,156	0	0	0	0	0	0	0	0	0	0	0	0	2,399,156
Deep Energy Retrofit	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Residential Building Practices and Demonstration Program	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Analysis: Internet Audit Program	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Workforce Development	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Low Income	**$27,508,923**	**$720**	**$0**	**$346,433**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$13,485,160**	**$13,485,160**	**$41,341,236**
Low-Income Single Family Retrofit	15,657,684	720	0	346,433	0	0	0	0	0	0	0	12,274,614	12,274,614	28,279,451
Low-Income Multifamily Retrofit	11,851,239	0	0	0	0	0	0	0	0	0	0	1,210,546	1,210,546	13,061,785
Commercial & Industrial	**$162,290,228**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,847,123**	**$0**	**$0**	**$2,847,123**	**$165,137,350**
C&I New Construction & Major Renovation	56,227,573	0	0	0	0	0	0	0	0	0	0	0	0	56,227,573
C&I Retrofit	103,468,419	0	0	0	0	0	0	0	0	935,674	0	0	935,674	104,404,093
C&I Direct Install	2,594,236	0	0	0	0	0	0	0	0	1,911,449	0	0	1,911,449	4,505,684
Workforce Development	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Business Energy Analyzer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deep Energy Retrofit	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRAND TOTAL	**$374,162,907**	**$118,692**	**$18,736**	**$705,945**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,882,586**	**$0**	**$13,485,160**	**$16,367,745**	**$391,374,025**

Gas Benefits, 2012 (Lifetime $)														
Program	Gas	Electric			Non-Gas Non-Electric*									TOTAL TRC Benefits
					Resource							Non-Resource	TOTAL	
		Summer Capacity	Winter Capacity	Energy	No. 2 Distillate	No. 4 Fuel Oil	No. 6 Fuel Oil	Propane	Wood	Water	Kerosene			
Residential	**$221,103,902**	**$149,632**	**$22,885**	**$470,749**	**$0**	**$0**	**$0**	**$0**	**$0**	**$45,780**	**$0**	**$0**	**$45,780**	**$221,792,948**
Residential New Construction & Major Renovations	27,030,659	149,632	22,885	470,749	0	0	0	0	0	36,018	0	0	36,018	27,709,943
Residential Heating and Water Heating	125,562,952	0	0	0	0	0	0	0	0	0	0	0	0	125,562,952
MassSAVE	197,765	0	0	0	0	0	0	0	0	0	0	0	0	197,765
Weatherization Program	47,876,584	0	0	0	0	0	0	0	0	9,762	0	0	9,762	47,886,347
Multifamily Retrofit	16,695,075	0	0	0	0	0	0	0	0	0	0	0	0	16,695,075
O Power	3,740,866	0	0	0	0	0	0	0	0	0	0	0	0	3,740,866
Deep Energy Retrofit	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Residential Building Practices and Demonstration Program	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Analysis: Internet Audit Program	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Workforce Development	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Low Income	**$36,279,594**	**$1,082**	**$0**	**$495,484**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$18,758,530**	**$18,758,530**	**$55,534,690**
Low-Income Single Family Retrofit	21,536,594	1,082	0	495,484	0	0	0	0	0	0	0	17,201,337	17,201,337	39,234,497
Low-Income Multifamily Retrofit	14,742,999	0	0	0	0	0	0	0	0	0	0	1,557,193	1,557,193	16,300,193
Commercial & Industrial	**$227,318,599**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$3,643,081**	**$0**	**$0**	**$3,643,081**	**$230,961,680**
C&I New Construction & Major Renovation	74,828,442	0	0	0	0	0	0	0	0	0	0	0	0	74,828,442
C&I Retrofit	149,176,126	0	0	0	0	0	0	0	0	1,096,075	0	0	1,096,075	150,272,202
C&I Direct Install	3,314,031	0	0	0	0	0	0	0	0	2,547,005	0	0	2,547,005	5,861,036
Workforce Development	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Business Energy Analyzer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deep Energy Retrofit	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRAND TOTAL	**$484,702,095**	**$150,714**	**$22,885**	**$966,233**	**$0**	**$0**	**$0**	**$0**	**$0**	**$3,688,861**	**$0**	**$18,758,530**	**$22,447,391**	**$508,289,318**

Gas Benefits, 2010-2012 (Lifetime $)														
Program	Gas	Electric			Non-Gas Non-Electric*									TOTAL TRC Benefits
					Resource							Non-Resource	TOTAL	
		Summer Capacity	Winter Capacity	Energy	No. 2 Distillate	No. 4 Fuel Oil	No. 6 Fuel Oil	Propane	Wood	Water	Kerosene			
Residential	**$538,161,204**	**$349,606**	**$56,027**	**$1,127,202**	**$0**	**$0**	**$0**	**$0**	**$0**	**$109,457**	**$0**	**$0**	**$109,457**	**$539,803,497**
Residential New Construction & Major Renovations	66,650,792	349,606	56,027	1,127,202	0	0	0	0	0	89,060	0	0	89,060	68,272,687
Residential Heating and Water Heating	308,496,333	0	0	0	0	0	0	0	0	0	0	0	0	308,496,333
MassSAVE	394,534	0	0	0	0	0	0	0	0	0	0	0	0	394,534
Weatherization Program	118,655,412	0	0	0	0	0	0	0	0	20,397	0	0	20,397	118,675,810
Multifamily Retrofit	36,471,303	0	0	0	0	0	0	0	0	0	0	0	0	36,471,303
O Power	7,492,830	0	0	0	0	0	0	0	0	0	0	0	0	7,492,830
Deep Energy Retrofit	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Residential Building Practices and Demonstration Program	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Analysis: Internet Audit Program	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Workforce Development	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Low Income	**$86,698,494**	**$2,388**	**$0**	**$1,162,460**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$44,176,494**	**$44,176,494**	**$132,039,836**
Low-Income Single Family Retrofit	50,840,813	2,388	0	1,162,460	0	0	0	0	0	0	0	40,490,968	40,490,968	92,496,629
Low-Income Multifamily Retrofit	35,857,681	0	0	0	0	0	0	0	0	0	0	3,685,526	3,685,526	39,543,207
Commercial & Industrial	**$504,066,357**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$8,081,175**	**$0**	**$0**	**$8,081,175**	**$512,147,533**
C&I New Construction & Major Renovation	174,248,293	0	0	0	0	0	0	0	0	0	0	0	0	174,248,293
C&I Retrofit	322,265,444	0	0	0	0	0	0	0	0	2,814,195	0	0	2,814,195	325,079,639
C&I Direct Install	7,552,620	0	0	0	0	0	0	0	0	5,266,981	0	0	5,266,981	12,819,600
Workforce Development	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Business Energy Analyzer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deep Energy Retrofit	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRAND TOTAL	**$1,128,926,056**	**$351,995**	**$56,027**	**$2,289,662**	**$0**	**$0**	**$0**	**$0**	**$0**	**$8,190,632**	**$0**	**$44,176,494**	**$52,367,126**	**$1,183,990,866**

ii. Savings Summary Table by program: annual savings over life of measures installed during program year

Gas Savings (Annual), 2010														
Program	# of Participants	Gas (MMBTU)	Gas (Therms)	Electric			Non-Gas Non-Electric*							
							Resource							
							MMBTU						Gallons	Non-Resource
				Summer Capacity (kW)	Winter Capacity (kW)	Energy (kWh)	No. 2 Distillate	No. 4 Fuel Oil	No. 6 Fuel Oil	Propane	Wood	Kerosene	Water	
Residential	190,386	650,491	6,504,911	47	31	331,865	0	0	0	0	0	0	363,033	0
Residential New Construction & Major Renovations	1,679	58,680	586,803	47	31	285,408	-	-	-	-	-	-	301,380	-
Residential Heating and Water Heating	32,112	331,270	3,312,696	-	-	-	-	-	-	-	-	-	-	-
MassSAVE	8,950	785	7,851	-	-	-	-	-	-	-	-	-	-	-
Weatherization Program	7,624	114,452	1,144,517	-	-	36,197	-	-	-	-	-	-	61,653	-
Multifamily Retrofit	5,847	35,619	356,194	-	-	10,260	-	-	-	-	-	-	-	-
O Power	125,000	109,685	1,096,850	-	-	-	-	-	-	-	-	-	-	-
Deep Energy Retrofit	23	-	-	-	-	-	-	-	-	-	-	-	-	-
Residential Building Practices and Demonstration Program	50	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Analysis: Internet Audit Program	9,100	-	-	-	-	-	-	-	-	-	-	-	-	-
Workforce Development	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Low Income	3,949	91,210	912,102	1	20	162,020	0	0	0	0	0	0	0	11,932,805
Low-Income Single Family Retrofit	2,498	52,001	520,011	1	20	162,020	-	-	-	-	-	-	-	11,015,018
Low-Income Multifamily Retrofit	1,451	39,209	392,091	-	-	-	-	-	-	-	-	-	-	917,787
Commercial & Industrial	5,931	618,108	6,181,084	0	0	0	0	0	0	0	0	0	76,012,100	0
C&I New Construction & Major Renovation	2,234	196,159	1,961,592	-	-	-	-	-	-	-	-	-	-	-
C&I Retrofit	2,138	399,165	3,991,652	-	-	-	-	-	-	-	-	-	37,383,000	-
C&I Direct Install	1,057	22,784	227,840	-	-	-	-	-	-	-	-	-	38,629,100	-
Workforce Development	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Business Energy Analyzer	500	-	-	-	-	-	-	-	-	-	-	-	-	-
Deep Energy Retrofit	2	-	-	-	-	-	-	-	-	-	-	-	-	-
GRAND TOTAL	200,265	1,359,810	13,598,098	48	52	493,886	0	0	0	0	0	0	76,375,133	11,932,805

Gas Savings (Annual), 2011						
Program	# of Participants	Gas (MMBTU)	Gas (Therms)	Electric	Non-Gas Non-Electric*	
					Resource	Non-Resource (1)

				Summer Capacity (kW)	Winter Capacity (kW)	Energy (kWh)	MMBTU						Gallons	
							No. 2 Distillate	No. 4 Fuel Oil	No. 6 Fuel Oil	Propane	Wood	Kerosene	Water	
Residential	286,675	923,355	9,233,555	64	36	381,352	0	0	0	0	0	0	457,371	0
Residential New Construction & Major Renovations	1,985	69,218	692,177	64	36	330,249	-	-	-	-	-	-	338,346	-
Residential Heating and Water Heating	44,564	464,903	4,649,034	-	-	-	-	-	-	-	-	-	-	-
MassSAVE	11,020	1,256	12,556	-	-	-	-	-	-	-	-	-	-	-
Weatherization Program	9,368	158,851	1,588,508	-	-	39,817	-	-	-	-	-	-	119,025	-
Multifamily Retrofit	7,824	49,128	491,280	-	-	11,286	-	-	-	-	-	-	-	-
O Power	200,000	180,000	1,800,000	-	-	-	-	-	-	-	-	-	-	-
Deep Energy Retrofit	9	-	-	-	-	-	-	-	-	-	-	-	-	-
Residential Building Practices and Demonstration Program	75	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Analysis: Internet Audit Program	11,830	-	-	-	-	-	-	-	-	-	-	-	-	-
Workforce Development	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Low Income	4,807	108,376	1,083,764	1	21	170,760	0	0	0	0	0	0	0	13,485,160
Low-Income Single Family Retrofit	2,802	58,885	588,854	1	21	170,760	-	-	-	-	-	-	-	12,274,614
Low-Income Multifamily Retrofit	2,005	49,491	494,910	-	-	-	-	-	-	-	-	-	-	1,210,546
Commercial & Industrial	7,588	877,999	8,779,986	0	0	0	0	0	0	0	0	0	132,709,650	0
C&I New Construction & Major Renovation	2,810	251,133	2,511,325	-	-	-	-	-	-	-	-	-	-	-
C&I Retrofit	2,655	587,547	5,875,469	-	-	-	-	-	-	-	-	-	43,613,500	-
C&I Direct Install	1,621	39,319	393,191	-	-	-	-	-	-	-	-	-	89,096,150	-
Workforce Development	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Business Energy Analyzer	500	-	-	-	-	-	-	-	-	-	-	-	-	-
Deep Energy Retrofit	2	-	-	-	-	-	-	-	-	-	-	-	-	-
GRAND TOTAL	299,070	1,909,730	19,097,305	65	58	552,113	0	0	0	0	0	0	133,167,021	13,485,160

Gas Savings (Annual), 2012

Program	# of Participants	Gas (MMBTU)	Gas (Therms)	Electric			Non-Gas Non-Electric*							
							Resource							
							MMBTU						Gallons	Non-Resource
				Summer Capacity (kW)	Winter Capacity (kW)	Energy (kWh)	No. 2 Distillate	No. 4 Fuel Oil	No. 6 Fuel Oil	Propane	Wood	Kerosene	Water	
Residential	405,424	1,137,748	11,377,476	81	50	489,461	0	0	0	0	0	0	579,424	0
Residential New Construction & Major Renovations	2,451	85,506	855,061	81	50	433,247	-	-	-	-	-	-	419,120	-

Residential Heating and Water Heating	51,959	529,900	5,298,995	-	-	-	-	-	-	-	-	-	-	-
MassSAVE	13,466	2,041	20,408	-	-	-	-	-	-	-	-	-	-	-
Weatherization Program	11,548	187,805	1,878,052	-	-	43,799	-	-	-	-	-	-	160,304	-
Multifamily Retrofit	10,541	68,496	684,959	-	-	12,415	-	-	-	-	-	-	-	-
O Power	300,000	264,000	2,640,000	-	-	-	-	-	-	-	-	-	-	-
Deep Energy Retrofit	9	-	-	-	-	-	-	-	-	-	-	-	-	-
Residential Building Practices and Demonstration Program	80	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Analysis: Internet Audit Program	15,370	-	-	-	-	-	-	-	-	-	-	-	-	-
Workforce Development	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Low Income	6,210	140,580	1,405,804	1	30	239,562	0	0	0	0	0	0	0	18,758,530
Low-Income Single Family Retrofit	3,847	79,983	799,834	1	30	239,562	-	-	-	-	-	-	-	17,201,337
Low-Income Multifamily Retrofit	2,363	60,597	605,971	-	-	-	-	-	-	-	-	-	-	1,557,193
Commercial & Industrial	9,345	1,192,351	11,923,515	0	0	0	0	0	0	0	0	0	165,668,995	0
C&I New Construction & Major Renovation	3,539	324,194	3,241,945	-	-	-	-	-	-	-	-	-	-	-
C&I Retrofit	3,275	817,938	8,179,380	-	-	-	-	-	-	-	-	-	49,844,000	-
C&I Direct Install	2,030	50,219	502,190	-	-	-	-	-	-	-	-	-	115,824,995	-
Workforce Development	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Business Energy Analyzer	500	-	-	-	-	-	-	-	-	-	-	-	-	-
Deep Energy Retrofit	1	-	-	-	-	-	-	-	-	-	-	-	-	-
GRAND TOTAL	420,980	2,470,680	24,706,795	82	81	729,023	0	0	0	0	0	0	166,248,419	18,758,530

Gas Savings (Annual), 2010-2012														
Program	# of Participants	Gas (MMBTU)	Gas (Therms)	Electric			Non-Gas Non-Electric*							
							Resource							
							MMBTU						Gallons	Non-Resource
				Summer Capacity (kW)	Winter Capacity (kW)	Energy (kWh)	No. 2 Distillate	No. 4 Fuel Oil	No. 6 Fuel Oil	Propane	Wood	Kerosene	Water	
Residential	882,485	2,711,594	27,115,942	192	118	1,202,678	0	0	0	0	0	0	1,399,828	0
Residential New Construction & Major Renovations	6,116	213,404	2,134,041	192	118	1,048,904	0	0	0	0	0	0	1,058,846	0
Residential Heating and Water Heating	128,635	1,326,073	13,260,726	0	0	0	0	0	0	0	0	0	0	0
MassSAVE	33,436	4,082	40,815	0	0	0	0	0	0	0	0	0	0	0
Weatherization Program	28,540	461,108	4,611,077	0	0	119,813	0	0	0	0	0	0	340,982	0
Multifamily Retrofit	24,212	153,243	1,532,433	0	0	33,961	0	0	0	0	0	0	0	0
O Power	625,000	553,685	5,536,850	0	0	0	0	0	0	0	0	0	0	0

Deep Energy Retrofit	**41**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Residential Building Practices and Demonstration Program	**205**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Energy Analysis: Internet Audit Program	**36,300**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Workforce Development	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Low Income	**14,967**	**340,167**	**3,401,671**	**2**	**72**	**572,343**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**44,176,494**
Low-Income Single Family Retrofit	**9,147**	**190,870**	**1,908,698**	**2**	**72**	**572,343**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**40,490,968**
Low-Income Multifamily Retrofit	**5,819**	**149,297**	**1,492,972**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3,685,526**
Commercial & Industrial	**22,864**	**2,688,458**	**26,884,584**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**374,390,745**	**0**
C&I New Construction & Major Renovation	**8,583**	**771,486**	**7,714,862**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
C&I Retrofit	**8,068**	**1,804,650**	**18,046,501**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**130,840,500**	**0**
C&I Direct Install	**4,708**	**112,322**	**1,123,221**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**243,550,245**	**0**
Workforce Development	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Business Energy Analyzer	**1,500**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Deep Energy Retrofit	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
GRAND TOTAL	**920,315**	**5,740,220**	**57,402,198**	**194**	**190**	**1,775,021**	**0**	**0**	**0**	**0**	**0**	**0**	**375,790,573**	**44,176,494**

E. Bill Impacts

1. *Overview*

Consistent with the goal of the three-year Plan to provide for the acquisition of all available energy efficiency and demand reduction resources that are cost effective or less expensive than supply, the Program Administrators sought to develop a statewide Plan that provides for this acquisition with the lowest reasonable customer contribution. G.L. c. 25, § 21(b). Relatedly, consistent with the requirements of the Act and of the Department's Order in D.P.U. 08-50-A, the Program Administrators worked diligently and collaboratively to review and analyze the rate and bill impacts associated with the implementation of the Plan in order to ensure that such impacts are equitable. More specifically, the Program Administrators have worked with the D.P.U. 08-50 Rate and Bill Impact Working Group to develop a common analytic model that can be used by all Program Administrators (as well as by interested parties) to review the rate and bill impacts associated with the implementation of the Plan—for participants, non-participants and average customers—in each rate class, for each Program Administrator. This sophisticated model is the result of ten full meetings of the D.P.U. 08-50 Rate and Bill Impact Working Group (and numerous follow-up conferences) and reflects valuable input and ideas from diverse interested parties, including the DOER, the Department, the Attorney General's Office, Council members and the Consultants.[12] The Program Administrators acknowledge and thank the participants in this diverse Working Group for their efforts in developing the models reflected in Appendix G. In developing this model, Program Administrators have been guided by the following core provisions of the Department's Order in

[12] The Program Administrators note that these efforts do not indicate that any such party has reviewed or approved the bill impacts resulting from this Plan at this date.

D.P.U. 08-50-A, which make clear that not only the costs of energy efficiency efforts, but also the benefits of such efforts must be reflected in the final billing analyses to be submitted today:

- Rate and average bill impact analysis should be performed on a portfolio basis, as opposed to a program-by-program basis, because it is the entire portfolio of programs that will affect customer rates and bills.

- Rate and average bill impact estimates should account for the impacts over the long term (e.g., for the average life of efficiency measures), in order to capture the full effect of energy efficiency savings and costs.

- Rate and average bill impact analyses should compare the estimated rates and bills with the energy efficiency programs in place to the estimated rates and bills that would be in place in the absence of the energy efficiency programs.

- Rate and average bill impact estimates should be conducted for each customer class, as well as for all customers on average.

- Rate and average bill impact estimates should present not only the absolute dollar increase in distribution rates and bills but also the percentage increase in distribution rates and bills.

- Rate and average bill impact estimates should present the percentage impact on total rates and bills, as well as the percentage impact on distribution rates and bills.

- Rate and average bill impact estimates should include ratepayer costs associated with the mandatory charge of 2.5 mills per kWh, as well as any other funds generated from the forward capacity market or the funds generated by RGGI, as these funds are not directly recovered from the Program Administrator's electricity customers.

- Rate and average bill impact estimates should account for the revenues that are collected through a revenue decoupling mechanism or through an interim lost base revenue adjustment mechanism.

D.P.U. 08-50-A at 57-58.

Further, as required by the Department's Order in D.P.U. 08-50-A, the model developed in the Working Group allows for:

- Estimates of both absolute and percentage impacts on total customer bills. *Id*. at 58.
- Factors in the effects of DRIPE. *Id*. at 59.
- The comparison of effects among programs participants and non-participants. *Id*. at 59.

The Program Administrators have integrated this common analysis model into their program planning efforts and would be pleased to offer a technical session to interested Council members on its development and operation. The Program Administrators will also be confirming the model in accordance with the Order in D.P.U. 08-50-B.

Appendix F contains a rate and bill impact analysis for an illustrative residential customer utilizing actual PA-specific savings goals and budgets contained within this Plan. In order to provide a comprehensive analytic tool, this analysis shows rate and bill impacts both with and without outside financing at the levels contemplated in this Plan, and with and without LBR, are required by D.P.U. 08-50-B. Further, each Program Administrator has prepared and submitted a rate and bill impact analysis for residential, low-income, small C&I, and large C&I rate classes using this model in a supplement to this Plan that is also being filed with the Council today.

The Program Administrators emphasize that the actual rate and bill impact that will be realized by a customer will depend on several variables, including the cost of service in a particular Program Administrator's service territory, the customer's actual individual usage, the level and quality of measure installation, and the availability of public or private funds other than those collected through the SBC for application towards energy efficiency expenditures, such as proceeds realized from the FCM or from cap-and-trade programs (*e.g.*, the RGGI). Utilizing the

model described, each individual Program Administrator will include a detailed, PA-specific rate and bill impact analysis for each of the four sectors noted above in its individual filing to be made at the Department on October 30, 2009.

F. Program Descriptions

1. *Strategic Overview of Residential, Low-Income, and C&I Programs*

The Commonwealth of Massachusetts faces an unprecedented opportunity to build upon the past twenty years of effective energy efficiency delivery strategies for residential, low-income, C&I, and municipal customers. Indeed, the passage of the Green Communities Act establishes the direction that Program Administrators will adopt going forward to comply with the requirement to meet future energy needs through cost-effective energy and demand reduction resources. The strategies to promote greater energy savings and peak demand reductions will build upon existing programs to date, with the intent to move to larger scale delivery of renewable, peak demand and energy efficiency solutions.

The depth of existing programs will significantly expand over the next three years as new initiatives are introduced to increase participation and savings. Existing programs that address potential energy and demand savings in both existing buildings and new construction, which have a history of producing significant savings, will be ramped up and new initiatives will be developed and introduced. The platform for increasing savings cost-effectively is based upon pursuing the following principles: (1) integrating gas and electric programs into a portfolio of fuel-neutral programs to the extent reasonable; (2) striving for seamless delivery from the customer's perspective; (3) deeper penetration of energy efficiency and automated load management measures in existing programs combined with the introduction of innovative and targeted approaches and options; (4) developing an expanded, trained workforce capable of

providing consistent program messaging and services, while maintaining high quality levels; (5) collaborating with community-based organizations that have long-standing relationships with homeowners, tenants and small businesses in economically marginalized communities, to develop community-based pilot initiatives that implement a tailored neighborhood approach to energy efficiency service; and (6) developing on-bill and other financing solutions to overcome cost barriers for residential and C&I customers.

2. *Consistent Messaging*

A critical component of integration and seamless delivery is consistent messaging. A statewide website (marketing portal) and marketing approach to make customers aware of program offerings will minimize the market confusion that can result from any competing advertising campaigns that may overlap in the mass media. In addition, individual Program Administrators will continue to implement their own complementary marketing initiatives to reinforce and support the overall statewide marketing strategy, as well as address unique local conditions and/or sub-markets in their service areas. These individual activities will be undertaken in consultation with all other Program Administrators in order to avoid inadvertent inconsistent messaging.

3. *Increased Savings Targets*

Meeting targeted 2010 through 2012 savings goals will require expanding existing programs and strategies to achieve deeper, more comprehensive savings; introducing and promoting new initiatives and technologies; and increasing marketing for all program offerings. Initiatives and approaches that will be expanded in 2010 include, but are not limited to: municipal initiatives; whole-house and building assessment; advanced lighting solutions; and initiatives targeting specific markets, such as the residential "deep retrofit" pilot and the "Office

of the Future" approach which targets commercial buildings, as well as an emphasis on increased automation of loads to provide customers with flexible supply opportunities. The Program Administrators will also work with community-based organizations to evaluate the potential for community mobilization initiatives to be conducted in the form of pilots. Each of these initiatives is described in more detail in the program descriptions.

4. *Review of New Technologies*

There is a steady flow of new technologies being developed and offered to increase the efficiency of energy use for residential and C&I customers. Before incorporating new or unfamiliar technologies in their program offerings, the Program Administrators are responsible for performing a thorough review to ensure that such products or device will provide cost-effective energy savings for their customers. To address the need for these reviews, the Program Administrators have established a Standing Technical Committee ("STC").

The STC consists of key technical staff from each Program Administrator as well as from the Consultants. The STC reviews technical issues of statewide interest. It provides documented technical interpretations and technology assessments to the program implementers and is the authority for consistent program interpretation of technical matters for all of the participating Program Administrators. The STC has developed a set of protocols for the content of their review and procedures for documenting and disseminating their conclusions and technical interpretations.

Requests for program consideration of a new or unfamiliar technology that come from a vendor or customer are forwarded to the technical committee by the receiving Program Administrator. This group can undertake or direct such tasks as:

- Research and analysis of specific measures that are candidates for inclusion in the programs.

- When appropriate and agreed to by the respective Program Administrators, development of common program implementation materials or procedures including: technical specifications, technical study/commissioning protocols; equipment baseline reference sheets; inspection forms; and other technical and administrative support material, for use by the respective Program Administrator staff and contractors.

- Recommendation of new items or changes to existing items on prescriptive offering lists, adjustments to savings estimations, and additions or modifications to the list of acceptable measures on an annual or cycle basis.

- As-needed assignments to collect data and/or to produce recommendations which would allow the Program Administrators to address unanticipated program implementation issues.

5. *Community-Based Efforts*

When thoughtfully designed and executed, community-based efforts can be a key tool in effecting deep, comprehensive penetration of energy efficiency in a neighborhood, city, or town. The Program Administrators seek to harness the power of communities to achieve broad-based participation in the Commonwealth's programs.

Over the years, both here in Massachusetts and elsewhere, much has been learned about why some community efforts succeed and others fail. The guiding principles of a successful community-based marketing initiative must include at a minimum the following attributes:

- **Community Engagement**

Successful community-based partnerships fully connect communities and Program Administrators; they focus on grassroots community outreach by providing focused energy education and resources linked to local motivation and empowerment to manage and reduce

energy consumption. These partnerships develop and deliver comprehensive, individualized initiatives. The keys to success are understanding and addressing the unique needs of partner communities to achieve all cost-effective energy savings- including both gas and electric opportunities- and to reduce greenhouse gas emission. Successful partnerships involve all sectors within the community and may include such activities as:

- Facilitating collaboration among students, teachers, parents, Program Administrators and the greater community to provide energy education fostering long-term energy savings.
- Assisting school systems in developing comprehensive, standards-based curricula, resources, materials and professional development for educators, school facility audits, and special events.
- Connecting local businesses with their serving Program Administrators to address the specific challenges each business faces in reducing energy usage, lowering utility bills, cutting greenhouse gas emissions, and educating their tenants, management and facility operations personnel.
- Partnering with community-based organizations to develop outreach and program delivery strategies.
- Partnering with local businesses (builders, contractors, electricians, plumbers, HVAC service providers, equipment suppliers, etc.) to familiarize them with program opportunities, energy efficiency practices and implementation requirements and to utilize them, where appropriate, as one of the program's service delivery channels.

In successful programs, the Program Administrator promotes a portfolio of opportunities that addresses all of the community's expressed needs, such as services for new construction, home energy services, and ENERGY STAR products for existing buildings, as well as information and facilitation of renewable energy, including information about CHP, net metering, and interconnection of generators. The Program Administrator provides energy saving tips on everything from heating and air conditioning to water heating and lighting, from cooking

to refrigeration, and through partnering efforts, the Program Administrator provides support for local economic development.

- **Community Commitment**

Community marketing achieves deeper penetration by adding a "pull" component to the traditional "push" of energy efficiency programs. Successful efforts are truly driven by the community and its recognized leaders, with the Program Administrator providing program project management and technical support in addition to guidance on overall energy savings goals. Without full community commitment, a particular program will achieve no more success than one driven by a traditional marketing effort.

With this in mind, Program Administrators will seek significant commitment from local community leaders both inside and outside of government. The Program Administrators recognize the potential for community-based programs to enhance the goals of the Green Communities Act both in terms of meeting energy savings targets and contributing to the non-energy goals of the Act, such as job growth. As with all programs to be implemented, however, the Program Administrators recognize the need for both the benefits and costs of this approach to be quantified to determine their overall cost-effectiveness.

The Program Administrators will select the communities with the greatest opportunities for success, based on an assessment of the proposals submitted. Because community-based efforts require a substantial and focused effort by both the Program Administrator and the community, the Program Administrators must focus their energies by limiting their initiatives to a few communities at any given time. This graduated strategy will allow for mid-course corrections which will enhance the likelihood of success and minimize risk. These pilots will be

evaluated to assess the effectiveness of the proposed strategies with respect to both direct energy and non-energy benefits.

NSTAR and National Grid are currently in discussions with the Green Justice Coalition ("GJC") regarding a particular program model which they call "Community Mobilization Initiatives" ("CMI"). The GJC defines CMI as

> "… a new term for energy efficiency outreach campaigns where community-based organizations that have long-standing relationships with homeowners, tenants and small businesses in economically marginalized communities and other groups that have a strong record of clean energy education and outreach, develop a 'community mobilization outreach model' that implements a large-scale 'bundled' neighborhood approach to energy efficiency retrofitting."

The GJC further states that this model has the potential to promote higher energy savings through deeper retrofits, as well as cost-savings through economies of scale. In addition, such an approach may prove to be particularly fruitful in the state's lower/moderate income communities, which have been traditionally harder to reach (including the service territories of Fitchburg Gas and Electric and the New England Gas Company).

Through the productive discussions that have taken place to date, the Program Administrators have been able to educate the community-based organizations on the energy efficiency services delivery process and at the same time begin to learn about the interests and skill sets of the community-based groups with respect to potentially delivering agreed-upon program components in selected communities. Further discussion with respect to the number of potential pilots and the size and scope of each pilot will take place once NSTAR and National Grid have received and reviewed the proposal(s) from the GJC. It is incumbent on the Program Administrators to fully assess proposed plans for expenditures of SBC funds for CMI or any other program pilot before any funds are committed.

6. *Workforce Development*

Additional staffing resources, both internal and external, will be needed to achieve mandated saving levels. Expanding outreach to customers will be an important factor in increasing participation and the number of completed projects. As the number of participants and projects increase, additional services from the local vendor and equipment supplier community will be required. It will also be critical to develop an expanded, diverse, and well-trained workforce capable of providing consistent program services, while maintaining high quality levels and safety standards.

The Program Administrators are committed to statewide efforts to expand training opportunities including the following:

- Working with colleges and universities to educate them on industry needs and develop appropriate coursework
- Supporting co-op programs
- Working with local vendors and equipment suppliers on cross-training initiatives
- Operating training facilities (including the Fitchburg training facility)
- Partnering with union-supported training programs to ensure that both the experience of training provider and associated curriculum will allow for meeting the safety and quality standards currently being met through the delivery of existing programs.

As indicated above, the Program Administrators are also evaluating the potential for pilot programs geared toward enlisting community-based groups to perform outreach and expanding the use of local contractors in program delivery. These pilot programs are designed to promote workforce development while encouraging participation by a broad range of market actors. The Program Administrators will provide regular updates to the Council and its Consultants on progress made in the area of workforce development

7. *Long-term Goals*

The long-term goal is to provide, as appropriate, a consistent set of statewide programs and strategies that can be delivered to customers in a seamless fashion, regardless of whether the customer is served by a combined gas/electric Program Administrator, by different gas and electric Program Administrator, or has facilities or projects in multiple utility service areas. Program Administrators will explore ways to accommodate this goal, potentially including providing services under contract to other Program Administrators (particularly in unique circumstances).

Achieving the multiple goals set forth in the Act will take time. In 2010 however, Program Administrators expect to see markedly increased consistency in participation requirements; available core services and measures; conditions, exclusions and limits on program capabilities; and incentive amounts associated with individual program measures.

Program Descriptions

The program designs in this section have been collaboratively developed by the Program Administrators. As a critical part of this program design process, the Program Administrators reached out to interested parties, including the Consultants and the low-income program delivery network, in order to develop state-of-the-art program designs that enjoy broad-based support. In some instances, the designs set forth below are fully developed and contain detailed information down to the exact level of proposed customer incentives. In other instances, some details of the program designs remain under development and will continue to be discussed and evaluated, not only during the review of this Plan by the Council, but also in advance of each Program Administrator's specific three-year plan to be filed on or before October 31, 2009. In developing these program designs, the Program Administrators sought to be directly responsive to the

suggestions advanced in the Priorities Resolution, and the Program Administrators will continue to work with Council members, the Consultants, and other interested parties on these designs. A critical component of these program designs is enhanced consistency, integration, and coordination across all Program Administrators. As indicated in the program descriptions below, it is the Program Administrators' goal that, except in limited circumstances based upon a Program Administrator's unique circumstances (*e.g.*, the specific needs of a service territory or the desire to operate a pilot effort), these program designs will be implemented by all Program Administrators on a coordinated statewide basis. This coordination and consistency should: (1) increase customer satisfaction and decrease customer confusion throughout Massachusetts; (2) simplify messages and marketing campaigns to customers, thereby making them more powerful; and, (3) ultimately, help the Program Administrators achieve broader and deeper energy savings. The Program Administrators look forward to reviewing these designs with the Council and other interested parties and finalizing state-of-the-art programs for implementation in 2010.

8. *Residential Programs Descriptions*

Residential High Efficiency Heating, Water Heating & Controls Program

Primary Objective	The objective of the program is to overcome market barriers to energy efficient heating equipment and to increase program awareness among consumers, plumbing/heating contractors, and home builders/developers, through rebates, incentives, education, and training opportunities. The Residential High Efficiency Heating, Water Heating, and Controls Program is designed to promote the install in residential applications of high efficiency gas furnaces and hot water boilers, energy efficient steam boilers; energy efficient indirect, tankless on demand, and stand alone water heating equipment; programmable thermosta and boiler reset controls. The program offers rebates for equipment in both new construction and the replacement/retrofit market. Incentives and rebates are administered via the GasNetworks collaborative and coordinated with the electric Heating, Ventilation and Air Conditioning Program (HVAC) Program. The objective of the program is to encourage consumers to install the most efficient gas heating technologies available when replacing older, less efficient equipment and when considering equipment in new construction. The program seeks to overcome market barriers and increase program awareness among consumers, plumbing/heating contractors, and home builders/developers, through rebates, incentives, education, and training opportunities.
Program Inception	The program was initially offered in 1997. GasNetworks is a nationally-recognized, award-winning collaborative of local natural gas companies serving nearly 2 million residential and C&I customers throughout New England. It has been promoting energy efficiency and the use of high efficiency natural gas technologies since 1997. The mission of this unique award-

Program Inception (cont.)	winning collaborative of natural gas utilities is to work with governmental agencies, trade allies, and consumers, in order to promote energy-efficient technologies. Successful strategies include the creation of common energy efficiency programs, education of consumers, and promotion and sponsorship of quality contractor training and equipment awareness programs of ever-changing natural gas technologies. Massachusetts members include Bay State Gas, Berkshire Gas, National Grid, New England Gas, NSTAR Gas, and Unitil.
2010-2012 Savings Targets	Please see PA-Specific Filings.
2010-2012 Budget	Please see PA-Specific Filings.
Joint vs. Sponsor-Specific Offering	Joint
Program Design	The Residential High Efficiency Heating, Water Heating, and Controls Program is designed to promote the installation of high efficiency gas furnaces and hot water boilers, energy efficient steam boilers, energy efficient indirect, tankless on demand, and stand alone water heating equipment, thermostats, and boiler reset controls in residential applications. The program offers rebates for equipment with input ratings of 300,000 BTU or less in the new construction and replacement market (*i.e.*, lost-opportunity applications). In collaboration with the Cool Smart electric efficiency program, GasNetworks also offers a dual electric/natural gas rebate program for high-efficiency furnaces equipped with Electronically Commutated Motor ("ECM") or equivalent advanced furnace fan systems. This program was launched on May 1, 2003, and represents the first dual-rebate program of its kind in the country. Going forward, the two programs will work together to coordinate common training and communication efforts with trade allies.

Target Market	Residential Target Markets include: • New Construction - Heating Equipment / Systems • Existing Homes - Replacement of Existing Heating Equipment (new equipment/old systems) The program targets these market segments: • Residential Home Owners with natural gas heating equipment • Home Designers and Architects • Engineers • Plumbing and HVAC Contractors and Technicians • Suppliers of High Efficiency Heating equipment and related parts/accessories • Manufacturers and Distributors of High Efficiency Heating equipment • New Home Builders and Remodeling Contractors
Marketing Strategy/Approach	The program is jointly marketed by GasNetworks member companies. The program will be promoted through a variety of marketing and educational campaigns including, but not limited to: upstream outreach, direct mail, radio and print media, bill inserts, trade ally events, sponsorships, and program brochures. The program will also be promoted via individual Program Administrator websites, and the GasNetworks collaborative website, (www.gasnetworks.com), where consumers and contractors can learn about the programs, download rebate applications, and obtain other valuable energy efficiency information. All of these functions will be integrated into the unified, statewide website scheduled to be completed by the first quarter of 2010. In addition to PA-specific marketing activities, the Program Administrators have learned over the years that trade ally events and training sessions prove to be a very critical and effective means of promoting these types of programs. Thus, the Program Administrators will promote this program through various PA-sponsored plumbing and heating training events, trade shows, and trade ally events in conjunction with the GasNetworks training seminars. In addition, the Program Administrators will promote program education and awareness utilizing manufacturer/distributor level marketing and training infrastructure as a platform to educate contractors

Marketing Strategy/Approach (cont.)	and wholesalers at a regional level. These activities will be well coordinated with electric programs, where possible. Program marketing will be supplemented by direct vendor outreach to equipment suppliers and installation contractors. This will provide direct communication on programs and qualifying equipment, as well as maximize exposure to the contractor base. In addition to customer rebates, installation contractors may also receive incentives for the installation of high-efficiency heating equipment to incentivize both parties involved in the decision making process and further encourage the installation of high-efficiency heating equipment. The Program Administrators will also market and leverage all available federal tax credits where applicable, as well as all supplemental consumer incentives (*e.g.*, equipment manufacturers) as a means to increase consumer adoption of high efficiency heating equipment. Additionally, the Program Administrators plan to provide continued support and promotion of the statewide branding efforts and strategic marketing plans to establish common branding themes across programs that will leverage program integration opportunities and broad-based outreach efforts to promote broader and deeper energy savings.
Target End Uses	Residential space and water heating fueled by natural gas.
Recommended Technologies	▪ Condensing furnaces and boilers where feasible ▪ Electronically commutated fan motors, which provide higher electric efficiency for warm air distribution
Financial Incentives	The equipment criteria and incentive levels proposed for residential heating customers who participate in this program are as follows:

Financial Incentives (cont.)	Furnace, 92%AFUE or greater	$400
	Furnace, 92%AFUE or greater w/ECM*	$500
	Furnace, 94% AFUE or greater w/ECM*	$650
	Boiler, 85% AFUE or greater	$500
	Boiler, 90% AFUE or greater	$1,000
	Combo Boiler-On Demand condensing unit	$1600
	Combo Boiler-On Demand non-condensing unit	$1000
	Steam boiler, minimum 82% AFUE with electronic ignition	$200
	Indirect Water Heater	$500
	Tankless On-Demand Water Heater, with an Energy Factor of 0.82 or greater and electronic ignition	$700
	Stand Alone Water Heater with an Energy Factor of 0.62 or greater	$50
	Condensing Gas Water Heater	$500
	Programmable Thermostats	$25
	Boiler Reset Controls	$200

Financial Incentives (cont.)	* $200 of this rebate is funded by electric Program Administrators as part of an integrated approach that promotes high efficiency gas furnaces that are also electrically efficient.
Delivery Mechanism	The program is administered by each gas Program Administrator and coordinated regionally through GasNetworks collaborative. GasNetworks utilizes a third-party administrative contractor, secured through a competitive bid process, to administer the rebates to customers. This contractor is responsible for tracking and reporting program activity to gas Program Administrators. The Program Administrators plan to take advantage of additional delivery mechanisms such as MassSAVE to promote high efficiency equipment installations as part of a comprehensive whole house approach to achieve broader and deeper energy savings. This scenario also supports seamless integration opportunities as well as the ability to develop "packaged" incentive offerings to drive consumer participation and adoption of new technologies.
Joint Program Administrator Enhancements Planned for 2010-2012	The Program Administrators, and GasNetworks as a group, will strive towards creating a seamless integration of the gas energy efficiency programs and the electric energy efficiency programs as Program Administrators and energy providers continue to educate residential customers and market actors such as contractors, suppliers, builders, and engineers about the benefits of using high efficiency heating, water heating, and cooling equipment. To this end, Gas Networks' High Efficiency Heating and Hot Water Program Administrators will work with electric Program Administrators (CoolSMART) to procure a single, joint circuit rider to support both programs in the field. The Program Administrators also plan to support development of workforce and contractor training efforts that provide increased educational opportunities as a means to ensure that new and existing contractors acquire the necessary skill sets to promote and install high efficiency heating equipment. Training will concentrate on raising the bar for quality installations and development of certification standards (*e.g.*, Building Performance Institute) and licensing where appropriate. The Program Administrators plan to utilize all publicly available institutional resources such as community colleges, vocational schools, and state licensing boards as well as independent and national organizations dedicated to quality installation standards and practices.

Program Administrator-Specific Elements	Please see PA-Specific Filings.
Three-Year Deployment	The gas Program Administrators believe that increases in equipment incentive levels may be required to address market barriers and achieve higher levels of participation and savings goals during 2010-2012. Indeed, rebate levels approaching full system incremental cost may be required to address certain market barriers including the recent down turn in the economy. The depressed economy may dramatically reduce consumer spending towards the replacement of functional as well as old, broken, but repairable heating equipment. In order to address this structural barrier, the Program Administrators have proposed an "early replacement" incentive that will target old, inefficient--but still operating--heating equipment for replacement with high efficiency equipment, which will require an energy audit through the Residential Conservation Services/MassSAVE program.[13] The gas Program Administrators will also work to progressively expand attic duct sealing offerings, preferably integrated with the electric Program Administrators via the MassSAVE and CoolSmart programs. In addition, GasNetworks will continue to: • Make customers aware of high-efficiency gas heating equipment and the energy savings that can be achieved • Increase market sector awareness and demand for high-efficiency gas heating equipment • Facilitate the purchase of high efficiency gas heating equipment • Provide high-quality training to trade allies such as plumbing and heating contractors • Increase trade ally awareness of the benefits of high-efficiency gas heating equipment • Work with regional groups to support research on and adoption of building code and appliance standards

[13] As a budgeting matter, please note, some Program Administrators have budgeted for this item in the weatherization program, while National Grid has budgeted for this item in the HEHE program.

Three-Year Deployment (cont.)	• Work with the electric HVAC programs to integrate the circuit rider function and jointly promote both programs. • Jointly promote brushless fan motors as well as attic duct sealing. Further, the gas Program Administrators will also strive to identify and support gas and electric program integration opportunities where appropriate as a means to increase consumer participation, gain economies of scale, create consumer-focused transparency across programs, and achieve broader and deeper energy savings. As is standard practice, gas Program Administrators will continue to evaluate emerging natural gas- related technologies (*e.g.*, micro combined heat and power – MCHP units) that provide opportunities to either pilot or introduce on a broad scale that maximize the Program Administrator's ability to achieve greater savings and increased market penetration.
Special Notes	The preceding program description is designed to support the successful attainment of the Green Communities Act's energy efficiency investment goals and environmental benefits. Further, it is the intent of the Program Administrators to support the Council and its Consultants through a recognized ongoing iterative planning process to develop and implement plans that meet the objectives of the Council's Priorities Resolution document. This program design is intended to addresses a number of applicable Council priorities including: • Providing program consistency through this program. • Focusing on maximizing incentive values and minimizing overhead costs in this program. • Striving to provide all customers with an opportunity to lower energy bills through the purchase and installation of energy efficient products. • Striving to provide seamless delivery and integration of incentives with other program delivery mechanisms such as the MassSAVE, CoolSmart, New Construction, and Multi-family programs. • Providing user-friendly programs by offering multiple paths/opportunities for participation

Special Notes (cont.)	• Coordinating with other programs for outreach communication and marketing strategy. • Addressing elements such as a focus on upper tier equipment, emerging technologies, and the integration with other programs where potential bundling of consumer incentives may generate deeper and broader energy savings. • Coordinating with other programs on an integrated website. • Coordinating of contractor training programs to support a sufficient and quality installation focused workforce. Also, the Program Administrators are working on an integrated gas and electric initiative (across customer classes) to support progressive building codes and appliance efficiency standards. The Program Administrators are reviewing a very recent draft proposed description of these efforts that they are working on collaboratively with the Consultants. The Program Administrators will share this description with the Council when it is finalized.

Residential Conservation Services / MassSAVE

Primary Objective	To provide residential customers with energy efficiency recommendations that enable them to identify and initiate the process of installing cost-effective energy efficiency upgrades. The Residential Conservation Services (RCS)/MassSAVE Program makes it easy, clear, and compelling for customers to participate in all comprehensive energy efficiency programs by providing information through bold outreach mechanisms, incentives, and multiple financing options. The program exemplifies a program-as-a-system approach where all components work together to support the success of achieving deeper energy savings per customer. The Program Administrators plan to increase the number of energy efficiency vendors and contractors while raising the level of quality control.
Program Inception	During the period 1980-2000, the RCS/MassSAVE program was an educational program encouraging customers to upgrade the efficiency of their homes. Beginning in 2001, the RCS/MassSAVE program began to change its emphasis from education only to education and measure implementation. Customers are now offered incentives to implement energy saving measures in their homes. The program has continued to increase cost effective incentive packages each year leading to greater energy savings and increased implementation.
2010-2012 Program Goals	Please see PA-Specific Filings.
2010-2012 Budget	Please see PA-Specific Filings.
Joint vs. Program Administrator-Specific Offering	Joint

Program Design	The program is committed to a comprehensive whole-house approach and seeks to maximize both electric and gas energy savings (including fuel-neutral incentives). The program plans to fully integrate the RCS/MassSAVE and gas weatherization programs, so that customers experience "one program" as opposed to multiple offerings. Through the intake process, the customer's primary heat source will be identified. The purpose of the screening is to steer customers using natural gas for space heating to the gas Program Administrators and customers using electric, oil or propane for space heating to the electric Program Administrators. Exceptions to this guideline may occur (*e.g.*, specialized high bill complaints, community outreach programs, and/or prior mutual agreements), and in these cases, the electric Program Administrators will seek to negotiate in good faith with the gas Program Administrators to achieve a resolution that serves the best interest of the consumer, maximizes savings opportunities on a fuel-neutral basis and allows for the overseeing Program Administrator to claim savings. The program is essential to achieving maximum program success and deeper energy savings. This is a significant leap forward, making distinctions between programs indiscernible to consumers. The program clearly defines the process and expectations of the customers up front and identifies those customers interested in investing in controlling their future energy costs. The level of service is intended to be flexible, providing information to a broad group of customers, with information regarding deeper retrofit services and renewable opportunities supplied to interested parties. All customers who call the MassSAVE toll-free number to learn about the program are asked several questions to determine their need for and general interest in making energy-efficient improvements. The Program Administrators are dedicated to providing prompt customer service; the goal is to limit the response time between the initial customer call and the first visit to thirty days or less. The Program Administrators wish to provide an even quicker response time and will strive to achieve that outcome while recognizing factors outside of the Program Administrators control that create a demand for services. Customers are guided to appropriate program services provided by energy efficiency vendors including targeted energy efficiency information, advanced diagnostics, efficiency rebates, and deep energy retrofit support. (Low-income customers are referred to appropriate low-income programs.) When appropriate, a series of home visits are offered to further engage the customer and proceed in a logical and methodical process of identifying and informing customers of all available energy savings opportunities.

Program Design (cont.)	The home visits include: • The first visit, referred to as the Screening Visit, is scheduled by a PA-approved vendor promptly after the initial customer phone call and is available at a variety of times to encourage maximum customer participation. This is an in-home visit designed to provide general information and education about energy efficiency and identify opportunities and challenges for energy saving installations. Identification of opportunities may include estimating time and labor needs for subsequent direct installation measures and a solar site assessment during the second or Diagnostic Visit. The Screening Visit will identify customers' specific needs and direct them to other energy-efficiency resources as appropriate. Should a customer choose not to proceed with the Diagnostic Visit, the initial assessment allows Program Administrators to collect customer data for future targeted marketing efforts. Instant energy savings are realized during the Screening Visit. With the customer's permission, CFLs and, when applicable, Light Emitting Diodes ("LEDs") are installed for free in all appropriate locations, as are low-flow shower heads and faucet aerators. The instant savings measures installed during the Screening Visit are intended, on average, to exceed the expected average cost to deliver this initial visit. • The Diagnostic Visit includes a comprehensive energy assessment including a variety of diagnostic techniques such as blower door tests, infrared scanning, and duct leakage testing (based on vendor determination). In all cases where the customer elects the comprehensive air sealing offer, a blower door test will be performed to maximize air leakage reduction and maintain combustion safety standards. Wherever feasible, full installation of air sealing, duct sealing, and programmable thermostats are provided at no cost to the customer. The savings derived from the direct install measures are designed to cover the cost of the visit. This visit will also identify and recommend specific energy-efficient upgrades that require professional contractors, as well as, a customer contribution. The energy advisor explains the contractor services required to install recommended measures, as well as all available energy efficiency financial incentives. • The Quality Assurance Visit allows all work to be inspected through a combination of methods including phone survey, postcard, e-mail or actual site visit by a third-party PA-approved vendor to

Program Design (cont.)	ensure that contractor-installed measures are accurate, professional, and safely installed based on program standards and to ensure program savings. • Program Administrators strive to maximize energy savings by promoting and supporting contractor training and education in an effort to establish a broader workforce knowledgeable of proper installation techniques. The goal is to have a sustainable and experienced workforce that is focused on achievable maximum energy savings ready and able to meet customer demand. As the Program Administrators continue to focus on program integration with the electric programs, the Program Administrators will work with CoolSMART and others to develop an installation protocol that will include the "right sizing" of systems ensuring that consumers are having the correct size and most efficient heating system installed.
Target Market	All non-low-income residential customers living in single-family houses or one- to four-unit multi-family buildings, regardless of heating fuel, who are committed to making their homes more energy efficient. Program Administrators plan to shift more attention toward targeting trades that influence homeowners' decisions. The Program Administrators are currently discussing and addressing the major program design modifications needed to bring in new contractors and plan to have a structure in place for bringing new contractors into the program by January 1, 2010. Program Administrators are also exploring ways to identify and reach landlords to make them aware of the program benefits that increase property value and provide energy savings to tenants.
Marketing Approach	The Program Administrators will collaborate to proactively drive the demand needed to support the 2010 – 2012 increase savings goals. Marketing efforts will focus on single-family homeowners, developing leads for identifying owners of 2-4 family homes (decision makers) and recruiting and training contractors. Efforts will include: • Designing a comprehensive education package to get customers thinking about ways to optimize their home's energy performance with a consistent statewide marketing message. • Creating a tool that informs customers how far they could go over the long-term that could put them on the path to Zero Net Energy. The tool will lay out steps customers can take this year, next year and

Marketing Approach (cont.)	over the years as they make home improvements. • Providing a statewide audit package that ensures customers are given consistent energy efficiency data and recommendations. Outreach and marketing efforts will be expanded to include building relationships with realtors, home improvement contractors, architects and others involved in renovations of one-to-four family homes. Marketing efforts will be designed to meet the objectives of reaching more customers (going broader into the customer base) and maximizing energy savings opportunities (going deeper into each home to find ways to save energy). The program's multi-media outreach campaign will focus on strategic television partnerships with local affiliate or cable programming providers, radio, print advertising, web-based marketing through various social media sites, and through part of a new consolidated website planned for the first quarter of 2010 that integrates all the Massachusetts energy efficiency programs and websites into a single portal. Current forms of multi-media outreach include: • MassSAVE website (enhanced via the Statewide Integrated Energy Efficiency Website) • Bill inserts • Radio, print and visual media advertising • New media advertising (advanced online options) • Targeted marketing through community outreach initiatives such as Cambridge Energy Alliance, Marshfield Energy Challenge, and the Energy Smack-Down program. • Targeted marketing through the use of data collected during the screening visits Individual Program Administrators may conduct additional marketing and may ramp their marketing up or down as needed to meet participation and budget goals.
Target End Uses	The program targets any cost-effective energy-saving improvement using a comprehensive whole house approach including but not limited to:

Target End Uses (cont.)	• Building Envelope • HVAC/Mechanical systems • Water heating • Energy saving appliances and lighting • Deeper retrofit measures • New technologies and renewables
Recommended Technologies	Recommended technologies include air sealing, duct sealing, insulation, refrigerators, thermostats, ventilation, and heating/cooling systems. The program also provides general information about energy efficiency and solar domestic hot water systems ("DHW") to consumers on request. Other measures may include heating system controls, super-insulation, CHP technologies, solar DHW systems and opportunities for piloting "deep energy retrofit" enhancements of major renovation projects. Customers will see these offerings as an integrated program.
Financial Incentives	The RCS/MassSAVE program provides on site customer-specific information at no cost to the customer, free installation of instant savings measures, as well as an educational experience including information regarding all statewide program incentives, financing options, and where to find information about Federal and State tax credits. The Program currently offers free direct installation measures; and incentives of 75 percent of the installed cost of contractor-installed measures, up to $2,000. The Program Administrators are exploring the possibility of increasing or eliminating the $2,000 cap. The Technical Evaluation Working Group is in the process of conducting a cost-effectiveness evaluation of new measures, measures packages, and a "pay for savings" rebate approach to go after deeper savings per house. This program will coordinate with other programs such as GasNetworks and Cool Smart by educating customers about rebates and financial incentives available to them through the Comprehensive Education Package and marketing materials providing a roadmap to achieving whole-house energy savings. As provided for by the GCA, the HEAT Loan program, provides qualified customers with 0 percent interest

Financial Incentives (cont.)	loans up to $15,000 with terms up to seven years and can be applied towards the following energy efficiency upgrades: • Insulation • Duct System Improvements • High-efficiency heating systems • High-efficiency DHW systems • Solar DHW systems (standardized incentive amount across all Program Administrators.) • ENERGY STAR-labeled thermostats • ENERGY STAR-labeled windows • ENERGY STAR-labeled water heaters • Other renewable technologies on a pre-approved basis A portion of the HEAT Loan may be used to finance the mitigation of barriers preventing the installation of energy efficient measures. In the past, safety barriers have been a significant obstacle in maximizing energy savings. Using HEAT Loan funds to manage safety issues will allow Program Administrators to access a broader spectrum of efficiency in the future. To address renewables, Program Administrators may look towards possibly expanding the HEAT Loan to allow for installation of renewables. Additional customer financing options like the "Pay & Save Pilot" are also being explored and their effectiveness will be evaluated at the end of the pilot for possible inclusion as a program financing option. A long term financing option that might also be explored is to work with all stakeholders to potentially include the cost of upgrades on property tax bills. The Program Administrators will continually look to address "new" financing options that would allow customers the ability to go deeper.
Delivery Mechanism	The program is administered within each service territory by its Program Administrator and is coordinated statewide through the Residential Management Committee ("RMC") that actively manages and steers the statewide MassSAVE program. The program is delivered by program vendors selected through a competitive

Delivery Mechanism (cont.)	bidding process. The Program Administrators are discussing how the structure and relationships will work as new vendors are brought into the Program. The Program Administrators will explore developing a comprehensive "Scope of Work" to be included in the RFP used statewide to ensure vendors adhere to: • Consistent statewide training • Data reporting • Achieving aggressive savings • Customer satisfaction • Quality Control standards • Scheduling requirements • Technical Assistance • Maintain and report health and safety information Vendors capable of serving large numbers of customers and that have appropriate resources and experience will be included in the bidders list. Work completed by MassSAVE energy service providers and their subcontractors must meet Building Performance Institute standards or similar standards set by the individual Program Administrators. These standards require a systematic approach to home improvement that addresses all aspects of building systems. In order to increase the number of energy efficiency contractors, the program offers an incentive/rebate to contractors who are installing retrofit weatherization measures such as insulation and air sealing. Once approval/certification criteria are determined, a statewide marketing campaign to recruit contractors will begin and a central database of authorized (certified) contractors will be established. Customers are required to have an RCS Site Visit through the Program Administrator's vendor to identify and prioritize all cost effective energy efficiency upgrades in order to receive an incentives or program rebate. All insulation work, whether performed by an authorized independent contractor or a vendor's subcontractor, will have a quality control inspection performed by the Program Administrator vendor when the work is complete. This will ensure that, either through an authorized installer or the Program Administrator's RCS vendor, installations meet BPI

Delivery Mechanism (cont.)	standards or similar standards set by the Program Administrators. The RMC members are working together toward a "best practices" approach and to provide a more coordinated statewide training as a means to ensure correct installation techniques for the RCS/MassSAVE Program. It is expected that training requirements will increase over time in order for contractors to retain their status as an authorized program contractor. Contractors must maintain a high level of customer satisfaction to continue in the program. RMC will apply a "best practices" approach and work together to make quality control an integral part of the RCS/MassSAVE Program. The Program Administrators plan to issue an RFP for a third-party Quality Control ("QC") vendor responsible for performing QC inspections of program implementation vendors, subcontractors, and contractors. The QC vendor will provide valuable information and feedback to the RMC on the program successes and areas that can be improved upon.
Joint Program Administrator Enhancements Planned for 2010-2012	In an effort to further penetrate the residential market, the RCS/MassSAVE program will evaluate the success of pilot programs such as the Marshfield Energy Challenge, the Cambridge Energy Alliance and the Energy Smack-Down, and will explore offering similar initiatives within other communities. Also, the Program Administrators, in their efforts to enhance the current services provided, will look to incorporate infrared and blower door testing where applicable.
Program Administrator-Specific Elements	Please see PA-Specific Filings.

Three-Year Deployment /Road Map	The RCS/MassSAVE program design is undergoing an effort to significantly increase the number of properties serviced by the program, which will also lead to higher energy savings potential. The design will also allow Program Administrators to better capture and utilize property data for the purpose of identifying all available energy efficient measures, as well as targeting marketing efforts. Program Administrators will continue to explore new technologies in conjunction with significantly increasing the implementation of known cost effective measures. Program Administrators intend to increase the number of qualified major measure installers through establishing qualification/training guidelines using the BPI or its equivalent as a benchmark. The RCS/MassSAVE program will undergo an evolutionary redesign with emphasis being placed on reaching more customers while achieving deeper energy savings. Program design issues that are currently being addressed: • The Marketing Evaluation working group is collecting and reviewing marketing data to further promote the program effectively. • The Technical Evaluation working group is determining the cost-effectiveness of new MassSAVE measures, and is screening packages that strategically group measures that leverage customer interest and provide deeper energy savings per home and potentially offer higher incentives. • Developing a Home Energy Use Index that shows in a single number or grade, how the home is performing relative to comparable homes. This is a 2009 metric (Existing Homes Rating) and the Program Administrators are partnering with NEEP to research and develop a rating system for potential incorporation into the MassSAVE program as a pilot in 2010. • Investigate custom incentive approach based on projected savings for the individual home ($ per MMBtu, $ per Kwh) • Identify alternative/new technologies and approaches (*e.g.*, spray foam in attics) as eligible for program rebates • Work to connect additional complementary contractors with the program, find ways to address contractors' "What's in it for us?" concerns • The program is currently funding training that addresses the program workforce needs and will continue to explore how specific technical training requirements can be introduced to training programs across the state

Three-Year Deployment/Road Map (cont.)	• Evaluate other financing options such as on-bill financing and work with all stakeholders to potentially include cost of upgrades on property tax bills • Consider increasing or eliminating the $2,000 incentive/rebate • Evaluate a higher incentive/rebate for landlords • Investigate funding sources to help eliminate health and safety barriers (*e.g.*, knob & tube wiring and other construction related repairs, subject to acceptable cost-effective levels, to increase the installation of energy efficient measures)
Special Notes	The preceding program description is designed to support the successful attainment of the Green Communities Act's energy efficiency investment goals and environmental benefits. Further, it is the intent of the Program Administrators to support the Council and its Consultants through a recognized ongoing iterative planning process to develop and implement plans that meet the objectives of the Council's Priorities Resolution document. This program design is intended to address a number of applicable Council priorities including: • Coordinating with other programs for outreach communication and marketing strategy • Reducing program differences across the Program Administrators • Engaging in open, transparent and competitive solicitation and maintaining high standards of performance and accountability. • Developing an iterative process where learning and improvement is achieved over time. Phasing in new programs, with ongoing re-evaluation and improvement throughout the three-year plan

Special Notes (cont.)	• Ensuring new service providers are trained, achieving quality control, and creating benefits for the Commonwealth from associated job creation and economic growth • Striving to provide customer rebate/incentives that encourage deeper energy savings by modifying customer incentives/rebate levels and incentive caps to encourage the best energy savings. Consider performance-based incentives structure. Add customer incentives for low-tech solutions such as air sealing that result in energy savings. • Striving to maximize seamless delivery to the customer. • Exploring a single number or grade for how the home is performing relative to comparable homes. • Through development of a marketing tool that informs the customer of how far they go over the long-term, putting them on the path to Zero Net Energy, the RCS/MassSAVE will look to further promote near zero energy homes • Coordinating with other programs on integrated website • Continued coordination of trainings to support a sufficient workforce.

Deep Retrofit Single- and Multi-Family Pilot

Primary Objective	To investigate the potential for energy savings of at least 50 percent of total on-site energy use through deep retrofits of existing residential buildings and to identify how to reduce the costs and challenges associated with deep retrofits.
Initially Offered	This pilot was originally offered as a pilot in the electric Program Administrators' 2009 plans.
2010-2012 Program Goals	Please see PA-Specific Filings.
2010-2012 Budget	Please see PA-Specific Filings.
Joint vs. Program Administrator-Specific Offering	Jointly offered program integrated gas and electric including single-family and multi-family by 2010. Incentive levels and outreach and program support vendors may vary by program administrator.
Program Design	The "deep energy efficiency" pilot will be consistent with the Governor's Zero Energy Task Force recommendations and will at a minimum explore 1) a new Deep Energy Retrofit Pilot Program of existing buildings achieving 50% energy reductions or more as compared to baseline energy usage, and 2) a Zero Energy Pilot Program that encourages diverse paths to Zero Energy, including Passive House or similar programs. This will include a wide range of projects such as single-family homes, affordable housing, mid- to large multi-family and include a substantial amount of square footage. The design includes a plan to support deep retrofits and to gather information on customer satisfaction, behavior modification, and energy savings. The pilot will help the Commonwealth continue to develop information on appropriate measures for deep retrofits, the correct way to model potential energy savings for deep retrofits, approaches for different housing types, training energy-retrofit contractors, customer education and marketing materials, and financing and incentive levels.

Program Design (cont.)	Budget permitting, gas utilities will pay incentives for an eligible project if the primary source of heat is gas. For 1-4 unit homes the electric program administrators will pay incentives for eligible project for non gas-heated homes, and for multi-family (5+ unit) buildings as well, if primary source of heat is electric. There is currently exploration by DOER into the possibility of the electric Program Administrators paying incentives for multi-family (5+ unit) projects whose primary heating fuel is oil or propane. Based on the results of this exploration, the electric Program Administrators will consider paying incentives for multi-family projects on a fuel blind basis. In order to achieve the targeted depth of energy savings in these projects it will be necessary to carefully consider the projects' HVAC systems with regard to size, efficiency, air intake and venting mechanisms, overall health and safety issues, and other 'house as a system' considerations. In some cases, in order to reach the highest efficiency levels a complete redesign out of the project's HVAC system may be necessary. On-going program evaluation and case study review of the homes treated will substantially inform the expanded effort in subsequent years. The Program Administrators will coordinate with the RCS/MassSAVE working group on making Deep Energy Retrofit information, including energy and other benefits, available through RCS/MassSAVE educational materials, statewide web content, and through home energy assessments.
Target Market	• Home owners, property owners, and property managers considering renovations and willing to invest in extensive carbon reductions • Advanced Remodelers and Builder Remodelers • Architects • Designers • Trade allies • Others involved in renovation or restoration of residential buildings
Marketing Approach	Outreach and marketing to identify and interest potential pilot candidates will be performed through internet research, targeted media outreach, contractor outreach through new homes program, multi-family audit program and potentially through home energy raters and other professionals with appropriate skills. Successful outreach and marketing are essential to the success of the pilot, and so a marketing strategy will be developed

Marketing Approach (cont.)	to ensure that customers who have the greatest likelihood of pursing a Deep Energy Retrofit are systematically identified and approached about pilot participation. Project selection will be by the sponsoring Program Administrator, based on property owner proposals to participate utilizing a qualified project team with a design that meets program defined criteria for optimal energy performance, health, safety and durability, and other criteria. A listing of contractors and designers with appropriate pre-requisite deep energy retrofit related experience as per criteria defined by the Program Administrator working group will be maintained to assist building owners in forming project teams to propose projects. Homes and apartment buildings on which renovations are planned (*e.g.*, siding and/or window replacements) will be targeted. Homeowner investments will be leveraged to maximize the effectiveness of the deep energy retrofits.
Target End Uses	To dramatically reduce the amount of energy used in existing residences
Recommended Technologies	• Exterior wall super-insulation build-outs • Attic insulation enhancements • Foundation wall/slab insulation • Extensive whole-house air sealing • High-performance windows and storm windows • High-performance lighting, including the use of CFL and light-emitting diode ("LED") technologies • High-efficiency heating and cooling systems • Advanced thermostatic controls • High-efficiency appliances and products • Advanced energy use feedback and monitoring technology • Mechanical ventilation • Solar photovoltaic systems • Solar thermal systems

Financial Incentives	High levels of incentives will be offered to ensure that deep retrofits are completed on the targeted number of existing homes and to achieve the desired mix of multi-family and single-family demonstrations. Incentives may be tiered based on the number of units in a building. Basic incentives to move the market, based on pilot experience to date, will be a maximum of $42,000 per unit. A higher tier of incentive levels up to an additional $10,000 may be offered for deep energy retrofit projects that approach the highest energy performance standards, for example Net Zero energy, Passive House or Thousand Home Challenge standards. Staged and partial projects will be considered for inclusion in the pilot, and incentives will be scaled accordingly. A 'staged' project is one in which the participant plans to pursue deep energy retrofit levels (over 50% energy use reduction) in stages over a period of time. A 'partial' project is one in which the participant will pursue a substantial energy retrofit but which will fall below the 50% savings target. The HEAT Loan will be made available to pilot participants as an added tool to assist in bringing projects to fruition.
Delivery Mechanism	Pilot program services will consist of outreach through a variety of channels to customers including through the existing RCS network to homeowner and to contractors through the residential new construction program. Project design details and assistance to the DER contractors doing the work will be handled through technical specialist organizations under contract and/or utilizing ARRA funds. In order for these projects to succeed, it will be essential to have extensive technical support and training, since the challenges of retrofitting a building to this degree in a manner that enhances rather than degrades the durability of the structure and the health and safety of the occupants, exceeds to a considerable degree what is involved in RCS or new home construction.
Joint Program Administrator Enhancements Planned for 2010 – 2012	Program Administrators will explore creating a second tier of incentives for households participating in the pilot program Thousand Home Challenge and/or approaching near Net Zero energy. This element and each project will be carefully reviewed to identify lessons learned and best practices, as well as to identify and fill gaps in the portfolio of housing types treated to date. Depending upon outcomes of cost-benefit analysis, the pilot may be expanded into a more full scale statewide program.

Program Administrator-Specific Elements	Please see PA-Specific Filings.
Three-Year Deployment/Road Map	• Publicity from completed projects will build interest for more homes, as will training of additional deep energy retrofit contractors. • There are a number of other points of entry that can be explored for timely leads including basement remediation, fire restoration, and siding contractors, if and when the pilot expands to a wider scale. Identifying how best to enable those contractors to partner with DER experienced contractors and make this work for their business plans is another tactic the pilot will explore. • Identifying lower cost HVAC and mechanical ventilation as well as super-insulated build-out approaches is vital to reducing total project costs. HVAC change-outs are often necessary since sealed combustion or forced draft is a requirement for combustion devices. • There are a number of products including advanced windows, integrated light HVAC, ventilation and water heating products that are ideal for very low energy load homes which are not yet available in the United States market. Through deep energy retrofit projects across New England and California, in particular, the market may grow and more of these technologies may emerge in the United States and can be tested and adopted in the program. • The full value proposition in DER work is not yet accounted for in the BCR models or well known, or in a form that helps to move this market including: far longer measure life than the 28 or 30 year max in current models and enhanced building durability and lower maintenance and insurance costs due to the addition of a rain screen with super insulated wall build out, not to mention improved IAQ and the impact on health costs. Opportunities to quantify and share information on this to better inform BCR analysis and market actor decisions can further the effort to reach pilot goals and climate change goals in the existing homes sector. However this is a large undertaking in some ways beyond the scope of the pilot, perhaps best done in a regional or national context.
Special Notes	In the 2009 pilot, many customers who were passionate about climate change withdrew from consideration, even though forewarned that their costs would likely be equal to or greater than the incentives ($42,000) due to worries about the economy and not being able to recoup their investment in energy savings over time or at the time of resale of the property. Financing which is extensive, long term, and either replicable or transferable to the next owner, is seen by many involved in this market as essential to increase participation including those

Special Notes (cont.)	who withdrew. Given the economy and scale of total investment for building owners, the pilot goals may only be achieved if considerable additional financing options become available through a wider group effort. The Deep Energy Retrofit working group will coordinate with the Financing and On-bill Repayment working group which is currently exploring financing options. Lifestyle education will be used to reduce appliance use and will be used to leverage selection of desired project (including housing style) types and maximum household energy reductions. If a customer who expresses interest turns out not to be good candidates or opts out the pilot, the customer will be referred to the appropriate energy efficiency program.

Residential New Construction

Primary Objective	To capture lost opportunities, encourage the construction of energy-efficient homes and drive the market to one in which new homes are moving towards net-zero energy.
Program Inception	The program was initially offered in 1998.
2010-2012 Program Goals	Please see PA-Specific Filings.
2010-2012 Budget	Please see PA-Specific Filings.
Joint vs. Program Administrator-Specific Offering	Joint
Program Design	The Program Administrators continue their strong commitment to a comprehensive whole-house approach for the Massachusetts New Homes with ENERGY STAR® Program. The Massachusetts program is a proud participant of the national ENERGY STAR new homes program and benefits from the regional, as well as national advertising efforts that ENERGY STAR Homes implements. The program is committed to achieving both a broader market penetration of energy-efficient homes from 2010 to 2012 as well as moving builders toward deeper energy savings where possible. The Program Administrators strive to retain 75 percent of the participating builders and recruit additional homebuilders and contractors working in the major renovations market. Homebuilders must target ENERGY STAR certification for all homes submitted to the program. However, the program will also provide incentives for an enhanced CODE Plus (a level above Massachusetts State Code but shy of the ENERGY STAR certification standards) as an avenue for broader reach as an entrée to

Program Design (cont.)	ENERGY STAR. Direct installation of quality ENERGY STAR-qualified compact fluorescent lights ("CFLs") in appropriate hard wired sockets, on-site training, and a final verification inspection is required for all homes participating in the program. The list of available lighting products has been expanded to include almost every type of bulb including candelabra based lighting. The JMC will also cross-promote with the Lighting group to introduce Solid State Lighting into this program. All projects consisting of four units or fewer will be designated as single-family, and all projects of five units or more will be classified as multi-family. Buildings that are five stories or fewer that are permitted under the residential use group are eligible to participate in the program and to be certified as an ENERGY STAR-qualified Home. Mixed-use (residential/C&I) buildings may participate if they are permitted in the commercial use group as long as: (1) the entire structure is five stories or fewer, and (2) each residential unit has its own heating, cooling, and hot water systems separate from the other units. Homes that exceed these requirements will be treated under the Multi-Family group's purview because of its mixed use nature. The Mid-Rise New Construction Program will encompass more than three stories for those that cannot be treated under the Massachusetts New Homes with ENERGY STAR Program. Additional qualifications for program participation are: **ENERGY STAR Certification:** • ENERGY STAR compliance with a Home Energy Rating System ("HERS") Index of 85 or less for ENERGY STAR Tier I and a minimum modeled improvement over the current Massachusetts Baseline Home/User Defined Reference Home ("UDRH") of at least 30 percent and 60 percent respectively for ENERGY STAR Tiers II and III. Three tiers of ENERGY STAR certification will be offered in the 2010 program. The criteria for each tier are listed in the Financial Incentives section. • Meeting the envelope leakage and duct leakage criteria • Successful completion of a Thermal Bypass Inspection Checklist ("TBC") and potentially five additional checklists as introduced by U.S. Environmental Protection Agency ("EPA") for Version III of the national ENERGY HOMES standard in 2010 with potential Version III adoption. • Meeting the EPA's ENERGY STAR homes qualifications and/or the most rigorous standard available at the time (see www.energystar.gov/index.cfm?c=new_homes.hm_index). • Program required percentage of CFL installations, and increased emphasis of direct installation of all available hard-wired sockets.

Program Design (cont.)	**Code Plus Certification:** • Meeting envelope leakage and duct leakage criteria • Program required percentage of CFL installations
Target Market	▪ Homebuilders ▪ Contractors ▪ Architects/Designers ▪ Trade allies ▪ HERS raters ▪ Homebuyers ▪ Realtors ▪ Developers ▪ Low income and affordable housing developers ▪ Code officials ▪ Consumers (in the market for new homes and or major renovations)
Marketing Approach	The program will continue to educate homebuilders, consumers, and trade partners regarding the energy-saving benefits and value of ENERGY STAR-qualified homes. Marketing efforts will focus on: homebuilder recruitment, continued training and support, public relations, and the implementation of large scale multi-media advertising campaigns geared toward homebuilders, consumers, and trade ally groups. The program will continue to support development of leads through building permit lists in cities and towns throughout the Commonwealth. These lists will be provided to market-based raters to use as prospecting tools. Hosting, sponsoring, and attending various trade show exhibitions and homebuilder conferences remain crucial to marketing the program. The program's multi-media advertising campaign will include vehicles such as: strategic television partnerships with local affiliate or cable programming providers, radio live reads and on-air interviews, print advertising in builder and trade publications, direct marketing via email/fax lists, and a very heavy online advertising presence which includes comprehensive social media outlets. The program will participate in the new statewide consolidated website that will further promote the program and aid in cross-program promotion. There will continue to be heavy emphasis on "earned media" and editorial PR involvement to ensure market

Marketing Approach (cont.)	penetration and an increased program capture rate. In addition, individual Program Administrators will use targeted marketing as needed to meet program participation and spending goals.
Target End Uses	▪ Energy-efficient building shell ▪ Proper duct and air sealing techniques ▪ Quality Installation of HVAC equipment ▪ Increased use of energy-efficient lighting ▪ Energy efficient water and heating upgrades ▪ Increased indoor air quality
Recommended Technologies	▪ ENERGY STAR-qualified heating and cooling systems, lighting, appliances and windows ▪ Increased levels of insulation using better materials, *i.e.*, blown in and/or foam board ▪ Improved construction techniques to minimize air leakage, duct leakage, infiltration, and heat loss ▪ Improved HVAC installation techniques and guidelines ▪ Incorporate mechanical ventilation ▪ Renewable ready-PV/Solar Thermal. Solar Thermal will likely be needed in order to achieve Tier 3 below.
Financial Incentives	Incentive levels may be adjusted to respond to market conditions. Current levels are shown in the table below. In addition, free ENERGY STAR-qualified CFL products are provided for each home. Participating homes are currently eligible for the following incentives which the program processes in addition to base incentives. Program Administrators will offer the same level of incentives in towns that adopt the stretch code. This program will coordinate with other programs such as Lighting, and Products to ensure that the program offers all available incentives that encourage deeper energy savings.

2010 Incentives

Package	Requirements	Single-Family Incentive[1]	Multifamily Incentive[2]		
			5-99 units	100-199 units	200+ units
CODE Plus	6 ACH CFM 50, 8 percent duct leakage	$325	$225	$225	$225
ENERGY STAR I	ENERGY STAR compliance with a HERS Index of 85 or less	$750	$650	$500	$350
ENERGY STAR II	ENERGY STAR compliance with a HERS Index of 85 or less and 30 percent improvement or better over the Massachusetts Baseline Home	$1,250	$1,150	$850	$550
ENERGY STAR III	ENERGY STAR compliance with a HERS Index of 85 or less and 60 percent improvement or better over the Massachusetts Baseline Home	$8,000	$4,000 [3]	$3,000 [3]	$2,000 [3]

[1] Starting in 2010 the program will define a single-family home as a structure that contains one to four units.

[2] Starting in 2010 the program will define a multi-family home as a structure that contains five or more units.

[3] ENERGY STAR III Multifamily projects will be reviewed for final fee structure; listed are the maximum incentives paid by Program Administrators.

2010-2012 Forecasted Program Activity

MA New Homes with ENERGY STAR Participation Levels			
	2010	**2011**	**2012**
Total Estimated Program Participants	2,138	2,396	2,956
Estimated Annual Growth Rate	2%	9%	21%
Total Estimated Housing Starts	6628	7224	8742
Estimated Market Penetration	32%	33%	34%

*Growth rate estimated by Reed Construction Data, June 2009 edition

Delivery Mechanism	The program is administered by a Program Administrator in each service territory and coordinated regionally through the Joint Management Committee ("JMC"). The JMC, through a competitive bid process, will select an implementation contractor to oversee the day-to-day operations of the program statewide. The contractor is responsible for tracking and reporting program activity to the respective JMC Program Administrator. The contractor will also conduct quality assurance/quality control of field activities and advise the JMC on necessary program changes and enhancements. Throughout the planned timeframe, the JMC plans to continuously strive towards a market-based network of trained contractors who offer energy-efficiency and rating services to homebuilders for a fee. The Program Administrator may consider continuing to support rater fees for low income projects in their service territories.

Delivery Mechanism (cont.)	The program recognizes the enhanced emphasis on training necessary to make this program successful, as well as to support workforce development efforts through the Green Jobs Act. The program will support training of increased frequency and greater depth in the fundamentals of building science and the latest available technologies, including those for air sealing and insulation. The Program Vendor will be a HERS provider of last resort to help new raters become established as part of the open market structure. The program will also provide trainings (by raters or the Vendor) as well as potential classroom trainings. Through this effort, we can commit to training more than 50 percent of the builders in the program.
Joint Program Administrator Enhancements Planned for 2010-2012	▪ With the advent of a new version ("Version III") of the ENERGY STAR Homes Program, the JMC will consider adoption of that program, which may require changes in 2010. ▪ There are ongoing discussions on Version III with regard to the verification process of quality HVAC installations. The discussions center on the testing requirements and the seasonal limitations in Massachusetts; the program will make every effort to work with the ENERGY STAR Homes Program and CoolSmart to increase quality installation and provide achievable, verifiable, savings to the program. ▪ The Program Administrators are currently working together to identify a way to provide complete support to multi-family structures of five stories or fewer and they are considering allowing master metered electric buildings to participate in the program, as they are ineligible currently. ▪ The 2009 major renovation pilot projects being conducted by the Program Administrators will provide further understanding for the JMC to garner greater savings by administering a Major Renovation Program during 2010-2012. ▪ Support code amendments that add to energy efficiency and explore with all entities the possibility of offering incentives to municipalities that adopt "stretch code" revisions in their communities. The JMC will provide stretch code training support to towns and builders participating in the program where it has been adopted. Further details will be provided in an appendix on codes and standards. ▪ The program will promote building science technologies which help interested homebuilders construct net zero energy homes. • Support workforce development efforts through Green Jobs Act by encouraging new raters to enter into the marketplace.
Program Administrator-Specific Elements	Please see PA-Specific Filings.

Three-Year Deployment/Road Map	For new construction, the efforts to achieve both deeper savings and gain broader market penetration will continue through multiple tiers of participation, one of which continues to push homes closer to net zero energy. These goals will be daunting in the recognition of the downturn in the economy and the resultant slow down of the building market. However, the program will have significant resources dedicated to "putting feet on the ground" to promote the program and support participating builders and other key stakeholders in the residential new construction market. For the three-year deployment, the Program Administrators will focus on: • Expansion of the current HERS rater network of nine competing companies • Moving closer to a fully market based program where Program Administrators reduce and ultimately phase out subsidies to raters shifting those monies directly to builders who, in turn will negotiate directly with raters for associated fees to rate homes • Expansion of the base of participating builders • Continued expansion of existing and new market allies • Training the market effectively in order to stay ahead of the introduction of more stringent building codes as well as new versions of the national ENERGY STAR Homes which will be significantly harder to achieve • Collaboration with Green Communities through technical support • Continued ramp up of consumer awareness The Program Administrators, in conjunction with the Consultants and LEAN, where appropriate, will be performing an assessment of the multi-family programs in Massachusetts. Because the target market for this program includes multi-family customers, the results of the statewide assessment may apply here. Please refer to the multi-family section for an update on the programs. The Program Administrators plan to implement the Statewide Multi-Family New Construction Pilot Program during the course of 2010. Coordination between this program and the ENERGY STAR Homes program will occur in order to provide a seamless delivery of new construction services to all eligible customers.

Special Notes	In order to provide context for the Program Administrators' proposal, please refer to Exhibit G, containing the document *Massachusetts New Homes with ENERGY STAR, Program Theory* (July 13, 2009), which was prepared on behalf of the Program Administrators and was very recently finalized. The preceding program description is designed to support the successful attainment of the Green Communities Act's energy efficiency investment goals and environmental benefits. Further, it is the intent of the Program Administrators to support the Council and its Consultants through a recognized ongoing iterative planning process to develop and implement plans that meet the objectives of the Council's Priorities document. This program design is intended to addresses a number of applicable Council priorities including: • Providing program consistency through this program. • Focusing on maximizing incentive values and minimizing overhead costs in this program. • Striving to provide customers/builders with an opportunity to lower utility bills through the purchase of energy efficient products. • Striving to provide seamless delivery of this program to customers. • Providing user-friendly program by offering multiple paths/opportunities for participation • Coordinating with other programs for outreach communication and marketing strategy. • The deeper savings will result from addressing elements such as additions that have not been addressed before. From the 2009 findings, the Program Administrators will amend the program to address deeper savings as a result. • Comprehensive program delivery through JMC integrating gas and electric Program Administrators in a fuel-blind nature • Coordinating with other programs on integrated website • Market based HERS Rater Model, Trainings and Technical Assistance • Performance based incentive structure, Third Tier • Through tier development and refinement informed by the 2008-09 Zero Energy Challenge, the JMC will

Special Notes (cont.)	look towards deeper energy savings to promote near zero energy homes • In anticipation of Version III of the ENERGY STAR Homes specification going into effect in 2011, the Program Administrators anticipate adopting many of the new specifications during the course of the 2010 program year in order to remain early adopters of more stringent energy efficiency requirements nationwide. • The Program Administrators plan to conduct ENERGY STAR Homes Version III pilot during the course of the 2010 program year. • The Program Administrators also plan to implement the Statewide Multi-Family New Construction 4-8 Story Pilot during the course of the 2010 program year. • Please see the Website for the description of the "Massachusetts New Homes with ENERGY STAR QIV Performance Metric", which is incorporated herein by reference.

Multi-Family Retrofit Program

Primary Objective	To maximize the acquisition of cost-effective gas and electric energy and demand savings by addressing the informational, economic, institutional, and technical barriers that historically have made the multi-family market a "hard-to-reach" sector. Moreover, the program aims to broaden participation and achieve deeper savings per participant through an incentive structure that encourages such action.
Program Inception	The Massachusetts Program Administrators have offered energy efficiency services to the multi-family sector, through various program designs, since the 1980's.
2010-2012 Program Goals	Please see PA-Specific Filings.
2010-2012 Budget	Please see PA-Specific Filings.
Joint vs. Company Specific Offering	The Program Administrators are proposing a common statewide program with the goal of offering a consistent customer experience throughout the state. In designing a program for this multi-faceted market, the Program Administrators recognize the need to allow for the flexibility to ensure that the needs of all participants are met.
Program Design	The program design is based upon the following guiding principles: • Participants will initiate a request for all program services through one party, without the need to directly contact multiple program administrators or multiple parties within the same program administrator. Throughout the project life cycle, the participant will have access to a single point-of contact that will facilitate all programmatic communication and coordination. • Eligibility for program measures and services will be based on cost-effectiveness and will not be restricted by the rate class associated with the meter(s) for the facility. • The program is structured to ensure that participants are provided with a "whole building" fully integrated offering targeting both gas and electric end-uses. While on-site, however, all opportunities,

Program Design (cont.)	regardless of fuel source, will be identified and documented for the customer. All efforts required to deliver a fully integrated gas and electric offering to a participant (the audit will be offered for propane and oil end-uses, however, at this time incentives will be provided only for gas and electric measures), regardless of service territory or rate class, will be performed in a manner that will result in a seamless customer experience, thus mitigating the potential for customer confusion and lost opportunities. The cornerstone of the program design involves the services of a Multi-Family Market Integrator who will provide project management services to ensure the seamless delivery of the program phases described below. (Additional detail on the role of the Multi-Family Market Integrator will be described in the section titled Program Delivery). <u>Participant Screening</u> Delivering energy efficiency services to the multi-family market is challenging because of the many variations in size and construction as well as ownership and decision making structures that exist. The Program Administrators will ensure that the services offered by the program are easily scalable to accommodate simple projects, highly complex projects, and everything in between. In addition, there will be a screening process to identify where along this continuum a project lies. As stated above, some screening data will be available from the web site or lead generator and, in addition, usage data will be supplied by the appropriate Program Administrators (provided authorization from the customer paying the bills is obtained). The remaining screening information will be obtained when the participant is contacted upon enrollment. It is during this discussion, that the Multi-Family Market Integrator will gain a better understanding of the end uses available for treatment and the motivations that drove the participant to solicit energy efficiency services. Armed with this information, the Multi-Family Market Integrator will explain that, in addition to the measures initially requested, a whole building assessment may be performed which will identify other energy savings opportunities. (At this time, incentives will be paid for gas & electric measures only.) By motivating the participant to accept the whole building assessment, the project could ultimately result in deeper savings than otherwise would have been realized.

Program Design (cont.)	Enrollment Because of the diversity within the multi-family sector and the various market actors that may be involved in lead generation, the program provides for multiple points of entry that will all ultimately provide participants with a comprehensive program offering and a seamless experience. Participants may enroll in the program via telephone, the statewide web site (which is currently under development) or their request for services may be initiated by other parties such as an Account Executive, a contractor, a consultant or engineer. Each participant will need to contact only one party to avail themselves of comprehensive services. Once the Multi-Family Market Integrator is made aware of a project (either via telephone, the web site or lead from another market actor), he or she reviews the information provided from the website screening questions or from the lead generator and then makes the initial contact with the customer and collects further information, as needed, to complete the enrollment. Whole Building Assessment Based on the outcome of the screening/enrollment process, the appropriate technical resources will be assigned to conduct a whole building, (fuel blind) assessment. The Multi-Family Market Integrator will attempt, through the screening process, to identify all resources required for the assessment; however, there may be instances where additional expertise is required and further site visits may be necessary. Technical assessments, benchmarking, and engineering studies may be conducted on an as needed basis. Integrated Proposal for Energy Efficiency Services Using the findings from the site-specific assessment, the appropriate parties will draft a project proposal that will include measures, other available services and incentives. At this time, incentives will be provided for gas and electric measures only. Once the comprehensive offer receives Program Administrator approval, it will be presented to the participant by the parties required to help the customer fully understand the offering. Delivery of Measures and Services The Multi-Family Market Integrator will coordinate the delivery of the measures and services opted by the

Program Design (cont.)	customer. The Multi-Family Market Integrator or other appropriate party will strive to have all dwelling unit measures installed in a single visit to minimize disruption for the tenants; however, multiple visits may be required for the installation of common area measures. Commissioning services will be performed as appropriate. <u>Quality Assurance</u> Quality assurance will be performed in support of this program. Third party independent QA/QC services will be solicited through a competitive bidding process. Currently there are plans for a statewide RFP to be issued to obtain QA/QC services for multiple residential programs, including the Multi-family program. Customer satisfaction surveys will also be administered to provide additional feedback for the Program Administrators. *Additional Program Design Elements* • Upon request, a comparison of energy usage before and after participation will be provided by the Program Administrators or a vendor under contract to perform these services. • A link to the current EPA Benchmarking tool (Portfolio Manager), or other comparable tool, will be included on the website page(s) associated with the Multi-family Program. This will allow building owners/managers to assess the energy efficiency of their buildings against comparable facilities. • The Program Administrators recognize that proper training for building operator and maintenance staff is a key factor in ensuring that expected savings are realized initially and persist over time. The Program Administrators will sponsor at least two sessions of a multi-family building operator training each year and provide an incentive of up to 50% of the training cost for facility operators . • Representation from the Multi-family Working Group will be included on the Deep Retrofit Pilot design team. The Multi-family Steering Committee will coordinate referrals to the Deep Energy Retrofit Single-family and Multi-family Pilot Program.
Target Market	Residential facilities with five or more dwelling units. The program will address the unique circumstances associated with mixed use buildings.

Marketing Approach	The program will be supported by the statewide energy efficiency marketing effort; however, direct outreach to building owners and/or property managers via trade associations will be used as a cost-effective mechanism for communicating with this population. Beginning in November of 2009, the Multi-family Steering Committee will begin developing a marketing plan to educate customers on the program services to be offered in 2010. The existing program vendors will participate in this session to provide their perspective based on their interactions with customers in the field. The Program Administrators conducted a literature review and focus group study. The results indicate that building owners/managers need to have confidence in the expected outcome from program participation. Once some projects are completed and results from these projects become available, this data can be used to develop simple case studies that can be placed on the web site and in other marketing materials.
Target End Uses	At this time the program targets, through a comprehensive energy assessment, gas and electric end-uses only. Instant savings measures such as energy efficient lighting upgrades and DHW saving devices as well as major measures are included. Under the program re-design, participants will have access to both those measures that are traditionally deemed "residential" and those that are considered "commercial" without any limitations imposed by their rate class/metering. Listed below are the primary end-uses targeted through the program. All cost-effective applications, systems, and building shell improvements that impact gas and electric consumption are eligible for incentives under this program. These include, but are not limited to, lighting, DHW, building shell improvements, appliances, motors, variable-speed drives, HVAC equipment, energy management systems and building controls, chillers, compressed air, and other site specific end-uses.
Recommended Technologies	Recommended gas and electric technologies offered may include, but are not limited to: • Energy efficient lighting upgrades & controls • Occupancy sensors • DHW measures: low flow showerheads, aerators and pipe wrap

Recommended Technologies (cont.)	• Programmable thermostats • Insulation • Air Sealing • HVAC hi-efficiency equipment upgrades and controls • ENERGY STAR-rated refrigerators and other eligible appliances • Variable Speed Drives • Motors • Chillers • Energy Management Systems (EMS) • Air compressors • Water heating equipment, including Solar hot water heating systems • Combined Heat and Power (CHP) • Heat Recovery Ventilators (HRV) / Energy Recovery Ventilators (ERV) • Custom Technologies Duct sealing measures and heat pump testing and upgrades will be performed through the existing Cool Smart or Cool Choice Program as appropriate. The Multi-Family Market Integrator will work with the customer to ensure that the appropriate services are delivered. These end-uses are best served by contractors specializing in this technology. In addition, there are instances where the customer's warranty may become void if anyone other than the original installation contractor performs work on the system. During program delivery, a packet

Recommended Technologies (cont.)	of additional program offerings (*i.e.*, lighting & appliances) will be made available to participants.
Financial Incentives	There are four categories of incentives including: a)100% incentive with $0 customer co-pay; b) fixed incentive and customer co-pay per measure; c) incentive expressed as a percentage of the total installed cost; and d) custom incentives based on the change between existing and replacement equipment. For individual gas and electric measure incentives, see Appendix A. Project caps, which take budget constraints into consideration, will be established by each Program Administrator. The Multi-family Steering Committee will consider alternative incentive structures specifically designed to encourage deeper savings over time. However, the Multi-family Working Group, based on their collective experience along with that of their implementation vendors, believes that offering integrated program services will provide for deeper savings than are currently being realized. The Program Administrators' approach involves launching the program using the incentive structure described above. Data on measures not opted for by program participants will be tracked by the Multi-Family Market Integrator and assessed by the Multi-family Steering Committee. The Program Administrators believes that implementing this approach will allow for assessing where program incentives may need to be enhanced based on in-the field program experience. In addition to the measure-level incentives described above, the Program Administrators will provide funding for "soft costs" including building operator training and technical assistance for those projects requiring an engineering study. The Program Administrators recognize that proper training for building operators and maintenance staff is a key factor in ensuring that expected savings are realized initially and persist over time. The Program Administrators will sponsor at least two sessions of a multi-family building operator training each year and provide an incentive of up to 50% of the training cost for facility operators. Incentives may also be paid to offset the costs of gas and electric engineering studies.

Financial Incentives (cont.)	The Program Administrators will examine the potential for offering on-bill financing to program participants. This assessment will take into consideration the unique characteristics of the multi-family market (i.e. the owner of the facility may responsible for the co-pay, but the energy bills may be paid by the tenants. The owner may not even be a customer of the Program Administrator). To assist building owners and managers with their planning efforts, the Program Administrators will commit to project-specific funding for up to one year for pre-approved projects with signed service agreement by customer, subject to regulatory and funding constraints.
Delivery Mechanism	The program will be administered cooperatively by the gas and electric Program Administrators. Collectively, the Program Administrators will form a Multi-family Steering Committee which will be responsible for program oversight and promoting continuous improvement/best practices with regard to the multi-family market. As stated in the Program Design section, the Multi-Family Market Integrator role will be key to the delivery of this fully integrated statewide program. The role was specifically created to ensure a seamless customer experience for participants regardless of the fuels, rates and service territories involved in a project. The Multi-Family Market Integrator will be responsible for facilitating the delivery of program services as well as acting as the conduit through which participant questions and concerns are directed to ensure that participants are not required to directly contact multiple parties during the project lifecycle. A comprehensive scope of work has been prepared for the Multi-Family Market Integrator role and a vendor will be selected via a competitive bidding process. Provisions will be made within the delivery process to allow for participants to use their own staff or contractors to install the measures, provided that they have Program Administrator approval which will involve providing documentation of their qualifications prior to the installation.
Joint Program Administrator Enhancements Planned for 2010-2012	N/A

<table>
<tr><td>Program Administrator-Specific Elements</td><td>Individual Program Administrators are encouraged to conduct pilot programs designed to allow for the evaluation of alternative program designs or specific technologies, especially those that encourage deeper savings. Findings from these pilots will be shared with the entire Multi-family Steering Committee and will be assessed to determine if enhancements to the current program design should be made based on the results of the pilots.</td></tr>
<tr><td>Three-Year Deployment/ Road Map</td><td>Provided below is the roadmap for the completion of the program design and program implementation.

PHASE I – PROGRAM PLANNING

<table>
<tr><th>Task Description</th><th>Target Completion Date</th><th>Deliverable</th></tr>
<tr><td>1. Prepare scope of work for Multi-family Market Integrator services.</td><td>Completed 9/09</td><td>Work scope for Multi-family Market Expeditor services.</td></tr>
<tr><td>2. Document process based on Multi-Family Market Integrator scope of work</td><td>10/31/09</td><td>Process Flow</td></tr>
<tr><td>3. Create Marketing Plan</td><td>12/31/09</td><td>Marketing Plan including support provided by statewide marketing effort as well as additional communications to be funneled through trade organizations within the multi-family community.</td></tr>
<tr><td>4. Finalize bidder list for Multi-Family</td><td>12/31/09</td><td>Vendor list</td></tr>
</table>
</td></tr>
</table>

Three-Year Deployment/ Road Map (cont.)		Market Integrator		
		5. Begin monthly Multi-family Steering Committee Meetings	1/31/10	Agenda and meeting notes
		6. Vendor Selection for Multi-Family Market Integrator	6/1/10	
		a. Update scope of work (if required) based on regulatory ruling on the Plans	2/8/10	Final SOW
		b. Issue RFP	2/16/10	RFP
		c. Bids due	4/1/10	Bidder proposals
		d. Vendor selection	5/5/10	Notice to procurement staff of vendor selected
		e. Contracts with each PA signed	6/1/10	Signed contracts
		7. Individual Program Administrators develop internal plans to implement statewide program	7/15/10	

Three-Year Deployment/ Road Map (cont.)

PHASE II – PROGRAM IMPLEMENTATION

Task Description	Target Completion Date	Deliverable
1. Implement common statewide incentives	1/1/10	
2. PAs that share a service territory will work together to provide integrated gas and electric energy efficiency services to customers being served prior to implementation of the formal Multi-Family Market Integrator role.	1/1/10	
3. Implement Marketing Plan	Jan- Jun 2010	Marketing materials and schedule for delivery
4. Kick-off meeting with Multi-Family Market Integrator	6/2/10	Agenda and meeting notes
5. Conduct training for PA and vendor staff	7/5/10	Documented completion of this task
6. Preparation of all program materials	7/5/10	Program materials
7. Program Implementation	7/15/10	Notification of program launch
8. Monthly Multi-family Statewide Executive	Ongoing	Meeting notes distributed to all

Three-Year Deployment/ Road Map (cont.)

Committee Meetings		participating Program Administrators
9. Standardize gas C&I measures and incentives (please see footnote in Appendix A)	For 2010 Program Year	Updated measure and incentive list

PHASE III – PROGRAM ASSESSMENT

Task Description	Target Completion Date	Deliverable
1. Annual Multi-family Statewide Executive Committee review of program successes and lessons learned with results feeding back into modifications to the program design as required.	2011- 2012	Narrative to be included in annual PA plan updates.

Special Notes	To provide a fully integrated energy efficiency offering, the program design is being developed by a cross-functional team including the Consultant and Program Administration staff representing gas and electric fuels, with experts from both the residential and C&I sectors. To best utilize the expertise of each member of the team, the following sub-groups have been formed. The Technical sub-group is responsible for identifying the end-uses and associated technologies that are appropriate for the multi-family market. This sub-group is also responsible for developing incentive structures intended to achieve greater participation and deeper savings. The Evaluation sub-group was charged with building on the success of the April 2009 Multi-family Workshop to obtain a greater understanding of the "market rate" sector. This assisted the Program Administrators in developing strategies to overcome market barriers and thus achieve increased participation and deeper savings. To this end, the Program Administrators contracted with Nexus Market Research to conduct focus groups as well as in-depth interviews with program administrators throughout the country. Additionally, the Program Administrators participated in pertinent webinars sponsored by organizations such as the Association of Energy Service Professionals (AESP) and ESource. • "50 Homes in One: Multi-family Efficiency Programs" on July 8, 2009, with speakers from Conservation Services Group, Wisconsin Energy Conservation Corp., Cambridge Energy Alliance, Pacific Gas & Electric, Commonwealth Edison, and NYSERDA. This program is being sponsored by ESource. • "Serving the Multi-family Market: New Construction to Existing Buildings to Policy Programs" on August 6, 2009, with speakers from the Wisconsin Energy Center, NYSERDA and the Heschong Mahone Group. This program is being sponsored by AESP. This program description has addressed each of the items included in the Council's Priorities Resolution. A summary of how these issues have been addressed is provided below for ease of reference. • "The PAs are encouraged to define "multifamily" as a building with more than four units". o The target market for this program is a facility with 5 or more units.

Special Notes (cont.)	• "The PAs are encouraged to work in conjunction with the Consultant to determine how to implement a program that from a customer's perspective will be blind to whether building meters are commercial or residential". o Participants will have access to incentives for all cost-effective measures offered through the program regardless of billing rate. • "The PAs are encouraged to work in conjunction with the Consultant to determine how to ensure that customers participating in the Multifamily Initiative need to fill out only one application for a given multi-family property and be required to interact with only one utility-related service provider or partner. For purposes of the multifamily program, the PAs are encouraged to define "property" as all buildings within a given property, regardless of the number of meters on that property. If the customer is not the building owner or landlord, the PA should seek to involve other customers on the property, whether other customers in the same development". o The Multi-Family Market Integrator will take the information necessary for the customer to apply for all eligible program services, so there will be no need for the customer to contact multiple parties to initiate a request. o The term property will not be limited to individual buildings, but rather can mean, where appropriate, a group of buildings. o The Program Administrators plan to involve tenants in the process, for example providing them with energy education. • "The PAs are encouraged to develop mechanisms, including outreach and education to landlords to demonstrate the benefits of undertaking energy efficiency and provide equitable sharing of the costs and benefits of energy efficiency improvements". o The marketing strategy for this program will include targeted outreach to the multi-family community. • "The PAs are encouraged to offer technical assistance in the form of audits, design assistance, commissioning, and training, and cash incentives based on building performance in the Multifamily

Special Notes (cont.)	Initiative". o As stated above, the program includes technical assistance in the form of a "whole building" assessment to identify opportunities regardless of fuel. Incentives are provided for cost-effective gas and electric measures. • "The PAs are encouraged to explore a Multi-family Initiative deep energy retrofit track". o There will be representation from the Multi-family Steering Committee on the program design team working on the Deep Retrofit Pilot to assess opportunities in facilities with five or more dwelling units. • "To ensure the highest level of quality and consistency, the PAs are strongly encouraged, in conjunction with the Consultant, to research, analyze and report their findings to the Council requiring the accreditation of all auditors of multifamily facilities and associated contractors, through rapid but thorough review of successful models in other areas of the country including but not limited to New York, Wisconsin, Ohio, and the Pacific Northwest, and through researching BPI and other accreditation entities". o The Program Administrators recognize the role that having trained professionals perform assessment and install measures plays in realizing expected savings. Primary vendors contracted by the Residential Program Administrators are required to have BPI certification or the equivalent. Sub-contractors will work under the supervision of the primary vendor. Primary vendors contracted by the C&I Program Administrators are required to meet all local, municipal and state licensing requirements. • "PAs are encouraged to examine the experience of NYSERDA and other states' multifamily programs". o The Massachusetts Program Administrators held a conference call in April 2009 with NYSERDA and their Program Administrator to gain a better understanding of their delivery model. o In preparation for the Multi-family Workshop, the facilitator conducted best practice research and presented their findings to the workshop participants. o In June 2009, the Program Administrators retained the services of a market research firm to conduct focus groups and in-depth telephone interviews pertaining to multi-family programs across the country.

	o Two nationwide webinars pertaining to multi-family programs were attended by representatives from the Program Design Working Group to review best practices.

APPENDIX A – FINANCIAL INCENTIVES TABLE

GAS MEASURES	INCENTIVE
Instant Savings Measures: Domestic hot water saving devices, such as faucet aerators and showerheads Energy Star rated programmable thermostats, where appropriate Basic in unit air sealing (e.g., weatherstripping and caulking) Pipe insulation (up to six feet)	No Cost to Customer
All other major energy saving measures including but not limited to:	Typically up to 50% of labor and equipment, or buy down the installed costs to the equivalent of a fixed

Attic Insulation Wall Insulation Rim joist insulation Space and Water heating equipment	payback period.[14] Financial incentive may also include co-funding engineering and commissioning studies and/or design incentives covering a portion of incremental architectural and design costs for efficiency improvements.

[14] Program Administrators have increasingly collaborated at the management, program management, and technical staff levels to standardize program measures, incentives, technical requirements, and participation criteria. The process of fully harmonizing prescriptive measures and the accompanying incentives will be complete for 2010. The criteria for vetting and approving custom projects, and assigning incentives will be standardized in 2010. Financial incentives cover a portion of the total installed project costs, typically up to 50% of labor and equipment, or buy the installed costs down to the equivalent of a fixed payback period. In addition, Program Administrators with the capability will offer on-bill financing options for municipal customers in 2010 to enable them to implement comprehensive energy efficiency treatment in their communities.

9. *Low-Income Program Descriptions*

Residential Low-Income Program

Primary Objective	To increase energy efficiency and reduce the energy cost burden for income-eligible customers through education and the installation of gas energy efficiency measures to achieve deeper and broader energy savings.
Program Inception	Some Program Administrators' low-income programs date back to the early nineties. Since 1998, Program Administrators have been working with LEAN to improve the low-income program and increase funding. From this emerged the Best Practices Working Group to provide a more coordinated statewide low-income program and a means to ensure correct installation techniques for the program.
2010-2012 Program Goals	Please see PA-Specific Filings.
2010-2012 Budget	Please see PA-Specific Filings.
Joint vs. Program Administrator-Specific Offering	This program is specific to individual Program Administrators. However, Program Administrators have been working in coordination with LEAN to offer common program elements. (See "Program Design.")

Program Design	The Program Administrators, along with the LEAN, state organizations such as DHCD and the Network, make up the Best Practices Working Group. The working group's objective is to collaborate and coordinate on all aspects of the low-income program, including but not limited to planning, delivery, implementation, standardization, education, marketing, training, cost effectiveness, evaluation, and quality assurance. This program piggybacks on the current DHCD low-income energy efficiency program. Once customers are deemed eligible, they will receive an in-home energy assessment from their local Network agency. The Network agency will then arrange for weatherization and other services to be installed by a qualified contractor. This program will achieve deeper savings by installing additional efficiency measures, to the extent cost-effective, such as indirect water heaters with heating systems, exterior doors, front load clothes washers and repairs to make efficiency measures possible. Other measures will be investigated, such as solar water heaters and usage monitoring systems. In addition, a change in rules as a result of the American Recovery and Reinvestment Act ("ARRA") makes it possible to spend more federal money in each home which will allow Program Administrator funding to help address more items on the cost effective priority list for each customer. Savings will be distributed more broadly by treating additional homes, including mobile homes (including contractor training if needed) homes where tenants pay for heat. As a final step, the Network agency will perform a final quality assurance inspection to ensure that all work is performed to program guidelines. Education and information are included in all Program Administrators' energy efficiency programs. The low-income program plans to develop/improve education materials and material distribution which will include: • Customer education packages: common "leave-behinds" in customer audit packs • Materials for outreach workers (*e.g.,* hospital intake people, senior centers) • A web link on Division of Unemployment Assistance website • Other outreach opportunities
Target Market	Residential natural gas heating customers living in one- to four- unit dwellings who are at sixty percent (60%) of the state median income level. In the case of multi-unit dwellings, at least fifty percent of the occupants must qualify as low-income in order

Target Market (cont.)	to be served by the low-income program. In special cases, where outside grant money can enhance program services, the Program Administrators may approve participation for customers in specific communities at eighty percent (80%) of the state median income. Any changes to eligibility will be addressed through the Best Practices Working Group.
Marketing Approach	Program Administrators will engage in outreach efforts to notify customers of the availability and value of energy efficiency services. Marketing will consist of contacting, by mail and/or telephone, customers subscribing to the low-income rates who have not received prior energy services. Direct mail, bill inserts, and literature distributed through social service agencies, government offices, and other networks are also used to market the program. In addition, Program Administrators and low-income advocates are participating in statewide marketing efforts to encourage income-eligible customers to take advantage of discount rates, energy efficiency programs and fuel assistance programs. The program is also being integrated into a unified, statewide website. This website will allow customers to go to one site to find out about all energy efficiency offerings available to them. Outreach and marketing efforts will be expanded to include building relationships with unemployment centers, medical service providers, and other venues that would reach potential income-eligible customers. Marketing efforts will be designed to meet the objectives of reaching more customers (going broader into the customer base, for example by participating in statewide education and marketing efforts) and maximizing energy savings opportunities (going deeper into each home to find ways to save energy, such as by an education by energy monitoring approach, with computerized feedback based on actual usage, if such a strategy proves to be cost-effective).
Target End Uses	Target end uses include but are not limited to: • Comprehensive, whole house approach • Building shell

Target End Uses (cont.)	• Heating • Domestic water heating • HVAC/mechanical systems • General waste heat • New technologies and renewables
Recommended Technologies	The Program Administrators will continue to work with the Best Practices Working Group to identify new cost-effective energy efficiency services, measures and technologies that are appropriate to offer to income-eligible customers. Current measures offered through the low-income program include, but are not limited to: • Attic insulation • Wall insulation • Pipe insulation • Duct insulation • Air sealing • Domestic hot water measures • Heating system repair and replacement • Major weatherization repairs (*e.g.*, electrical repairs, roofs, etc.) • Landlord heating system retirement pilot (PA-specific) • Health and safety Other technologies to be discussed in the Best Practices Working Group for future consideration include but are not limited to: • Expanded landlord heating system retirement initiatives • Exterior doors • Super insulated roofs

Recommended Technologies (cont.)	• Solar water heating • Green/hypoallergenic products • Window coverings • Mobile home insulation • ENERGY STAR Clothes washers • Other measures determined on a site-specific basis
Financial Incentives	In all but exceptional cases, low-income products and services are directly installed and delivered with no co-payment from participating customers, subject to local Network agency discretion.
Delivery Mechanism	Program Administrators, when warranted, use a lead vendor to administer the program. The Program Administrators work closely with their lead vendor and/or respective Network agencies on all aspects of the program design and implementation. The lead vendor/Network agencies are responsible for providing the actual weatherization services to the customer. The lead vendor/Network agencies work with installation contractors to ensure that the proper program guidelines are enforced. These agencies are also responsible for ensuring that the customer meets the eligibility requirements for program participation and providing the lead vendor and/or Program Administrator with the required documentation of all work performed.
Joint Program Administrator Enhancements Planned For 2010-2012	In order for the low-income program to increase the number of program participants and achieve deeper energy savings over the next three years, the Program Administrators will: • Work with LEAN, DHCD, and Network agencies to increase qualified contractor participation in the program through training and workforce development. • Continually review and evaluate new measures and technologies through the Best Practices Working Group process • Leverage all applicable revenue streams available to enhance services

	• Broaden program participation through coordinated marketing and outreach efforts • Deepen efficiency penetration consistent with a comprehensive, whole house approach
Three-Year Deployment	The Program Administrators, in conjunction with the Consultants and LEAN, where appropriate, will be performing an assessment of the multi-family programs in Massachusetts. Because the target market for this program includes multi-family customers, the results of the statewide assessment may apply here. For low-income, multi-family retrofit projects, the assessment will include the development of strategies to serve low-income multi-family buildings in a manner that is fuel-blind, meter-blind, and integrates low-income, residential and commercial programs, as appropriate, by minimizing co-payments to the greatest extent possible (pending a review of the budget impact by each Program Administrator).
Special Notes	The preceding program description is designed to support the successful attainment of the Green Communities Act's energy efficiency investment goals and environmental benefits. Further, it is the intent of the Program Administrators to support the Council and its Consultants through a recognized ongoing iterative planning process to develop and implement plans that meet the objectives of the Council's Priorities document. This program design is intended to addresses a number of applicable Council priorities including: • Seamless Delivery. By coordinating Program Administrator programs with the U.S. Department of Energy and U.S. Department of Health and Human Services programs administered by DHCD, as well as other programs implemented by the network that implements the Program Administrator and DHCD programs, Program Administrators assure that a common set of programs is available to all income-eligible customers and that the programs are seamless from the viewpoint of customers. Program Administrators' programs are also coordinated with each other, particularly across fuels. Nevertheless, experimentation and pilot programs implemented in particular territories allow development of improvements that are monitored by the Best Practices Working Group for possible adoption statewide. • Best Practices. The Program Administrators will continue to work within the Best Practice Working Group meetings for successful program development. The Best Practice Working Group's objective is to collaborate and coordinate on all aspects of the low-income program including ongoing planning, delivery, implementation, marketing, training, evaluation, and quality assurance. In addition, by piggy-

Special Notes (cont.)	backing on the DHCD weatherization program, the Program Administrators will maximize seamless delivery to the customer without duplication or complexity. • Training. The Program Administrators will continue to explore common protocols in auditor and contractor training development and outreach for all areas identified through the Best Practices Working Group. The quality standards for qualified contractors will be consistent with the Massachusetts Weatherization Assistance Program Technical Manual, which was developed as a working document to be used in conjunction with the Northeast Weatherization Field Guide. The guide provides comprehensive technical guidelines on appropriate weatherization protocols and techniques. In addition, the Program Administrators will provide to qualified auditors and contractors in-field training and materials related to energy efficiency technologies and help expand outreach efforts. • Quality Control. All work is rigorously inspected to ensure high quality materials and installation practices are used. The Program Administrators, in coordination with the Best Practices Working Group, will work to maintain this high level of oversight. • Pilots. The Best Practices Working Group is continually looking for new and innovative technologies and measures to help income-eligible customers save energy. To that end, the Program Administrators will consider piloting, monitoring, and evaluating new technologies/measures to determine if a full program rollout is justified. • Deeper/Broader. Through the comprehensive, whole house approach, all available cost-effective energy efficiency measures offered through the program will be considered and, where feasible (dependent on health and safety as well as overall program cost effectiveness), implemented in order to attain greater savings. The program strives to provide all customers with an opportunity to lower utility bills through the purchase of energy efficient products. • Coordination. The Program Administrators will coordinate with other programs for outreach communication and marketing strategies, the integrated website, contractor trainings to support a sufficient and quality installation focused workforce, and program quality assurance/quality control

Special Notes (cont.)	initiatives. The Program Administrators are aware that significant amounts of short-term economic stimulus funds may be made available to help underwrite low-income energy efficiency efforts. The levels and possible effect of this potential capital infusion is not yet known, but this issue will be re-visited by the Program Administrators, LEAN, and the Council as final, accurate information becomes available.

Low-Income Residential New Construction

Primary Objective	To capture lost opportunities, encourage the construction of energy-efficient homes, and drive the market to one in which new homes are moving towards net-zero energy.
Program Inception	Since 1998, Program Administrators have included low-income new construction in the residential new construction program.
2010-2012 Program Goals	Please see PA-specific filings.
2010-2012 Budget	Please see PA-specific filings.
Joint vs. Program Administrator-Specific Offering	Joint
Program Design	The Program Administrators continue their strong commitment to a comprehensive whole-house approach for the Massachusetts New Homes with ENERGY STAR Program. The program is committed to achieving both a broader market penetration of energy-efficient homes as well as deeper energy savings where possible. The Program Administrators strive to retain participating builders and recruit new ones. Homebuilders must target ENERGY STAR certification for all homes submitted to the program. However, the program will also provide incentives for CODE Plus (a level above Massachusetts State Code but shy of the ENERGY STAR certification standards) as an avenue for broader reach as an entrée to ENERGY STAR. Direct installation of ENERGY STAR-qualified CFLs in appropriate hard wired sockets, on-site training, and a final verification inspection is required for all homes participating in the program. All projects four units and fewer will be identified as single-family, and all projects five units and greater will be classified as multi-family. Buildings that are five stories or fewer that are permitted under the residential use group are eligible to participate in the program and to be certified as an ENERGY STAR-qualified Home. Mixed-use (Residential/C&I) Buildings may participate if they are permitted in the commercial use group as long as:

Program Design (cont.)	(1) the entire structure is five stories or fewer and (2) the space conditioning and water heating systems are not shared between the residential and commercial spaces. Additional qualifications for program participation are: **ENERGY STAR Certification:** • ENERGY STAR compliance with a HERS Index of 85 or less for ENERGY STAR Tier I and a minimum modeled improvement over the current Massachusetts Baseline Home/UDRH of at least 30 percent and 60 percent respectively for ENERGY STAR Tiers II and III. Three tiers of ENERGY STAR certification will be offered in the 2010 program. The criteria for each tier are listed in the Financial Incentives section. • Meeting the envelope leakage and duct leakage criteria. • Successful completion of a TBC and additional checklists as introduced by the EPA for version III of the national ENERGY HOMES standard. • Meeting the EPA's ENERGY STAR homes qualifications and/or the most rigorous standard available at the time (see www.energystar.gov/index.cfm?c=new_homes.hm_index). • Program required percentage of CFL installations. **Code Plus Certification:** • Meeting envelope leakage and duct leakage criteria • Program required percentage of CFL installations
Target Market	• Homebuilders • Contractors • Architects/Designers • Trade allies • HERS raters • Homebuyers • Realtors • Developers • Low Income and affordable housing developers • Code officials

	• Consumers (in the market for new homes and or major renovations)
Marketing Strategy/ Approach	The program will continue to educate homebuilders, consumer, and trade partners regarding the energy saving benefits, and value of ENERGY STAR-qualified homes. Marketing efforts will focus on: homebuilder recruitment, continued training and support, public relations, and the implementation of large scale multi-media advertising campaigns geared toward homebuilders, consumers and trade ally groups. The program will continue to support development of leads through building permit lists in cities and towns throughout the Commonwealth. These lists will be provided to market-based raters to use as prospecting tools. Hosting, sponsoring and attending various trade show exhibitions and homebuilder conferences remain crucial to marketing the program. The program's multi-media advertising campaign will include vehicles such as: strategic television partnerships with local affiliate or cable programming providers, radio live reads and on-air interviews, print advertising in builder and trade publications, direct marketing via email/fax lists and a heavy online advertising presence which includes comprehensive social media outlets. The program will participate in the new statewide consolidated website that will further promote the program and aid in cross program promotion. There will continue to be heavy emphasis on "earned media" and editorial PR involvement to ensure market penetration and an increased program capture rate. In addition, individual Program Administrators will use targeted marketing as needed to meet program participation and spending goals.
Target End Uses	• ENERGY STAR-qualified heating and cooling systems, lighting, appliances and windows • Increased levels of insulation using better materials *i.e.*, blown in and/or foam board • Improved construction techniques to minimize air leakage, duct leakage, infiltration, and heat loss • Improved HVAC installation techniques and guidelines • Incorporate mechanical ventilation • Renewable ready-PV/Solar Thermal
Recommended Technologies	• ENERGY STAR-qualified heating and cooling systems, lighting, appliances and windows • Increased levels of insulation using better materials, i.e., blown in and/or foam board • Improved construction techniques to minimize air leakage, duct leakage, infiltration, and heat loss • Improved HVAC installation techniques and guidelines • Incorporate mechanical ventilation • Renewable ready-PV/Solar Thermal

Financial Incentives	Incentive levels may be adjusted to respond to market conditions. Current levels are shown in the table below. In addition, free ENERGY STAR-qualified CFL products are provided for each home. Participating homes are currently eligible for the following incentives which the program processes in addition to base incentives. This program will coordinate with other programs such as MassSAVE, GasNetworks, and CoolSmart. Please refer to those other filing sections for specifics. • Income eligible participants receive $100 incentive for an ENERGY STAR-rated dishwasher and refrigerator.

Package	**Requirements**	**Single-Family Incentive[1]**	**Multi-family Incentive[2]**		
			5-99 units	**100-199 units**	**200+ units**
CODE Plus	6 ACH CFM 50, 8 percent duct leakage	$325	$225	$225	$225
ENERGY STAR	ENERGY STAR compliance with a HERS Index of 85 or less	$750	$650	$500	$350
ENERGY STAR II	ENERGY STAR compliance with a HERS Index of 85 or less and 30% improvement or better over the Massachusetts UDRH	$1,250	$1,150	$850	$550

ENERGY STAR III	ENERGY STAR compliance with a HERS Index of 85 or less and 60% improvement or better over the Massachusetts UDRH	$8,000	$4,000 [3]	$3,000 [3]	$2,000 [3]

[1] Starting in 2010 the program will define a single-family home as a structure that contains between one and four units.

[2] Starting in 2010 the program will define a multi-family home as a structure that contains five or more units.

[3] Energy Star III Multifamily projects will be reviewed for final fee structure, listed are the maximum incentives paid by Program Administrators.

Delivery Mechanism	The program is administered by a Program Administrator in each service territory and coordinated regionally through the JMC. The JMC, through a competitive bid process, choose an implementation contractor to oversee the day-to-day operations of the program statewide. The contractor is responsible for tracking and reporting program activity to the respective JMC Program Administrators. The contractor will also conduct quality assurance/quality control of field activities and advise the JMC on necessary program changes and enhancements. Throughout the planned timeframe, the JMC plans to continuously strive towards a market-based network of trained contractors who offer energy-efficiency and rating services to homebuilders for a fee. The Program Administrators may consider continuing to support rater fees for low-income projects in their service territories. The program recognizes the new emphasis on training necessary to make this program successful, as well as to support workforce development efforts through the Green Jobs Act. The program will support training of increased frequency and greater depth in the fundamentals of building science and the latest available technologies, including those for air sealing and insulation. The contractor will be a HERS provider of last resort to help new raters become established as part of the open market structure.
Joint Program Administrator	• The Program Administrators are currently working together to identify a way to provide complete support to multi-family structures five stories or fewer. The Program Administrators will consider allowing master metered

Enhancements Planned for 2010-2012	electric buildings to participate in the program, as they are ineligible currently. • The 2009 major renovation pilot projects being conducted by the Program Administrators will provide further understanding for the JMC to garner greater savings by administering a Major Renovation Program during 2010-2012. A plan for a consistent unified program--either within RCS or within new construction--will be part of the October filing for the 2010-2012 three-year Plan. • Support code amendments that add to energy efficiency • The program will promote building science technologies which help interested homebuilders construct zero energy homes. • Support workforce development efforts through Green Jobs Act by encouraging new raters to enter into the marketplace.
Program Administrator-Specific Elements	Please see PA-specific filings.
Three-Year Deployment/Road Map	For new construction, the efforts to achieve both deeper savings and gain broader market penetration will continue through multiple tiers of participation, one of which continues to push homes closer to net zero energy. These goals are daunting given the downturn in the economy and the resultant slow down of the building market. However, the program will have significant resources dedicated to "putting feet on the ground" to promote the program and support participating builders and other key stakeholders in the residential new construction market. For the three-year deployment, the Program Administrators will focus on: • Expansion of the current HERS rater network of nine competing companies • Moving closer to a fully market-based program where Program Administrators reduce and ultimately phase out subsidies to raters shifting those monies directly to builders who, in turn, will negotiate directly with raters for associated fees to rate homes • Expansion of the base of participating builders • Continued expansion of existing and new market allies • Training the market effectively in order to stay ahead of the introduction of more stringent building codes as well as new versions of the national ENERGY STAR Homes which will be significantly harder to achieve • Collaboration with Green Communities through technical support • Continued ramp up of consumer awareness

Three-Year Deployment/Road Map (cont.)	The Program Administrators, in conjunction with the Consultants and LEAN, will be performing an assessment of the multi-family programs in Massachusetts. Because the target market for this program includes multi-family customers, the results of the statewide assessment may apply here. For low-income multi-family projects, the assessment will include the evaluation of strategies to serve low-income multi-family buildings in a manner that is fuel-blind, meter-blind, and integrates low-income, residential, and commercial programs, as appropriate, with, a minimal or no co-payment pending a review of the budget impacts by each Program Administrator.
Special Notes	The preceding program description is designed to support the successful attainment of the Green Communities Act's energy efficiency investment goals and environmental benefits. Further, it is the intent of the Program Administrators to support the Council and its Consultants through a recognized ongoing iterative planning process to develop and implement plans that meet the objectives of the Council's Priorities Resolution document. This program design is intended to addresses a number of applicable Council priorities including: • Coordinating with other programs for outreach communication and marketing strategy • Performance-based incentive structure, Third Tier • Comprehensive program delivery through Joint Management Committee integrating gas and electric Program Administrators in a fuel-blind nature • Through tier development and refinement informed by the 2008-09 Zero Energy Challenge, the JMC will look to further promote near zero energy homes • Coordinating with other programs on integrated website • Market-based HERS Rater Model, Trainings, and Technical Assistance

Low-Income Multi-family Retrofit Program

Primary Objective	To deliver energy efficient products and services directly to the dwellings of residential customers living in facilities (with five or more units) on the low-income rate or of eligible income-eligible residents living in multi-family non-institutional facilities (with five or more units) owned or operated by a non-profit entity or a public housing authority, by addressing the informational, economic, institutional, and technical barriers that have historically made the low-income multi-family market a "hard to reach" sector in order to help eligible participants lower their energy bills. The program aims to broaden participation and achieve deeper savings per participant by integrating gas and electric measures into a single program.
Program Inception	Some programs offering services to this customer segment date back to the early nineties. Since 1998, Program Administrators have been working with the Best Practices Working Group to provide a coordinated program.
2010-2012 Program Goals	Please see PA-Specific Filings.
2010-2012 Budget	Please see PA-Specific Filings.
Joint vs. Program Administrator-Specific Offering	The Program Administrators are proposing a common statewide program with the goal of offering a consistent participant experience throughout the state. The Program Administrators recognize the need to allow for the flexibility to ensure that the needs of all participants are met.
Program Design	This program is designed to minimize or eliminate co-payments, integrate gas and electric program delivery, and integrate funding across all sectors that serve low-income multi-family facilities to the greatest extent possible. Eligibility for program measures and services will be based on the established program cost-effectiveness test, which include agreed non-energy benefits, and will not be restricted by rate class associated with the meter(s) for the facility to the greatest extent possible. The program will be structured to ensure that participants are provided with a "whole building", fully integrated

Program Design (cont.)	offering targeting both gas and electric end uses. While on-site, all opportunities, regardless of fuel source, will be identified and documented for the customer. All efforts to deliver a fully integrated offer to a participant will be performed in a manner that will result in a seamless participant experience. The Program Administrators in collaboration with LEAN, state organizations such as the DHCD, public housing authorities (PHAs), community development corporations (CDCs), other non-profit entities that own or operate low-income non-institutional multi-family housing (non-profits), and Community Action Program ("CAP") agencies, will make up the Best Practices Working Group. The working group's objective will be to collaborate and coordinate on all aspects of the low-income multi-family program, including but not limited to, planning, delivery, implementation, standardization, education, marketing, training, cost effectiveness, evaluation, and quality assurance. This program will piggyback on the current DHCD low-income energy efficiency programs and all other eligible funding sources (i.e. federal and state) to enhance program services. The LEAN Lead Vendor with respect to each PA service territory will be the same as the LEAN Lead Vendor for other low-income efficiency programs, or such other arrangement as is agreed with LEAN (hereinafter "LEAN Lead Vendor"). Sub-contracting will be appropriate to the complexity of the work required and will be based on the same audit tool as in the market rate multi-family retrofit program. Low-income customers will be referred to the LEAN Lead Vendor by the Multi-Family Market Integrator ("MMI"), as defined in the multi-family retrofit program. Low-income customers may also apply directly through the LEAN network. An essential element of this program is that interested customers also have the option, at their discretion, of electing to participate in the market rate multi-family retrofit program. This approach helps ensure that there are multiple paths to participation in energy efficiency programs in this unique market sector that has also been served over many years by skilled contractors and engineering firms. These firms will continue to be eligible to provide services in this sector, both through the market rate multi-family retrofit program (and its terms and conditions) and, where qualified, as providers for the LEAN network under the terms and conditions of this program. The following program design components are similar as those found in the multi-family retrofit program description. <u>Enrollment</u> Participants for this program may enroll through a low-income agency, statewide website, the multi-family

Program Design (cont.)	statewide toll free number, Program Administrators or other venue. Participant Screening LEAN will develop an Advisory Committee composed of LEAN, CDCs, other nonprofit owners of low-income non-institutional multi-family housing, and PHAs, which will be tasked with prioritizing low-income multi-family projects for each Program Administrator and alerting the Multi-Family Market Integrator, as defined in the multi-family retrofit program, of projects assigned to move forward. The Advisory Committee will integrate flexibility into their planning to handle unique needs of Program Administrators or potential participants. Due to the nature of this market segment most leads will be generated through the Advisory Committee, however, leads coming in via other venues will be screened by the MMI and forwarded to LEAN for eligibility confirmation. Upon confirmation of a project, the LEAN Lead Vendor is responsible for coordinating the appropriate parties to address the project needs based on protocols agreed to by specific Program Administrators and consultation with specific Program Administrators to move the project forward. Whole Building Assessment Based on the outcome of the screening process, the appropriate technical resources will be assigned to conduct a whole building, (fuel blind) assessment. The audit firms used for the market rate program will also serve the low-income sector, along with the current Network agencies who serve the low-income multi-family market. If the same firms are not available, the auditor(s) performing the services will be required to have, at a minimum, the same qualifications (i.e. training, certification, etc.) as the market rate program auditors. The LEAN Lead Vendor will attempt, through the screening process, to identify all resources required for the assessment; however, there may be instances where additional expertise is required and therefore more than one site visit is necessary. Technical assessments, benchmarking, and engineering studies will be conducted as needed. At the time of the assessment, education will be provided to participants and instant saving measures will be installed, as appropriate and authorized by the customer.

Program Design (cont.)	Integrated Proposal for Energy Efficiency Services Using the findings from the site-specific assessment, the appropriate parties will draft a project proposal that will include gas and electric cost-effective measure opportunities and other available services where applicable. The project proposal will be forwarded to the appropriate Program Administrators for approval. Once the comprehensive offer has received Program Administrator approval, it will be presented to the participant by the parties required to help the customer fully understand the offering. Delivery of Measures and Services The LEAN Lead Vendor will coordinate the delivery of the measures and services opted by the customer. The installation firms used for the market rate program may also serve the low-income sector. If the same firms are not available, the vendors performing the services will be required to have, at a minimum, the same qualifications (i.e. training, certification, etc.) as the market rate program vendors. An exception to this protocol will occur when participants select their own vendor for the installation of gas measures such as heating systems, but they still must have the same qualifications as any other qualified installation vendor. The installation contractors will strive to have all dwelling unit measures installed in a single visit to minimize disruption for the tenants; however multiple visits may be required for the installation of common area measures. Commissioning services will be performed as appropriate. Quality Assurance/Quality Control Quality assurance will be performed in support of this program. The Program Administrators anticipate that the quality assurance will be performed by an independent third party. Customer satisfaction surveys will also be administered to provide additional feedback for the Program Administrators. The same QA/QC protocols and vendors will be used for both the market rate and low-income sectors. Education and information are included in all Program Administrators' energy efficiency programs. The low-income multi-family program plans to develop/improve education materials and material distribution which will include education materials for landlords, property managers, building occupants, and property management personnel.

Program Design (cont.)	*Additional Program Design Elements* • The Program Administrators will, on request, inform participants of the change in their energy consumption one year after participating in the program. This may be accomplished via a letter or email. • Subject to a review of cost reasonableness, available tools will be used to allow LEAN to benchmark customer energy use against like buildings as part of the project screening process. • The Program Administrators recognize that proper training for building operators and maintenance staff is a key factor in ensuring that expected savings are realized. As such, the Program Administrators will assess the feasibility of offering incentives for the building owner/manager and/or their staff to obtain applicable training and certifications. The Program Administrators in collaboration with LEAN, state organizations such as the DHCD, public housing authorities (PHAs), community development corporations (CDCs), other non-profit entities that own or operate low-income multi-family housing (non-profits), and Community Action Program ("CAP") agencies, will make up the Best Practices Working Group. When topics to be discussed apply to both market rate and low-income customers, this group and the Multi-family Steering Committee (for the market rate program) will hold joint working sessions.
Target Market	Residential customers on the low-income rate or individuals living in non-institutional dwellings owned or operated by non-profit entities or public housing authorities with five or more units who are at 60 percent of median income level as well as landlords and property managers of these buildings. Fifty percent of the occupants must qualify as low-income in order to be served by the low-income multi-family program. In special cases, where outside grant money can enhance program services, the Program Administrators may approve participation for customers in specific communities at 80 percent of median income. Any changes to eligibility will be addressed through the Best Practices Working Group.

Marketing Strategy/ Approach	The Program Administrators foresee a high demand for the low-income multi-family program that will be managed jointly by the Advisory Committee and the Program Administrators. The Program Administrators will engage in outreach efforts to notify customers of the availability and value of energy efficiency services to stimulate interest in the program and operate within budgets. Marketing will consist of contacting customers subscribing to the low-income rates who have not received prior energy services and landlords of low-income tenants. Direct mail, bill inserts, and literature distributed through social service agencies, housing funders, government offices, and other networks are also used to market the program. Program Administrators will use their relationship with PHAs and other low-income property managers to market the benefits of the program. In addition, Program Administrators and low-income advocates are participating in statewide marketing efforts to encourage income-eligible customers to take advantage of discount rates, energy efficiency programs and fuel assistance programs. The program is also being integrated into a unified, statewide website. This website will allow customers and potential participants to go to one site to find out about all energy efficiency offerings available to them. Marketing efforts will be designed to meet the objectives of going broader and deeper to maximize energy savings.
Target End Uses	Gas and electric target end uses in both dwelling units and common areas include but are not limited to the following: • Comprehensive, whole building approach, including audits • Building shell • Heating and cooling • Domestic water heating • HVAC and other Mechanical systems and controls • Lighting and Appliances • General waste heat • New technologies and renewables • All other cost-effective site-specific end uses that impact gas and electric consumption

Recommended Technologies	The Program Administrators will continue to work with the Best Practices Working Group to identify new, cost-effective energy efficiency services, measures and technologies for gas and electric end uses that are appropriate to offer to low-income multi-family customers. Potential measures offered through the low-income multi-family program, where cost-effective, include but are not limited to: • Attic insulation • Wall insulation • Pipe insulation • Duct sealing/insulation • Air sealing, including weatherstripping • Domestic hot water measures • Lighting upgrades and controls • Energy Management Systems (EMS) • Occupancy sensors • Motors and drives • Chillers • Air compressors • Heating system repair and replacement • Water heating equipment • Programmable thermostats • Ventilation system repair, adjustment, replacement • Refrigerators • Freezers (PA-specific) • Air conditioners • Heat Recovery Ventilation/Energy Recovery Ventilation • Redistribution systems • Temperature building controls • Power smart strips • Health and safety Other technologies to be discussed in the Best Practices working group for future consideration if cost-effective include but are not limited to:

Recommended Technologies (cont.)	• Combined heat and power (CHP) • Major weatherization repairs (e.g., electrical repairs, roofs, etc.) • Exterior doors • Other envelope measures • Low mercury light • LED • ENERGY STAR Clothes washers • Solar water heating • Geothermal • Biomass • Green/hypoallergenic products • Window coverings • Other measures as determined on a site-specific basis
Financial Incentives	Program Administrators will pay up to 100% of the project cost with established caps, including measure caps, which will be determined by agreement between LEAN and the Program Administrators based on a review of cost-effectiveness. Given the cost of larger capital investment projects (e.g. heating system upgrades), the Program Administrators will negotiate with all interested stakeholders to establish incentive caps and guidelines to ensure cost-effectiveness and a more systematic balanced approach to program spending. Program Administrator funds will only be accessed after other funding sources have been leveraged. Project participants willing to provide co-payments will be entitled to favorable weighting as the Advisory committee prioritizes projects.
Delivery Mechanism	The program will be administered cooperatively by the gas and electric Program Administrators in conjunction with interested stakeholders. There will be a common enrollment process (using the services of the Multi-Family Market Integrator) for both the market rate and low-income segments to prevent customer confusion. Once the participant's project is identified as a low-income multi-family project the delivery of the program services will be similar to that for

Delivery Mechanism (cont.)	market rate participants except that the LEAN Lead Vendor will be responsible for coordinating the appropriate resources and vendors to move the project forward. The program delivery mechanism serves to minimize lost opportunities and encourage deeper savings in the following ways: • The increased incentives amounts may allow for achieving energy savings that would not be possible if this population had to provide a significant co-payment. • Having the PHAs and non-profits (CDCs and other non-profit owners of non-institutional low-income multi-family housing) directly working with members of the Best Practices Working Group will facilitate access to the tenant spaces, which has been traditionally cited a potential barrier in the multi-family market. • The Best Practices Working Group will attempt to leverage funds from all applicable revenue streams to achieve deeper savings.
Joint Program Administrator Enhancements Planned for 2010-2012	In order for the low-income multi-family program to achieve deeper energy savings and increase the number of program participants over the next three years, the Program Administrators will: • Leverage, to the best extent possible, all applicable revenue streams available to enhance services on a meter-blind basis, including integration of gas and electric, low-income, residential, and commercial funding. • Deepen efficiency penetration consistent with our comprehensive, whole building approach on a fuel-blind basis with increased incentives. • Implement LEAN Lead Vendor services across the state, similarly as described for the MMI in the Market Rate Multi Family program description. • Broaden program participation through coordinated marketing and outreach efforts, if needed. • Continually review and evaluate new measures and technologies through the Best Practices Working Group process.
Program Administrator-Specific Elements	Please see PA-Specific Filings.

Three-Year Deployment/ Road Map

Provided below is the roadmap for the completion of the program design and program implementation.

PHASE I – PROGRAM PLANNING

Task Description	Target Completion Date	Deliverable
1. Identify eligible measures and establish incentives	Completed 10/09	Set of measures and corresponding incentives
2. Prepare draft scope of work for Multi-Family Market Integrator services.	Completed 9/09	Draft work scope for Multi-Family Market Integrator services.
3. Establish PA protocols for budgeting and expense tracking under new "meter/rate" blind model	10/31/09	Discussion in the October filing in the Budget section describing assumption used in the budgeting process
4. Evaluate the feasibility of offering incentives soft costs such as technical assistance and for building owner/manager or their staff to obtain applicable trainings and certification.	10/31/09	Documented findings from joint PA and Consultant assessment
5. Develop detailed program delivery model	12/31/09	
• Document detailed roles and responsibilities for each market actor required to support the program design.	12/31/09	Matrix including market actors along with their roles and responsibilities.
• Develop process flow documentation illustrating the customer experience and the interactions between other key market actors including the Program Administrators, auditors, installation	12/31/09	Process flow

Three-Year Deployment/ Road Map (cont.)

vendors, technical assistance and QA/QC providers.		
6. Create Marketing Plan o If needed, the Program Administrators and LEAN will work together to develop a full marketing plan beyond the statewide marketing efforts o Identify marketing material needed for customers	Ongoing	If needed, form a low-income multi-family marketing committee to develop a detailed marketing and outreach plan.

PHASE II – PROGRAM IMPLEMENTATION

Task Description	Target Completion Date	Deliverable
1. Conduct training for PA and vendor staff	3rd QTR 2010	Documented completion of this task
2. Implement Marketing Plan and/or create customer marketing materials	3rd QTR 2010	Marketing materials and schedule for delivery
3. Program Implementation	3rd QTR 2010	Notification of program launch
4. Monthly Multi-family Statewide Executive Committee Meetings, including LEAN	Ongoing	Meeting notes distributed to all participating Program Administrators and LEAN
5. Training	Ongoing	Training and workforce development will be accomplished by the Program Administrators working with LEAN, DHCD, CDCs, PHAs, other non-profit owners of non-institutional low-income multi-family housing, and

Three-Year Deployment/ Road Map (cont.)

		CAP agencies to increase the number of qualified contractors, energy auditors, and administrative staff.
6.Leveraging of funds	Ongoing	The Best Practices Working Group will leverage all applicable revenue streams available to enhance services.

PHASE III – PROGRAM ASSESSMENT

Task Description	Target Completion Date	Deliverable
1. Annual Multi-family Statewide Executive Committee (including LEAN) review of program successes and lessons learned with results feeding back into modifications to the program design as required.	2011- 2012	Narrative to be included in annual PA plan updates.
2. Evaluation of new measures.	ongoing	The Best Practices Working Group process will continually review and evaluate new measures and technologies. See "Recommended Technologies" above.

Special Notes

The Program Administrators, in conjunction with the Council's Consultants, PHAs, CDCs, other non-profit owners of non-institutional low-income multi-family housing, and LEAN, have performed an assessment of the multi-family program in Massachusetts. For low-income multi-family projects, the assessment developed this program for serving low-income multi-family buildings in a manner that is fuel-blind, meter-blind, and integrates low-income, residential and commercial programs, as appropriate, with increased incentives up to100% (pending a review of the budget impacts by each Program Administrator).

Special Notes (cont.)	The program will address several of the Council's Priorities Resolution including: • Seamless Delivery. By coordinating Program Administrator programs with the U.S. Department of Energy and the Department of Health and Human Services' programs administered by DHCD, as well as other programs implemented by the Network that implements the Program Administrator and DHCD programs, Program Administrators assure that a common set of programs is available to all low-income customers and that the programs are seamless from the viewpoint of customers. Program Administrators' programs are also coordinated with each other, particularly across fuels. Nevertheless, experimentation and pilot programs implemented in particular territories allow development of improvements that are monitored by the Best Practices Working Group for possible adoption statewide. This program will be uniquely meter-blind, i.e., combine funding from gas and electric PAs across low-income, residential, and commercial sectors. • Best Practices. The Program Administrators will continue to work in coordination with LEAN (expanded to include CDCs, PHAs, and other non-profit owners of non-institutional low-income multi-family housing) at the Best Practice Working Group meetings for successful program development. The Best Practice Working Group's objective is to collaborate and coordinate on all aspects of the low-income multi-family program including ongoing planning, delivery, implementation, marketing, training, evaluation and quality assurance. In addition, by piggy-backing on the DHCD weatherization program and/or other state or federal programs, the Program Administrators will maximize seamless delivery to the customer without duplication or complexity. • Training. The Program Administrators will continue to explore common protocols in auditor and contractor training development and outreach for all areas identified through the Best Practices Working Group. The quality standards for qualified contractors will be consistent with the Massachusetts Weatherization Assistance Program Technical Manual, which was developed as a working document to be used in conjunction with the Northeast Weatherization Field Guide. The Guide provides comprehensive technical guidelines on appropriate weatherization protocols and techniques. In addition, the Program Administrators will provide qualified auditors and contractors in-field training and materials related to energy efficiency technologies and help expand outreach efforts. • Quality Control. All work is rigorously inspected to ensure high quality materials and installation

Special Notes (cont.)	practices are used. The Program Administrators, in coordination with the Best Practices Working Group, will work to maintain this high level of oversight. • Pilots. The Best Practices Working Group is continually looking for new and innovative technologies and measures to help low-income customers save energy. To that end, the Program Administrators will consider piloting, monitoring and evaluating new audits and technologies/measures to determine if a full program rollout is justified. • Broader/Deeper. Through the comprehensive, whole building approach, all available cost-effective energy efficiency measures offered through the program will be considered on a fuel-blind basis with minimized or no co-payments for gas and electric measures and where feasible (dependent on health and safety as well as overall program cost effectiveness) implemented in order to attain greater savings. The Program Administrators are aware that significant amounts of short-term economic stimulus funds may be made available to help underwrite low-income energy efficiency efforts, including at public housing authority buildings. The levels and possible effect of this potential capital infusion is not yet known, but this issue will be re-visited by the Program Administrators, LEAN and the Council as final, accurate information is available. The Program Administrators reserve the right to claim savings regardless of funding sources used. While the LEAN is looking to expand eligibility for this program to include affordable housing owners that are for-profit entities, both the Program Administrators and LEAN agree that implementation of this change will require policy changes. Until such changes are approved by the necessary regulators, this segment of the multi-family market will be served through the market rate program.

10. *C&I Program Descriptions*

C&I Retrofit Program for Existing Buildings

Primary Objective	This program will increasingly focus on comprehensive gas and electric energy efficiency opportunities associated with mechanical, electrical, and thermal systems in existing commercial, industrial, governmental and institutional buildings. It provides technical assistance and incentives to encourage retrofitting of equipment that continues to function, but is outdated and inefficient, and can be replaced with a premium efficient product. The program provides technical assistance (to identify and quantify opportunities) and financial incentives based on a percentage of project costs (both material and labor) to make equipment removal and replacement attractive to building and business owners in terms of conventional business payback requirements. The program also helps participants identify specific peak load management opportunities that enable participants to maximize other time-based incentives – such as those available from the ISO – to manage their electric and thermal loads, and assists occupants in improving their ongoing operation and maintenance practices.

Program Inception	Most Electric Program Administrators have offered retrofit programs since 1988. Over time these programs have evolved and improved through incorporation of the lessons of actual delivery experience, program evaluation recommendations, and the best practices from other programs around the country. Also, prior to the passage of the Green Communities Act, the Electric PAs had a long and productive relationship in the Massachusetts Electric Utility Collaborative, which provided a formal framework for incorporating customer input and best practices recommendations from outside consultants from all around the country into PA program designs. The Massachusetts programs developed through the Collaborative partnership came to be recognized as amongst the best in the country and both the programs and the collaborative decision-making model have been copied by a number of other jurisdictions in North America. The Gas Program Administrators have collaborated through GasNetworks since 1997. GasNetworks is a nationally-recognized, award-winning collaborative of local natural gas companies serving nearly 2 million residential and C&I customers throughout New England that has been promoting energy efficiency and the use of high efficiency natural gas technologies since 1997. The mission of this unique collaborative is to work with governmental agencies, trade allies, and consumers, in order to promote energy-efficient technologies. Successful strategies include the creation of common energy efficiency programs, education of consumers, and promotion and sponsorship of quality contractor training and awareness programs of ever-changing natural gas technologies. Massachusetts members include Bay State Gas, Berkshire Gas, National Grid, New England Gas, NSTAR Gas, and Unitil. In recent years the Electric PAs have increasingly collaborated at the management, program director, and technical staff levels to harmonize program measures, incentives, technical requirements, and participation criteria. Each PA now has a suite of retrofit program services that provides customers with technical solutions to guide better peak and overall energy management, incentives to drive customers to replace existing inefficient equipment and systems, and a means to measure the results of these replacements through cost-effective commissioning and retrocommissioning practices. The programs have been responsive to advancements in technologies and design standards for higher performance practices. The Program Administrators have developed more comprehensive solutions and wider choices in incentive offerings to promote deeper savings and greater customer participation. They have also adapted offerings in response to evolving customer needs and expectations and developed targeted initiatives – such as those for cities and towns, schools, small businesses and site-specific commercial and industrial processes – to address the needs of unique customer niches.

Program Inception (cont.)	In addition, PA-administered programs have fostered growth of a robust private sector infrastructure of companies and individual skilled energy efficiency technical practitioners – contractors, trade allies and suppliers, engineers and analysts – who work with both the programs and the marketplace to influence the selection, replacement, and management of mechanical, electrical and gas equipment and systems. Because of the international reputation of the Massachusetts programs for excellence in design and implementation, many of these companies now export their expertise in these areas to clients in other jurisdictions in the US and Canada, and this industry now constitutes a significant market niche of well-paid jobs that are based in the Commonwealth.
2010 – 2012 Program Goals	Please see PA-Specific Filings.
2010 - 2012 Budget	Please see PA-Specific Filings.
Program Design	In 2010, the Electric Program Administrators will complete the harmonization of their retrofit offerings into a consistent core set statewide of prescriptive and custom offerings, incentives, and supportive services. Gas Program Administrators will similarly organize their programs into prescriptive and custom offerings and align them into a consistent set of services and incentives. All gas and electric retrofit programs will be organized under a single program name, using application forms and other program materials that are the same, except for information pertaining to the individual Program Administrator brand identifiers, contact information, etc. In addition to this core program, individual administrators may also test the viability of new strategies and options for their customers. Strategies under consideration for implementation in 2010 include: identifying cost effective methods to improve deep energy efficiency in retrofit markets, identifying new financing instruments to promote greater access to capital to promote deeper penetration into customer sectors, and incorporating new technologies to accelerate adoption of emerging and promising electric and gas end uses, as well as an increased emphasis to automate loads to maximize the value of time-based energy supply offerings. The overall Retrofit Program addresses energy efficiency opportunities in existing commercial, industrial, governmental and institutional buildings. Under this umbrella, there are multiple offerings, tailored to unique customer needs and opportunities, including:

Program Design (Cont.)	**Technical Assistance ("TA") Services**: Solid, professional, unbiased and independent technical advisory services provide the foundation for the achievement of deep and broad savings in existing buildings. The TA Services component of the program provides technical support matched to the specific needs and capabilities of each commercial or industrial customer. Services may include walk-through audits, detailed energy-efficiency studies for buildings or building components, and specialized technical studies, such as studies of industrial process improvements and compressed air projects. In general, study proposals will be assigned to, and performed by, TA consultants who have been selected as preferred vendors through a competitive procurement process by the Program Administrators. TA consultants will be assigned based on an assessment of their expertise with the technology area under consideration. Customers can also elect to use a TA provider of their own choosing, as long as the co-funding Program Administrator approves the firm's qualifications and cost-estimate. Non-preferred vendors must comply with the same level of detail and quality as preferred vendors. In many instances, commercial and industrial customers may have both gas and electric equipment options for a particular end-use. In order to (a) encourage more comprehensive, integrated, and balanced consideration of all the energy efficiency options available, and (b) ensure that customers have open choices, the gas and electric Program Administrators delivering the statewide program will provide coordinated Technical Assistance Studies. In general, the study costs will be cost-shared between the gas and electric Program Administrators according to the proportionate share of the analysis and/or opportunities found through the analysis. Study opportunities are likely to appear in larger, complex buildings and industries. For smaller, simpler buildings and businesses turnkey vendors are expected to provide evaluations as part of their proposals without an additional cost. As an example, lighting retrofits are not eligible for technical assistance study funding. **Whole Building Assessment** ("WBA") is a comprehensive targeted approach designed to attain, over time, maximum savings in buildings through a detailed technical review and an integration of energy consuming gas and electric equipment and systems, including upgrades as appropriate. WBA helps commercial and municipal customers with larger buildings to, first, assess energy efficiency opportunities through benchmarking, and then provide them with an integrated, optimized, and systematic action plan to, over time, address identified opportunities and overcome institutional barriers. WBA provides the ongoing technical assistance and incentives required to achieve maximum deep and lasting savings.

Program Design (cont.)	Customers sign a Letter of Agreement ("LOA") that commits them to work in good faith to implement a menu of cost-effective energy efficiency and peak load reduction strategies identified in an energy assessment report. The in-depth technical assessment includes benchmarking buildings using ENERGY STAR's Portfolio Manager[15] to analyze energy use data. The assessment also includes a lighting and mechanical all-fuels walk-through audit. This holistic analysis is summarized in a report to the customer. The report details the building's current energy use, lists and prioritizes energy saving opportunities (both low-cost/no-cost and capital improvements), identifies incentives (gas, electric, tax and other) when available to bring the plan to action and provides the basis for a jointly-developed action plan to systematically improve the building's energy performance. The plan also provides peak load management opportunities to allow participants to consider time-sensitive supply offerings. Customers are also encouraged to enroll their facility staff in the Building Operator Certification Program and to avail themselves of other suggested energy education opportunities in order to help building operators implement low-cost/no-cost recommendations and monitor building operations by reviewing and interpreting Portfolio Manager reports. Program Administrators pay for a portion of the cost of participating in such trainings. **Municipalities** often have unique barriers which the Municipal Initiatives is designed to help overcome. These barriers can include: capital and staff limitations and procurement processes which were not designed to easily accommodate the vendor-driven process of energy efficiency. Municipalities may lack the technical recourses to become familiar with complex efficiency options, and requirements for governing body approval of all capital budget items can make it difficult for municipal officials to act on opportunities to reduce energy costs. Also, many cities and towns have very old public facilities with old systems. Local government structures also delegate responsibility for energy upgrades to the individual department level, while payment of bills often resides at a central finance office. Thus, there may be little incentive for departments to upgrade the energy efficiency of their buildings because the reward for reduced energy bills may simply be a reduced operating budget in the subsequent year. The cumulative consequence is that municipal customers often have very outdated and inefficient energy systems, but because savings per building may be low and the transaction costs of public procurements are high, energy service companies have little or no incentive to market to these customers.

[15] http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager.

Program Design (cont.)	The Green Communities Act provides a new streamlined contracting process that allows cities and towns to sole-source efficiency projects to a Program Administrator, or the Program Administrators' delivery contractor, if the total work is less than $100,000. By providing upfront competitive bidding, enhanced financial incentives, and Program Administrator financing options, including on-bill payment, some Program Administrators have been able to provide a turnkey service with incentives structured to create positive cash flow and to encourage comprehensive projects. This addresses many of the implementation barriers cited above. The Program Administrators will use direct, targeted outreach to municipalities to ensure they are aware of all energy services and customized assistance available to facilitate participation and will simplify transaction and administrative burdens for municipalities. **Compressed Air:** Significant energy savings can be achieved from optimizing compressed air systems in industrial facilities (over 100 HP). The focus is on the efficiency of the compressor system elements and recovery of waste heat generated by these systems. **Industrial:** Small and Large industrial customers will be targeted by the combined gas and electric energy efficiency program. Industrial energy savings opportunities will be viewed comprehensively and all the potential cost and savings streams will be quantified. The approach will incorporate measures like heat recovery and process improvements, as well as the DOE Steam Assessment and Savings program. Non-gas/electric energy benefits or additional costs related to improvements will be quantified to the extent possible. Examples of additional benefits might be; raw material, scrap and increased thru-put. We plan to target industrial opportunities more aggressively and more routinely and explicitly to quantify the non-energy benefits of efficiency measures and educate customers about them. **Retro-Commissioning:** Deferred maintenance, piecemeal upgrades, "sensor drift" and other factors affect, and degrade, building operation over time. Retro-commissioning allows a thorough evaluation of all building systems to ensure they are operating as designed. Remedial actions resulting from these studies are usually low cost or no cost and have an immediate impact on the energy use and quality of the building operation. Typically these studies require a significant time investment by a higher level engineer and therefore are often not cost-effective. In order to look for ways to reduce the study costs, Program Administrators will support these studies on a limited basis.

Program Design (cont.)	**Retrofit Performance Lighting**: Many spaces have lighting that was installed without benefit of a customized lighting design matched to the work requirements in the space or with limited or no consideration for comprehensive energy performance. By combining better fixtures lamps and controls, and altering layout where cost-effective there may be a significant opportunity for both energy reduction and a better system that contributes to a better visual and working environment. This will be offered on a limited basis and projects will be evaluated through the custom path to determine the potential for a broader customer application and cost effectiveness. **Renewable Energy:** Some existing buildings have potential for incorporating renewable energy options. PA-contracted vendors who conduct audits on existing buildings will be directed to offer a preliminary investigation of PV and solar thermal opportunities when a customer expresses an interest in pursuing such options. Where opportunities are found, the customer will be directed to the appropriate entity to secure more detailed information to properly evaluate these opportunities. Solar thermal opportunities may be eligible for custom measure incentives under PA efficiency programs as well. **Governor's Clean Energy Challenge ("GCEC")**: The Program Administrators fully support delivery of the Clean Energy Challenge. PAs will provide Massachusetts companies that accept the GCEC with the means to reduce their energy and operating costs, and, and to calculate the carbon savings from these actions. The assistance begins with an on-site Whole Building Assessment, including energy use benchmarking and a technical study to identify energy use reduction strategies—performed through a review of utility consumption data provided directly by utilities and other vendors. **Demand Response ("DR"):** Demand response will help participants identify specific peak load management opportunities that maximize their opportunities to secure time-based incentives to manage their electric loads. Additional DR opportunities will be identified and automated control measures will be identified where applicable. The program also assists occupants in improving ongoing operation and maintenance practices that could favorably impact demand. To maximize demand resource enrollment in the FCM, Program Administrators will work with third party Curtailment Service Providers ("CSP"s) to facilitate the enrollment of as many participating large C&I customers as possible. Program Administrators expect that this approach will provide a more manageable path for customers to participate in the FCM and, therefore, the need for Program Administrators to aggregate these customers should be minimal.

Program Design (cont.)	Smaller businesses will be offered DR-enabled thermostats if they agree to participate in potential load curtailment in the future. The DR potential for this customer class will be aggregated and after two years the cost and market penetration impacts of this strategy will be evaluated. The intent and expectation is that this least-cost method of enabling mass market DR will produce the critical mass necessary to enroll in the FCM. DR benefits and incentives would be retained by the Program Administrators to increase the pool of program funds. **Combined Heat and Power ("CHP")** is an attractive offering for customers such as hospitals, thermal intensive industrials, multi-family housing and others with year round thermal use. CHP presents unique challenges, as reductions of metered electric loads are offset by increased use of fossil fuels to power the CHP system. Overall energy efficiency is improved through increased utilization of the on-site electric generator's recoverable heat. Program Administrators will require a custom analysis and screening of potential CHP opportunities to ensure positive net benefits and a net reduction in greenhouse gases. The eligibility process will be aligned with the Alternative Portfolio Standard ("APS") process. In summary, a fully integrated energy efficiency delivery model is being constructed that will deliver gas and electric efficiency, CHP, renewable energy, and the DR services necessary for adoption of Smart Grid technology. As markets evolve and change in response to other emerging clean energy technologies and new business growth, the Program Administrators will be organized in a way that allows rapid response to these new opportunities for the benefit of their customers and the Commonwealth. As a recent example, the expansion of the internet has driven rapid growth of power-consuming data centers, and the Program Administrators have responded with strategies to reduce energy consumption and costs for these facilities by providing high performance ventilation and cooling for computer servers. Similarly, the growing commercial laboratories business in the Commonwealth presents unique challenges and opportunities to provide tailored energy use reduction strategies. Next to data centers, laboratories are the most energy intensive non-industrial facilities and opportunities for efficiency improvements have gone largely untouched, due to concerns about a sterile environment and safety. Program Administrators have addressed these issues directly in their proposals for efficiency projects. Success in these early projects will open the door for many more opportunities with significant potential for both electric and fossil fuel savings. Similarly, industrial customers represent significant natural gas energy savings and the Program Administrators will work with the Department of Energy's Industrial Technologies Program to identify steam savings and carbon reduction opportunities.

Target Market	The target market is all non-residential customers - commercial, industrial, governmental, and institutional. Multi-Family customers will be channeled through the separate Multi-Family Retrofit Program described separately in this filing.
Marketing Approach	While a variety of marketing approaches will be employed, experience has established that the most successful avenue is through one-on-one communication with customers through account executives, in partnership with trade allies, who can initially identify gas and electric opportunities and gauge customer interest in pursuing an efficiency upgrade, or a comprehensive plan of upgrades. Account managers can leverage their intimate, long-term relationships with customers and their knowledge and analysis of customer data (energy use, demand, sector analysis, etc.). Trade allies such as equipment vendors, consulting engineers and energy service companies, or "channel partners" are key actors in promoting, identifying, and delivering services to customers. Account managers conduct dual sales calls, open houses, training, and new product and service demos with trade allies. All programs are "open" and allow significant flexibility to vendors and customers in determining the optimal implementation strategy and partners for their particular project. Program Administrator experience with non-residential customers has established that this kind of one-on-one "relationship marketing" is most successful in moving businesspeople and institutional/government customers to action. In addition to channel partners, Program Administrators may also leverage closer alliances with turnkey installation contractors. These are firms that have been chosen through a formal bid solicitation and act as agents to the Program Administrators in performing specific program functions. Program Administrators use these firms to strategically market to specific customers, sectors and/or technologies. While channel partners provide widespread marketing and maintain customer flexibility, turnkey installation contractors allow for targeted, coordinated sales along with pre-approved turn-key solutions to customers. In 2010, the Program Administrators will launch a statewide website and statewide media marketing. Additional marketing approaches may be used by one or more Program Administrators to increase participation and capture deeper, broader savings with their customers. These could include: direct mail; seminars and training sessions; power breakfasts; webinars; participation in trade shows and conferences; co-marketing through trade industry, public interest and civic groups that represent the target market and have extensive outreach capabilities; and informational meetings with ESCos and contractors. In addition, Program Administrators expect to supplement these strategies with broad-based radio, printed matter and email-blast outreach. Email alerts and other low-cost means to reach customers will also be adopted to advance customer participation. Program Administrators are currently using on-line communications to

Marketing Approach (cont.)	bring new and emerging technologies to the attention of their customers. Other social marketing techniques will be used to increase customer awareness of program services and the means to access these services. All these strategies will be integrated into a common marketing plan that will identify key drivers, objectives, strategies, and tactics to increase customer participation.
Target End Uses	Targeted end uses include, but are not limited to, lighting and lighting controls, motors and drives, HVAC equipment, energy management systems, compressed air and unique industrial processes. Gas end uses include: building envelope and glazing, commercially sized heating and water heating equipment, system and building controls. Any commercially available energy efficiency technology may be considered through a custom application. Fully integrated and comprehensive gas and electric approaches will be taken to ensure the capture of all cost-effective achievable technical potential.
Recommended Technologies	Recommended technologies include efficient lamp technologies, efficient lighting fixtures, lighting controls, efficient motor drive systems, efficient HVAC systems, CHP, compressed air systems, heat recovery, steam systems, industrial process systems and controls, building controls, demand controlled ventilation, Energy Recovery Ventilation Units ("ERVs"), advanced gas technologies, dehumidification and humidification. Solar hot water, advanced cooling systems and other emerging technologies may also be addressed.
Financial Incentives	In recent years the Program Administrators have increasingly collaborated to harmonize program measures, incentives, technical requirements, and participation criteria. The process of fully harmonizing prescriptive measures and the accompanying incentives will be complete for 2010. Similarly, the criteria for vetting and approving custom projects, and assigning incentives will be standardized in 2010. Financial incentives cover a portion of the total installed project costs, typically by providing up to 50% of labor and equipment costs, or by incentivizing the installed costs down to the equivalent of a fixed payback period. Financial incentives may also include co-funded engineering and commissioning studies and/or design incentives covering a portion of incremental architectural and design costs for efficiency improvements. In addition, Program Administrators with the capability will offer on-bill financing options for municipal customers in 2010 to enable them to implement comprehensive energy efficiency treatment in their communities. The Program Administrators anticipate that some incentives will be adjusted higher to support emerging or underutilized technologies in order to accelerate market acceptance and sales volume. Over time, this strategy is intended to bring down the cost of these measures, and thus the incentive requirements. Incentives for more

Financial Incentives (cont.)	accepted efficient electric and gas end use technologies may also be increased when they are used in combination with other measures to promote broader and deeper savings. This is the so-called "Multi-Measure Incentive."
Delivery Mechanism	Program Administrator staff, trade allies and project administrators perform most sales, marketing, program administration, and implementation functions. In addition, outside contractors are retained for technical review of applications, on-site energy analysis, technical and design assistance for comprehensive projects, project commissioning services, and the actual measure installations, including turn-key services.
Joint Program Administrator Enhancements Planned for 2010-2012	Key joint Program Administrator enhancements are identified in the narratives above. In summary, program services and incentives will be offered under one common umbrella program with a statewide platform. Individual Program Administrators will administer the program in their locales, using common procedures, qualifications and incentives. Application forms and promotional materials will feature the statewide program name; the local Program Administrator brand, and will be common, except for any unique information required to properly administer the program in an individual Program Administrator's locale – such as contact numbers and addresses, etc. There will also be an integrated website and statewide program marketing and customer outreach campaigns. Program Administrators will also work together on CHP and DR activities, introduction and promotion of new and emerging technologies, integration of multi-family program options, and responding to GCA directives. Programs are kept in harmony by regular meetings of the respective program managers around policy and delivery issues, and the Joint Standing Technical Committee around issues of measure savings quantification, vetting new measures, and testing of emerging technologies. The Gas Technologies Committee was recently formed to coordinate on the review of savings, new measures and technologies. This group will also work to keep trades and vendors apprised of new technologies and program design. Over the next three years, the Program Administrators will increase their capacity to deliver deeper savings by evaluating internal staff capacity and needs, and adjusting accordingly, retaining additional installation contractors to deliver services to customers, and expanding the pool of qualified contractors, engineering and architectural consulting firms in order to deliver larger scale energy efficient technical solutions to customers. In addition, the Program Administrators are looking to develop additional strategic partnerships with other

Joint Program Administrator Enhancements Planned for 2010-2012 (cont.)	energy services providers. To address customer needs for additional capital to invest in more comprehensive or expensive solutions in their facilities, various financing options will be tested and implemented. Also, as described earlier, program components targeting specific customer groups and building types with specific needs and energy saving opportunities will be expanded to increase participation and savings.
Special Notes	The current Massachusetts portfolio of retrofit services is mature and successful. Massachusetts gas and electric programs have received numerous awards from peer organizations (EPA, DOE, AGA, American Council for Energy Efficient Economy ("ACEEE"), Natural Resources Defense Council, NEEP and others) for being examples of exemplary program design. The Massachusetts Electric PA programs have also been identified as "Best Practices" in studies commissioned by the Energy Trust of Oregon, the California program administrators, ACEEE, and others. The Program Administrators have long collaborated with their peer program deliverers in other states and regions, through active participation and leadership in such organizations such as the American Council for and Energy Efficient Economy, the Alliance to Save Energy, Northeast Energy Efficiency Partnership, the Consortium for Energy Efficiency, GasNetworks, etc. The Program Administrators also regularly collaborate with individual utilities or groups of utilities to develop new program delivery models and strategies. With growing common challenges to develop comprehensive and deep treatments in buildings, leading program deliverers have joined to develop common, national approaches. For example, the Massachusetts Program Administrators are currently actively involved in the Office of the Future Project for deep treatments of office space (with such partners as the Energy Trust of Oregon, BC Hydro, Southern California Edison, Pacific Gas and Electric, the US Department of Energy, and others); the Advanced Buildings program for new construction (with the New Buildings Institute, Efficiency Maine, Efficiency Vermont, Efficiency New Brunswick, We Energies, and others); and the DesignLights Consortium Solid State Lighting Program (with all the major New England program administrators, the Long Island Power Authority, the Energy Center of Wisconsin, the California utilities, and others).

C&I Lost Opportunity Program

Primary Objective	The program is designed to optimize the efficiency of equipment, building design and systems in new construction and renovation of commercial, industrial, institutional and government facilities. These are opportunities that would otherwise be lost because of the myriad of barriers to efficiency that operate in these markets. The focus is on offering a comprehensive set of electric and gas efficiency options that are specific to the needs of each unique facility. The program also targets the brief window of opportunity to install premium grade replacements when equipment fails or is near the end of its useful life. The Program Administrators also partner with advocates, building scientists, and regulators to ensure that the best practices in building design and equipment specification which introduced and propagated by the program are ultimately built into the evolution of better building requirements.
Program Inception	The electric and gas Program Administrators have offered new construction services since 1987 and 1997, respectively. Massachusetts and the states of the Pacific Northwest were the first jurisdictions to offer such programs, and the Massachusetts program model has been widely replicated in subsequent years, in New Jersey, New York, at the Long Island Power Authority, New Hampshire, and Maine, for example. The programs have evolved and been refined over time, incorporating field experience, market feedback, evaluation results, and successful measures developed by other states. The experience of the Massachusetts Program Administrators, and those of our peers elsewhere, have produced such cooperative ventures between jurisdictions as the *Advanced Buildings/ Core Performance* initiative, the Advanced Energy Office (currently in the pilot phase), and targeted initiatives to unique building types – such as data centers, commercial laboratories, and other industrial processes with unique energy and business requirements. The programs provide value to the unique financial and operational needs of each building owners, by using a variety of strategies in combination – technical assistance, case studies of similar facilities, incentives, commissioning, etc. Program Administrators use skilled technical assistance contractors, recognized experts drawn from the marketplace, to work with the customer's design team to identify the best design and equipment options for their particular building, and then provide incentives to ensure that these options are incorporated into

Program Inception (cont.)	the structure. These design principles and equipment selections are verified as part of the design and construction process. For smaller buildings interested in a holistic approach that can lead to LEED designation, the Advanced Buildings approach is applied. For buildings already in progress where comprehensive treatment is not possible, or where the owner is interested in upgrading targeted end uses only, prescriptive approaches, or prescriptive in combination with some custom measures, are applied. The gas Program Administrators have collaborated through GasNetworks since 1997. GasNetworks is a nationally-recognized, award-winning collaborative of local natural gas companies serving nearly 2 million residential and C&I customers throughout New England that has been promoting energy efficiency and the use of high efficiency natural gas technologies. The mission of this unique collaborative is to work with governmental agencies, trade allies, and consumers, in order to promote energy-efficient technologies. Successful strategies include the creation of common energy efficiency programs, education of consumers, and promotion and sponsorship of quality contractor training and awareness programs of ever-changing natural gas technologies. Massachusetts members include Bay State Gas, Berkshire Gas, National Grid, New England Gas, NSTAR Gas, and Unitil. As is the case with the retrofit program, the Program Administrators have increasingly collaborated at the management, program director, and technical staff levels to harmonize lost opportunity program measures, incentives, technical requirements, and participation criteria. The Joint Standing Technical Committee, now composed of representatives of each Program Administrator, reviews emerging technologies, monitors test installations, and maintains communications with peers in other efficiency programs and at various research laboratories. A Program Review Committee of Program Administrator staff annually reviews standard measures, incentives, and administrative procedures across Program Administrators and harmonizes the offerings. Additionally, the program managers of each Program Administrator meet as needed to address policy and program issues of common concern.
2010 – 2012 Program Goals	See 08-50 Tables in MA Joint Statewide 3-Year Program Filing and as submitted by each Program Administrator.

2010 - 2012 Budget	See 08-50 Tables in MA Joint Statewide 3-Year Program Filing and as submitted by each Program Administrator.
Program Design 2010-2012	In 2010, the gas Program Administrators will complete the harmonization of their lost opportunity offerings into a consistent core set statewide of prescriptive, custom, and comprehensive design approaches incentives, and supportive services. Electric Program Administrators will similarly organize their programs and align them into a consistent set of services and incentives. All lost opportunity programs will be organized under a single program name, using application forms and other program materials that are substantially the same, except for information pertaining to the individual Program Administrator brand identifiers, contact information, etc. In addition, this core program, with one or more Program Administrators, may also test the viability of new strategies and options for their customers. Strategies under consideration for implementation in 2010 address data centers, high performance laboratories, targeted LED installations, and an investigation of Zero Net Energy Buildings. The statewide offering will allow C&I customers the opportunity to receive financial incentives, technical services, and commissioning services for their projects. The program addresses two broad types of time-dependent projects: • Projects involving new construction of a building or the major renovation/remodeling of an existing facility • Projects involving primarily new equipment purchases and/or the end-of-life replacement of fully depreciated equipment. The program encompasses the Comprehensive Design track, high efficiency heating and water heating, a Core Performance track, Performance Lighting, and a variety of prescriptive and/or custom options. In addition, specific technologies can be addressed through Massachusetts MotorUp, Massachusetts Cool Choice and various GasNetworks initiatives. The program also supports advancing federal equipment standards, the Massachusetts Building Energy Code and code compliance training. **Technical Assistance Services**: Provision of timely, high-quality, independent technical advisory services to design teams is central to the achievement of comprehensive savings in new construction. The TA Services

Program Design 2010-2012 (Cont.)	component of the program provides technical support matched to the specific requirements of each project and the needs of each design team. Services may include detailed energy modeling of the performance of the proposed building using various configurations of design and equipment, targeted studies and recommendations for specific building components or systems, or specialized technical studies, such as proposed industrial process improvements and compressed air projects. In general, study proposals will be assigned to, and performed by, TA consultants who have been selected as preferred vendors through a competitive procurement process by the Program Administrators. TA consultants will be assigned based on an assessment of their expertise with the technology under consideration. Customers can also elect to use a TA provider of their own choosing, as long as the co-funding Program Administrator approves the firm's qualifications and cost-estimate. Non-preferred vendors must comply with the same level of detail and quality as preferred vendors. In many instances, customers may have both gas and electric equipment options for a particular end-use. In order to (a) encourage more comprehensive, integrated, and balanced consideration of all the energy efficiency options available, and (b) ensure that customers have open choices, the gas and electric Program Administrators delivering the statewide program will provide coordinated Technical Assistance Studies. In general, the study costs will be cost-shared between the gas and electric Program Administrators according to the proportionate share of the analysis and/or opportunities found through the analysis. **Advanced Buildings Core Performance** is a comprehensive, prescriptive program for small commercial new construction built around delivering the New Building Institute's national Advanced Buildings Program. The Advanced Buildings *Core Performance Guide* applies proven and available energy efficient technology and building science to the design of commercial and institutional buildings in the 10,000–100,000 square foot range. The Core Performance criteria address better performance characteristics in the building envelope, dedicated mechanical heating, cooling and lighting systems, multiple demand control ventilation practices, indoor air quality improvements, and domestic hot water system efficiency. These criteria are based on the results of 30,000 energy modeling evaluations of three major building prototypes (retail, office, school), with four high-efficiency thermal and HVAC system permutations for each prototype. That analysis identified a package of consistent strategies (the "core" in Core Performance) that lead to predictable energy savings across all climate zones. In Massachusetts, application of all Core Performance criteria will result in buildings with energy savings that exceed the Massachusetts Energy Code by 20-30 percent. In addition, peak energy reduction techniques will be employed to allow participants with either third-party energy supplier time sensitive rate offerings or those

Program Design 2010-2012 (cont.)	enrolled in the ISO-NE Price Response Program additional savings opportunities. Core Performance is accepted by the US Green Buildings Council as an alternative pathway to achieve the energy and environment points required to qualify a smaller building for Leadership in Energy and Environmental Design ("LEED") certification. Program Administrators will provide technical assistance consultants to help design teams incorporate all the Core Performance features in their buildings, incentives (presented to the customer in easy-to-comprehend $ per square foot (sqft) terms), independent third party verification of Core Performance compliance, and recognition via certification of the building as an "Advanced Building" as well as ancillary publicity as jointly agreed to by the Program Administrator and the client. The Core Performance model is best applied in small office, retail, public assembly, and school/preschool applications. (The benefits diminish in lodging, large multi-family and assisted living circumstances.) The economics are based on buildings with central mechanical cooling systems. Building owners and their design teams must agree to comply with all of the essential requirements of the program (the "core") in order to participate, and they may select other features ("Enhanced Performance Strategies") to exceed the base savings potential. **Advanced Energy Office ("AEO")** is being developed by a consortium of utilities, including some of the Massachusetts Program Administrators, Southern California Edison, California Gas & Electric, BC Hydro, and others. It will target time-dependent energy efficiency opportunities that occur when a new office building is fit out for new tenant occupancy, or when an existing office building is refit at the time of tenancy change. The largest areas of energy use in office buildings are interior lighting, plug loads (computers, office equipment, etc.), ventilation, and cooling. The AEO Consortium has developed, and is now field testing, a comprehensive package of measures—the "25 Percent Solution"—that can predictably reduce lighting, plug, and HVAC loads in office spaces by 25 percent. In addition, peak energy reduction techniques will be employed to allow participants with either third-party energy supplier time sensitive rate offerings or those enrolled in demand response programs to achieve additional savings opportunities. The package also highlights such occupant amenities as improved lighting quality and comfort system performance. The 25 Percent Solution is structured to complement the tenant improvement process, when new or existing office spaces are "fit up" for an incoming tenant. Implementers of the AEO initiative will work with property owners/managers, tenants, design professionals, and contractors to create a more responsive and responsible office environment—one that better serves tenants' needs while also reducing energy costs, enhancing property values, and supporting a reduced carbon footprint. It is

Program Design 2010-2012 (cont.)	expected that with today's heightened concern about both high energy prices and climate change, tenants will aspire to achieve "25% Solution Certified" space. **Advancements to Massachusetts Building Energy Codes:** Program Administrators have worked with the Massachusetts Board of Building Regulations and Standards ("BBRS") and other interested partners on the advancement in building energy codes for over a decade. Representatives of the Program Administrators sit as active members of the Energy Advisory Committee ("EAC") where they have helped BBRS develop the technical requirements for more stringent energy codes in the commonwealth. In addition, the Program Administrators support the "stretch" energy code option for local communities. The stretch code is based on *Advanced Buildings Core Performance,* which is supported as a voluntary program outside of stretch code communities. Program Administrator's will support the adoption of local stretch codes through continuation of upstream and/or downstream incentive structures for a set transition period, targeted at two years after local adoption, or until the next statewide code upgrade. **State and Federal Equipment Standards:** Appliances and plug loads often account for 25 percent of a building's total energy consumption and can be as much as 50 percent or more, especially in hospitals and laboratories.[16] Appliances are usually not regulated by building energy codes, which is why supporting higher equipment standards may be as important as supporting a rigorous code. Gas and electric programs offer incentives for energy-efficient equipment that is more efficient than required by state and federal standards, thereby helping "mainstream" these products in the marketplace, and increasing the likelihood that they can be incorporated in future cycles of standards upgrades. The Program Administrators will continue to work with regional and national groups, such as the Consortium for Energy Efficiency, the Alliance to Save Energy, Northeast Energy Efficiency Partnerships, and the Appliance Standards Awareness Project to support legislation and regulation that calls for more stringent state and federal equipment standards. Program Administrators will also support efforts underway to ensure that states seeking exemptions from federal standards to enhance local standards be allowed to do so. Support provided by Program Administrators in the Program Administrators has included legislative testimony, briefings with state and federal

[16] From "*The Role of Energy Codes in Public Policy A White Paper by the Northwest Energy Codes Group"* - December 2008

Program Design 2010-2012 (cont.)	legislators, and letters of support for specific legislation on codes and standards. **Training for Building Code Compliance:** Program Administrators will continue to provide support for training of code officials, building design professionals and contractors. Improved knowledge helps both the regulated community (architects and engineers) and code regulators improve compliance. The Program Administrators will make recommendations to BBRS and seek their direction on training and outreach efforts that might be offered for the current code and any stretch codes that might be adopted. The Program Administrators and BBRS will then coordinate efforts to implement those efforts. **Product Availability:** The Program Administrators will continue to work with distribution houses to facilitate product access and provide competitive pricing of efficient products. In some cases, this involves bidding for specific products (lamps, ballast, fixtures, drives, heating, water heating equipment, controls, etc.), which are then promoted to customers and vendors. This is especially vital to smaller customers and vendors who do not have the resources and size to procure at bulk pricing. **Performance Lighting:** The Programs Administrators promote high performance lighting technologies and design practices that are either more efficient than standard practice and/or the requirements of the Massachusetts Building Code through incentives for better lighting design. The Performance Lighting option promotes the thoughtful combinations of energy efficient lighting fixtures and lighting controls in site-specific lighting designs that produce quality lighting using lower watts per square foot than the current commercial Massachusetts building code. **DesignLights Consortium:** The Program Administrators will introduce solid state ("LED") lighting technologies as these become cost-effective in various applications. The Massachusetts Program Administrators participate with a number of regional and national program administrators in the DesignLights Consortium, which has contracted with the Lighting Design Laboratory at Rensselaer Polytechnic University to qualify specific LED products submitted by manufacturers for lighting quality, reliability, and energy savings. After vetting, these technologies will be approved for incentives by each of the DesignLights cooperating program administrators. **Massachusetts Cool Choice and MotorUp:** The Program Administrators will continue to jointly deliver state-wide initiatives that target high efficiency HVAC equipment and controls and NEMA Premium efficiency motors. Additional gas technologies for heating and cooling will be evaluated, as well as new electric technologies such as variable refrigerant flow heat pump systems, as to their overall energy savings benefits for

Program Design 2010-2012 (cont.)	future integration as a prescriptive incentive. **Gas Technology and Application:** The Program Administrators will continue to jointly deliver state-wide initiatives that target high efficiency heating, water heating, and kitchen equipment and control systems. Program Administrators will continue to identify and evaluate high efficiency gas technologies, as well as incorporating energy savings electric technologies, as joint offerings to our customers. **Combined Heat and Power ("CHP")** is an attractive offering for customers such as hospitals, thermal intensive industrials, multi-family housing and others with year round thermal use. CHP presents unique challenges, as reductions of metered electric loads are offset by increased use of fossil fuels to power the CHP system. Overall energy efficiency is improved through increased utilization of the on-site electric generator's recoverable heat. Program Administrators will require a custom analysis and screening of potential CHP opportunities to ensure positive net benefits and a net reduction in greenhouse gases. The eligibility process will be aligned with the Alternative Portfolio Standard ("APS") process.
Target Market	The target market is all time-dependent gas and electric energy efficiency opportunities in the C&I sector – commercial, industrial, institutional, and government customers. Key market actors are architects, engineers, commissioning agents and owners/ developers of new buildings, and manufacturers and distributors of energy efficiency gas and electric technologies.
Marketing Approach	Projects involving new construction have significantly different dynamics than retrofit projects. New construction typically requires longer lead-times and involves more decision makers and influencers than retrofit projects. In addition, while retrofit projects typically involve turn-key vendors selling a project specifically on efficiency attributes, a parallel market actor does not exist in new construction. Products are usually specified, not sold. While the customer is still a key decision maker, it is critical that all stakeholders are included and are informed and influenced toward a common goal of energy efficiency. Although this process starts with the architect, the final design/product can be changed (value-engineered/alternate specification) by the engineer, contractor,

Marketing Approach (cont.)	distributor and so forth. To address these dynamics, specific outreach strategies are designed for each of these stakeholders groups. Extensive one-on-one communication is the primary outreach strategy – building relationships by partnering on successful projects and adding value ensures commitment to efficiency. This direct marketing is supported through numerous other channels including brown bag educational seminars, formal training such as Labs21, newsletters, and open houses. Direct marketing pieces have been developed to pursue new construction leads identified through such publications as the REED Construction Database and New England Construction News. Additional marketing approaches used by one or more Program Administrators include direct contact with customers identified through trade publications and advertising in local trade publications, seminars and training sessions. The statewide website and statewide media marketing will build overall awareness of the program. For time-dependent projects involving replacement of failed or end-of-life equipment, marketing efforts focus on customers and equipment vendors rather than on developers and designers. Program Administrators market the equipment replacement track to customers and vendors through extensive one-on-one communication. Supplemental marketing efforts include distribution of promotional material (such as case studies), attendance at trade shows and conferences, power breakfasts, and other customer and vendor focused training seminars. Program Administrators are constantly looking for additional innovative ways to work with equipment distributors and installers to help them promote energy-efficient equipment and systems to their customers.
Target End Uses	Targeted end uses include can include: lighting equipment and controls, lighting design, motors, variable speed drives, high performance HVAC equipment, chilled water systems / refrigeration systems, building envelope measures, compressed air, high efficiency heating and water heating, and industry-specific gas and electric industrial processes. Site-specific custom measures, including CHP distributed generation, may also be considered. Full comprehensive gas and electric approaches are aggressively promoted to ensure the capture of all cost-effective achievable and technical potential in a given facility.
Recommended Technologies	Recommended technologies can include: efficient lamp and ballast technologies, direct/indirect lighting fixtures, lighting controls, building envelope measures, efficient motors and motor drive systems, efficient cooling systems, chillers, gas-fired infrared heating systems, efficient boilers and hot water equipment, combustion controls, compressed air, ERVs, dehumidification, humidification, gas and electric process improvements and energy management systems. Other cost-effective electric or gas efficiency measures will be evaluated for eligibility.

Financial Incentives	All Program Administrators' financial incentives structures will be consistent. Both prescriptive incentives (fixed amounts for specific measures) and custom incentives (based on the unique energy savings criteria of a project) are available. Financial incentives may cover up to 75 percent of incremental labor and equipment costs. Prescriptive financial incentives are offered for selected lighting, motor, variable frequency drive, HVAC measures, heating and water heating, controls and kitchen equipment. Other cost effective measures are promoted with custom incentives based on the incremental equipment and installation labor costs (if any) of installing high efficiency equipment compared to standard efficiency equipment, or brought down to an equivalent of a fixed payback period. Design incentives covering a significant portion of incremental architectural and design costs associated with comprehensive energy efficient designs are promoted to encourage holistic design treatments. Program Administrators also co-fund targeted engineering and commissioning studies.
Delivery Mechanism	The Program Administrators will work together to market and implement the program as a unitary statewide effort to maximize the acquisition of potential energy savings (gas and electric) in the ongoing market for new facilities and replacement equipment in the Commonwealth.

Joint Program Administrator Enhancements Planned for 2010-2012	Key joint Program Administrator enhancements are identified in the narratives above. In summary, program services and incentives will be offered under one common umbrella program with a statewide platform. Individual Program Administrators will administer the program in their locales, using common procedures, qualifications and incentives. Application forms and promotional materials will feature the statewide program name; the local Program Administrator brand, and will be common, except for any unique information required to properly administer the program in an individual Program Administrator's locale – such as contact numbers and addresses, etc. There will also be an integrated website and statewide program marketing and customer outreach campaigns. Programs are kept in harmony by regular meetings of the respective program managers around policy and delivery issues, and the Joint Standing Technical Committee around issues of measure savings quantification, vetting new measures, and testing of emerging technologies. The Gas Technologies Committee was recently formed to coordinate on the review of savings, new measures and technologies. This group will also work to keep trades and vendors apprised of new technologies and program design. Over the next three years, the Program Administrators will increase their capacity to deliver deeper savings by evaluating internal staff capacity and needs, and adjusting accordingly, retaining additional installation contractors to deliver services to customers, and expanding the pool of qualified contractors, engineering and architectural consulting firms in order to deliver larger scale energy efficient technical solutions to customers. In addition, the Program Administrators are looking to develop additional strategic partnerships with other energy services providers. The intent of the Program Administrators is to build on our successful base of twenty years of experience with a continued focus on offering all-fuels-integrated design solutions to move buildings to optimal levels of performance. To address customer needs for additional capital to invest in more comprehensive or expensive solutions in their facilities, various financing options will be tested and implemented, including the ability for the Program Administrators to provide financing using program funds to all eligible customers with flexibility to set different terms based on experience. Also, as described earlier, program components targeting specific customer groups and building types with specific needs and energy saving opportunities will be expanded to increase participation and savings.

Special Notes	Improving the energy performance of commercial buildings is essential to achievement of minimizing carbon emissions. The next generation of building science planning will examine how buildings can move to *Getting to Fifty*—50 percent more efficient than current codes. The Program Administrators will work with a number of the leading organizations that are investigating technical solutions and practices to meet this next threshold. These include the New Buildings Institute, the US Green Buildings Council (USGBC), the American Institute of Architects, the American Council for and Energy Efficient Economy and other experts in the building science field. The current Massachusetts portfolio of lost opportunity services is mature and successful. Massachusetts gas and electric programs have received numerous awards from peer organizations (EPA, DOE, AGA, American Council for Energy Efficient Economy ("ACEEE"), Natural Resources Defense Council, NEEP and others) for being examples of exemplary program design. The Massachusetts electric Program Administrators programs have also been identified as "Best Practices" in studies commissioned by the Energy Trust of Oregon, the California program administrators, ACEEE, and others. As noted elsewhere in this document, the Program Administrators have long collaborated with their peer program deliverers in other states and regions, through active participation and leadership in such organizations such as the American Council for and Energy Efficient Economy, the Alliance to Save Energy, Northeast Energy Efficiency Partnership, the Consortium for Energy Efficiency, GasNetworks, etc. The Program Administrators also regularly collaborate with individual utilities or groups of utilities to develop new program delivery models and strategies. With growing common challenges to develop comprehensive and deep treatments in buildings, leading program deliverers have joined to develop common, national approaches. For example, some of the Massachusetts Program Administrators are currently actively involved in the Advanced Energy Office Project for deep treatments of office space (with such partners as the Energy Trust of Oregon, BC Hydro, Southern California Edison, Pacific Gas and Electric, the US Department of Energy, and others); the Advanced Buildings program for new construction (with the New Buildings Institute, Efficiency Maine, Efficiency Vermont, Efficiency New Brunswick, We Energies, and others); and the DesignLights Consortium Solid State Lighting Program (with all the major New England program administrators, the Long Island Power Authority, the Energy Center of Wisconsin, the California utilities, and others).

C&I Direct Install Program

Primary Objective	The primary objective of the C&I Direct Install Program is to provide cost-effective, comprehensive electric and gas retrofit services to business customers on a turnkey basis using the same delivery model throughout the Commonwealth.
Program Inception	Each Electric Program Administrator began offering some kind of specialized services for hard-to-reach small business customers in the 1990s. The "direct install" turnkey model was first offered by National Grid in 1990 for customers 50 kW and smaller. With experience it evolved and improved over time and was subsequently adopted, with some variations, by all the Massachusetts Electric Program Administrators except for FG&E. The Gas Program Administrators have no history of offering a direct install option. The Massachusetts direct install model has been recognized by many national "best practices" studies and awards as the best delivery mechanism to comprehensively and cost effectively address this market, and it has been replicated by programs in New Hampshire, Rhode Island, Vermont, and Nova Scotia to date. With the direct install model, Program Administrators solicit competitive bids for the labor and materials costs of installing improved lighting equipment, lighting controls and, in some cases, improved refrigeration measures for walk-in coolers. Through a turnkey process, a single contractor conducts an audit to identify better lighting options and installs recommended measures. Some Program Administrators offer on and/or off-bill financing options to help customers finance their share of the cost of installing improvements. Program Administrators offer incentives ranging from 35% to 80%. Over time the Program Administrators have learned that, depending on the financing mechanism, it is possible to alter the mix of incentives and financing and maintain attractive customer penetration rates. Current variations in incentives: • NSTAR has a 30% customer co-pay (with no discount for the customer making a one-time payment of their share of the project cost), remainder financed through separate sundry bill for 12 months at 0% interest • WMECo has a 65% customer co-pay (with a 5% discount off the total project cost for a single payment

Program Inception (cont.)	by the customer), remainder financed on the bill • National Grid has a 30% customer co-pay (with 4.5% discount off the total project cost for a single customer payment), remainder financed on the bill for 12 or 24 months at 0% interest • Cape Light Compact has a 20% customer co-pay, balance due to contractor upon completion. Municipal projects require no co-pay. Projects are capped at $150,000 per project year unless exempted by vote of the Governing Board. • Fitchburg Gas & Electric has a 20% customer co-pay, balance due to contractor upon completion Current variations in "Small Business" definition: • NSTAR: <300 kW • WMECo: <200 kW • National Grid: <200 kW • Cape Light Compact: <300 kW • Fitchburg Gas & Electric: <100 kW
National Grid Goals – 2010	Please see PA-Specific Filings.
National Grid Budget - 2010	Please see PA-Specific Filings.
Program Design –2010 – 2011	The Program Administrators will offer a consistent statewide delivery model in 2010. That is, the electric and gas measures offered and delivery through a direct install turnkey mechanism will be the same throughout the Commonwealth. **2010** will be a "transition year" during which the following issues will be addressed for implementation in 2011. 1. All Program Administrators will move to a common <300 kW cap and reevaluate after six months for

Program Design –2010 – 2011 (cont.)	its impact on gas measures and opportunities. 2. FG&E will transition to the standard DI model. 3. All Program Administrators will identify and add prescriptive gas measures and potentially more prescriptive electric measures, and adjust their screening tools to allow for custom gas measures. 4. All Program Administrators will renegotiate their current contracts to add identified gas prescriptive measures and provide for screening of gas custom measures. 5. The gas Program Administrators will commence actions to provide on-the-bill-financing by 2011 or, in the alternative, negotiate arrangements with the electric Program Administrators servicing their areas to bill gas measures through the electric bill, with a reimbursement to the electric Program Administrators for measure and financing costs. 6. FG&E and NSTAR will commence actions to provide on-the-bill financing payments in 2011. 7. All Program Administrators that offer financing will offer a common discount for single customer payment. 8. All Program Administrators that offer financing will explore flexible repayment terms to produce a positive cash flow for the customers, beyond 24 months. 9. The Program Administrators will develop and pilot the structure of a "mid-tier" DI option, with an expanded portfolio of measures to address this sector business retrofit DI measures as well as additional opportunities found in a selected band to be determined, for implementation in 2011. (Target band in the range of 200/300 – 750 kW); pilot as necessary. 10. The Program Administrators will develop and pilot a "Main Street" DI retrofit project for very small customers, size, eligibility and delivery mechanism to be defined. 11. All Program Administrators will move to a 70% incentive, except for CLC, which will negotiate to use NSTAR billing services. If successful, CLC will drop to the common incentive level in 2011. **2011** 1. The Program Administrators will either form a single contracting entity or present another

Program Design 2010 – 2011 (cont.)	administrative model that assures maximum efficiency of delivery statewide. 2. All Program Administrators will offer two or three tiers of DI options, if the analyses/pilots with the upper and lower range of small customers show promise 3. The continuation or expansion of the "Main Street" project TBD
Target Market	The program will target all direct install retrofit business customers within the defined size limitations identified above in 2010. There will be a common size definition in 2011.
Marketing Approach	There will reference to the program at the common statewide website, but the program will continue to be primarily marketed by the direct installation contractors directly to the customers on lists of eligible customers provided to them by the Program Administrators. Contractors use direct mailings and telemarketing, as well as specialized targeted efforts for hard-to-reach market segments, such as customers in economic development zones and ethnic neighborhoods, and outreach through neighborhood business associations. Trade allies, industry stakeholders, suppliers and company field personnel also inform customers about the program's benefits and incentive mechanisms. In addition, small business customers with high-bill complaints may be referred to the program as a way for them to reduce their electric and gas usage.
Target End Uses	Targeted electrical end uses include, but are not limited to: lighting and lighting controls, HVAC equipment, water heating, VSDs and refrigeration. A variety of other electric end uses may be served through a custom approach. Targeted gas end uses may include, but not be limited to: heating system controls, commercial dishwashing - water heating and potentially building envelope.
Recommended Technologies	Recommended electric technologies include energy-efficient fluorescent ballasts, lamps, and fixtures; hard-wired and screw-in compact fluorescent systems; high intensity discharge systems; LED lighting and occupancy sensors; energy management systems; and refrigeration measures such as evaporator fan controls, efficient evaporator fan motors, automatic door closers and door heater control devices for walk-in coolers. To create greater depth and appeal for the program, customers are offered the opportunity to install non-prescriptive lighting and other comprehensive energy efficiency measures through the custom approach. Recommended gas technologies include programmable thermostats, pre rinse spray valves, pipe insulation, and potentially some weatherization and infiltration measures. Other identified gas measures may be

	served through a custom approach to include EMS and Hood controls
Financial Incentives	Qualified participants receive an audit to identify cost effective opportunities for saving energy. Both prescriptive incentives (fixed amounts for specific measures) and custom incentives (based on the unique energy savings criteria of a project) are available. Financial incentives cover a portion of the total installed costs, including labor and equipment. In addition, some Program Administrators currently offer low- or no-interest financing options and/or discounts for upfront payment of their share of the cost, and all PAs will move to include these options.
Delivery Mechanism	Vendors are selected through a competitive bidding process to implement the program. These vendors market the program, perform audits at customers' facilities, offer recommendations to customers, complete audit forms and questionnaires, purchase lighting materials from a supplier also selected through a competitive bid process, install measures, input data into a database, and prepare progress reports for the Program Administrators on a regular basis.
Three-Year Deployment	Over the next three years the Program Administrators will examine their capacity to deliver deeper savings by evaluating internal staff and contractor capacity and needs, and adjusting accordingly, as well as by retaining additional installation contractors to deliver services to customers and promote the installation of custom measures. The Program Administrators will also pilot variations of the direct install model both up market, to larger facilities, and down market, to very small customers. Additional technical assistance consultants will be retained to help installation contractors with a broader array of custom projects. After program harmonization in 2010, Program Administrators will pilot various modifications to the current incentive formulas, including extending payment terms beyond two years and adjusting incentive levels.

C&I Pay & Save Financing/Loan Pilot

Primary Objective	To establish a pilot loan program that creates an alternative financing mechanism for customers to finance the customer contribution cost of the implementation and installation of energy efficiency measures. The desired effect is to eliminate a barrier for customers to participate in energy conservation.
Program Inception	New pilot program (see Special Notes regarding 2009 Energy Pay and Save Pilot Program)
2010-2012 Program Goals	Please see PA-Specific Filings.
2010-2012 Budget	Please see PA-Specific Filings.
Joint vs. Program Administrator-Specific Offering	Joint offering.
Program Design	The program would make funds available to customers to assist in financing energy efficiency improvements and enable customers to repay those loans through their utility bills without interest.
Target Market	To be used by programs designated by Program Administrators.
Marketing Strategy/ Approach	Pilot program will be incorporated into the small business audit process as well as other C&I programs
Target End Uses	C&I customers who install non-portable measures.
Recommended Technologies	Non-portable measures

Financial Incentives	Financing the customer contribution assists customers who do not have the ability to pay in full at the time of the installation. It is expected that this incentive will allow for increased customer participation in programs.
Delivery Mechanism	C&I program delivery vendors.
Three-Year Deployment	Once the pilot program is completed on December 31, 2009, an evaluation will commence and a decision to incorporate this program into 2010-2012 programs will be explored by Program Administrators.
Special Notes	The Program Administrators will incorporate findings of the Department-approved Energy Pay and Save pilot program offered to residential and small business customers from April 1, 2009 – December 31, 2009 (D.P.U. 09-07) in any new financing initiative which may be developed. In all programs or instances where financing is provided the Program Administrators have the ability to provide financing using program funds to all eligible customers with flexibility to set different terms based upon experience.

11. *Codes and Standards Support*

The Program Administrators have long supported a number of efforts to develop and implement progressive building energy codes and appliance efficiency standards. These have included providing testimony before the Board and Building Regulations and Standards (BBRS), offering training to code officials, and supporting efforts by the Northeast Energy Efficiency Partnerships (NEEP) and others to have state-level appliance efficiency standards adopted in Massachusetts.

These efforts will continue and plan to be expanded over the 2010-2012 timeframe. Planned and anticipated activities include:

- Support for the Recently Adopted Stretch Code – The Program Administrators plan to provide support of individual jurisdictions considering adoption of the recently approved Stretch Code. In addition, the Program Administrators plan to work with the BBRS and other interested stakeholders to develop compliance documents and to develop and offer training to builders, architects and code officials on the Stretch Code.

- Identify and Advocate for Continued Improvement of the Massachusetts Building Code – Through the Standing Technical Committee the Program Administrators will identify code changes that will further the goals of increased energy efficiency in Massachusetts. As needed and as deemed appropriate, the Program Administrators in consultation with other key stakeholders will help develop technical analysis and provide testimony before the BBRS and other regulatory authorities in Massachusetts in support of these changes.

- Expand Training for Building and Design Professionals and for Code Officials – The Program Administrators plan to work with other key stakeholders to develop and offer training to building/design professionals and code officials. These trainings will address code compliance issues, as well as highlight beyond code efforts (Stretch Code, LEED, etc.) and include Program Administrators' program offerings.

- Advocate for New and/or Improved State Appliance Standards – Through the Standing Technical Committees the Program Administrators plan to identify savings opportunities that could be obtained through new or improved state appliance efficiency standards. The Program Administrators will work with NEEP, the Appliance Standards Awareness Project (ASAP) and others to support new standards be adopted in Massachusetts. Similarly, the Program Administrators will support efforts at the national level to develop and promulgate federal appliance standards

The above and related codes and standards efforts will require Program Administrators time and resources. Currently, the Program Administrators do not claim savings for any of their codes and standards activities. The completion of a 2009 residential metric will provide a basis for developing an attribution model to claim savings for Program Administrator code and standards efforts. The Program Administrators plan to work with the EEAC, DOER and others to develop a final approach that would allow Program Administrators to claim and reflect all savings from codes and standards efforts.

12. *Training & Education Programs*

Training & Education Programs

Primary Objective	Training & Education efforts are designed to promote and increase the installation and acceptance of natural gas high efficiency technologies. The gas Program Administrators, through the GasNetworks collaborative, recognized early on that contractor education and training is an integral part of transforming the marketplace to accept new and more efficient equipment technologies. The gas Program Administrators have focused on promoting new technologies, promoting ENERGY STAR-qualified gas heating equipment, and providing professional training seminars and programs to contractors and trade allies throughout the region. GasNetworks has been providing state-of-the-art training programs since 1998. The group has made significant advances in its goal of providing contractors with the necessary knowledge and tools to install and promote ENERGY STAR-qualified gas heating equipment and other energy efficiency natural gas equipment and technologies. In addition to producing its own training programs and providing sponsorship to other energy efficiency efforts, GasNetworks has teamed up with various organizations and manufacturers to promote and sponsor additional professional development training courses. Partnerships have included the MA PHCC, International Associational of Plumbing and Mechanical Officials, American Society of Heating, Refrigeration and Air-Conditioning Engineers (Boston), Honeywell and Weil-McLain among others. The members of GasNetworks have built strong working relationships with manufacturers and distributors, as well as with the plumbing and heating contractor community through their involvement in the marketplace. To date, GasNetworks has provided training to over 7,300 contractors and installers.
Program Inception	1998
2010-2012 Savings Targets	N/A
2010-2012 Budget	Please see PA-Specific Filings.

Joint vs. Program Administrator-Specific Offering	Joint
Program Design	A primary objective of the gas Program Administrators' training and education efforts has been to transform markets in the Commonwealth and more broadly, in the Northeast. The Program Administrators have made significant advances in reducing or eliminating market barriers through their support of training and education for: the Massachusetts Board of State Examiners of Plumbers and Gas Fitters (fuel gas code), consumers, trade allies, building officials, and contractors. The gas Program Administrators will continue to expand their highly successful efforts in this very important arena. The education and training programs will be marketed to HVAC contractors, plumbing code officials, homebuilders, building officials, plumbing supply houses, and other key market actors through direct-mail promotions, contractor training seminars, brochures, the GasNetworks website, and newsletters. The Program Administrators will also educate and promote awareness of programs through industry related organizations (*e.g.*, Massachusetts Board of State Examiners of Plumbers and Gas Fitters, the MA PHCC, the Consortium of Energy Efficiency, Board of Building Regulations and Standards, and JMC) and other energy efficiency programs (*e.g.*, ENERGY STAR Homes and RCS). The program is designed to increase contractor acceptance and awareness of high efficiency natural gas technologies, provide technical assistance and education related to the proper installation of high efficiency equipment and offer sales and marketing training to contractors so they are well-equipped to promote high efficiency equipment to their customers. The overarching goal of the training and education programs is to overcome market barriers related to the acceptance, knowledge, and installation of high efficiency equipment.
Target Market	• Contractors • Trade allies • Equipment manufacturers and distributors • Builders • Architects • Engineers

Marketing Strategy/Approach	The program is jointly marketed by the gas Program Administrators through the highly successful GasNetworks collaborative. The program will be promoted through a variety of marketing channels including, but not limited to: upstream outreach, web advertising, direct mail, trade ally events sponsored by other group and suppliers, sponsorships, and program brochures. The programs will also be promoted through the GasNetworks collaborative website, www.gasnetworks.com, where contractors can learn about the programs in general, find training events, download rebate applications and obtain other valuable energy efficiency information. The website and its functions will be integrated into the unified, statewide website set to be completed by the end of 2009. The site will include: • Downloadable application forms for regional market transformation programs • Links to Federal and State agencies as well as other energy efficiency related websites • Consumer tips on saving energy and buying high efficiency heating and water heating equipment • Newsletter registration form • E-mail Blast capability • Industry related 'News and Events' and upcoming 'Contractor Training Seminars' and 'Other Training' sections Additionally, the Program Administrators plan to provide continued support and promotion of statewide training that will leverage program educational opportunities and broad-based contractor outreach efforts and industry partnerships.
Target End Uses	Natural gas savings through the proper installation of high efficiency natural gas equipment and technologies.
Recommended Technologies	Well-executed and timely educational events and the dissemination of information to key players.
Financial Incentives	The gas Program Administrators have historically provided significant subsidies so that the training opportunities for contractors and trade allies are very affordable from the large, multiple-employee contractor

Financial Incentives (cont.)	to the "one-man-shop" contractor. Contractors may also receive incentives for the installation of high efficiency heating equipment to break through the barriers of awareness and understanding with new technology.
Delivery Mechanism	The Program is administered by the Program Administrators of the GasNetworks member utilities and jointly coordinated through GasNetworks. Further, the Program Administrators plan to take advantage of additional delivery mechanisms such as Program administrators to promote contractor training and education as part of a comprehensive approach to achieve a broader and deeper industry workforce. This scenario also affords seamless integration opportunities to drive contractor participation and adoption of new technologies.
Joint Program Administrator Enhancements Planned for 2010-2012	The Program Administrators, and GasNetworks as a group, will strive towards creating a seamless integration of the gas energy efficiency programs and the electric energy efficiency programs as utilities/energy providers continue educating key market actors such as HVAC contractors, builders and engineers about the benefits of using both high efficiency natural gas equipment and technologies and high efficiency electric technologies such as cooling equipment.
Sponsor Specific Elements	To be provided with October 2009 filings.
Three-Year Deployment/Road Map	The gas Program Administrators have learned over the years that trade ally events and training sessions prove to be a very critical and effective means of promoting high efficiency technologies. Thus, the Program Administrators will promote the rebate program through various PA-sponsored plumbing and heating training events; trade shows and trade ally events in conjunction with the GasNetworks training seminars. In addition, the Program Administrators will promote program education and awareness utilizing manufacturer/distributor level marketing and training infrastructure as a platform to educate contractors and wholesalers at a regional level. Program marketing will be supplemented by vendor outreach directly to equipment suppliers and installation

Three-Year Deployment/Road Map (cont.)	contractors. This will provide direct communication on programs and qualifying equipment, as well as maximize exposure to the contractor base. The Program Administrators also plan to support development of workforce and contractor training efforts that provide increased educational opportunities as a means to ensure that new and existing contractors acquire the necessary skill sets to sell and install high efficiency heating equipment. Training will be oriented to raising the bar for quality installations and development of certification standards (*e.g.*, Building Performance Institute) and licensing where appropriate. The Program Administrators plan to utilize all publicly available institutional resources such as community colleges, vocational schools, and state licensing boards as well as independent and national organizations dedicated to quality installation standards and practices.
Special Notes	The Program Administrators constantly strive to ensure that they remain on the cutting edge of promoting and educating industry players about new technologies as they become available. The gas Program Administrators' GasNetworks programs have received numerous national awards and recognition including: ■ AESP *National Award for Outstanding Achievement in Energy Program Design and Implementation 2007* ■ ACEEE *Exemplary Portfolio of Energy Efficiency Programs 2007* ■ ACEEE *Exemplary Program GasNetworks Joint Gas & Electric High Efficiency Furnace Rebate 2004* ■ ACEEE *GasNetworks Regional Multi-Utility Collaborative Comprehensive Portfolio 2004* The preceding program description is designed to support the successful attainment of the Green Communities Act's energy efficiency investment goals and environmental benefits. Further, it is the intent of the Program Administrators to support the Council and its Consultants through a recognized ongoing iterative planning process to develop and implement plans that meet the objectives of the Council's Priorities document. This program design is intended to addresses a number of applicable Council priorities including: • Program Administrators providing program consistency through this program.

Special Notes (cont.)	• Program Administrators provide user-friendly program by offering multiple paths/opportunities for participation • Integration with electric program administrators to maximize training opportunities and efficiency. • Coordinating with other programs for outreach communication and marketing strategy. • Continued coordination of contractor trainings to support a sufficient and quality installation focused workforce.

G. Special Public Education and Action Activities

1. *Introduction*

In order to achieve the aggressive goals set forth in this Plan, the Program Administrators will undertake a comprehensive energy efficiency public education and awareness outreach campaign. The core goals of the Program Administrators in any public education and promotion campaign include: reaching the maximum level of residential and business customers possible; providing messages that are not overly technical and that clearly describe the benefits of energy efficiency; exploring targeted marketing to unique or specific communities throughout the state (including communities where English is not the primary language); utilizing diverse media (*e.g.*, internet, bill inserts, television, radio, billboards, public transit) to disseminate consistent and clear messages; and ensuring that the various strategies work together to ultimately achieve deeper and broader savings. The Program Administrators are aware that, in addition to their efforts, the Commonwealth seeks to promote energy efficiency and the Program Administrators will look to coordinate activities with applicable governmental initiatives, such as the efforts contemplated under Section 108 of the Green Communities Act, which provides for a collaborative pilot effort by the DOER and the University of Massachusetts at Boston to establish an educational outreach program, that includes programs to be provided at community colleges and community centers. The Program Administrators will look to the DOER for further guidance with respect to this pilot effort. The Program Administrators will also continue to work with local schools, including technical vocational high schools and community colleges, to support comprehensive standards-based education in order to promote a more energy-conscious and educated society. These efforts are discussed in more detail below.

2. *Updated Statewide Education and Outreach Efforts*

During the summer of 2009, the Program Administrators commenced collaborative efforts with the DOER to address public education and participation-oriented efforts in more detail, with a particular focus on statewide efforts. The overall purpose of energy efficiency education, community outreach, and marketing efforts will be to increase residential and business consumer awareness and encourage consumers' subsequent participation in energy efficiency programs, while fostering behavioral changes that lead to energy savings, the reduction of greenhouse gas emissions, and increased customer savings. A successful and effective statewide education and marketing plan is fundamental for the Statewide three-year Plan, and will play an important role in achieving the goal of transforming markets for energy efficiency. In addition to the current program level education and marketing efforts, the Program Administrators will undertake the development of a comprehensive statewide energy efficiency campaign in order to achieve the savings goals proposed in this updated Plan. The Program Administrators will develop strategies to deliver this campaign to targeted customer profiles. While much of the educational focus has been on residential markets, the Program Administrators will also consider specific strategies targeting the business sector. Ultimately, the educational and marketing effort should move residential and business consumers through a process of awareness, attitude change, and finally action.

In order to realize their public education, community outreach, and marketing potential, the Program Administrators have identified the following goals:

- Prioritizing public education.
- Providing information that clearly outlines the benefits of energy efficiency and a path to a Zero Net Energy future.

- Broadening awareness of available resources and actions to all potential audiences, including residential and business customers.
- Identifying and understanding the barriers to action, and developing potential motivators to bridge the gap between awareness and action.
- Communicating with the general public and with targeted audiences in the most effective ways possible to reach those audiences.
- Maximizing the number of individuals, organizations, and businesses that take action to reduce their energy consumption.
- Educating consumers on the benefits of, and ways to achieve, deeper savings through deep energy retrofits.
- Educating service providers and equipment suppliers on the benefits of, and ways to deliver energy efficient products and services to achieve savings across their broader customer base.
- Encouraging behavioral change to conserve energy, save money, and reduce greenhouse gas emissions.

The Program Administrators will expand and develop outreach strategies while creating seamless consumer experiences that offer integrated portfolios of energy efficiency information and program options that are clear, relevant to the consumer, and available to all Massachusetts residents, businesses, and other organizations. Some of the expanded statewide energy efficiency efforts currently underway that will assist in implementing this education and marketing plan include the following:

i. Education & Training

The Program Administrators continue to participate in existing and burgeoning efforts to create a standardized energy curriculum where one does not already exist. Some Program Administrators currently offer curriculum and educational information and guidance to schools; these efforts will be expanded to Program Administrators through collaboration with the DOER, Massachusetts Department of Education, the University of Massachusetts, and with local

community colleges to create and disseminate additional educational curriculum. The Program Administrators are considering developing a standard introduction to energy and energy efficiency that will be common to all education and training efforts. Further, the Program Administrators will continue to support ongoing efforts to reach targeted audiences (*e.g.*, teachers, schools, contractors, architects, realtors, building inspectors).

The Program Administrators have learned over the years that trade ally relationships, events, and training sessions prove to be a critical and effective means of promoting energy efficiency. Thus, the Program Administrators will expand the promotion of programs through various PA-sponsored training events, trade shows, and trade ally events in conjunction with large-scale, statewide GasNetworks training seminars, which to date have proven very successful. For example, over 360 HVAC professionals attended the September 24, 2009 conference in Randolph, which featured a myriad of expert trainers and speakers who explored subjects such as high efficiency natural gas heating equipment and installation practices, hydronic heating, on demand water heating, and condensing and modulating boilers, and which also included 25 equipment manufacturers and suppliers who displayed new products and technology, and a trade show. To date, GasNetworks has provided expert training to over 7,300 HVAC contractors. The Program Administrators recently established an education and training center in Fitchburg. In this "hands-on" classroom environment, contractors experienced in energy efficiency installations are trained in the proper techniques of air sealing and insulation installation in order to ensure consistency across service providers. The Program Administrators have plans to open a second center in Springfield. In addition, the MassSAVE team is currently creating a comprehensive education package designed as a tool to inform all residents about how

to contemplate energy savings in their homes over the long-term, and to direct them on a path of energy efficiency that could lead to Zero Net Energy.

Moreover, the Program Administrators are joining with the Massachusetts Energy Efficiency Partnership ("MAEEP") to present US DOE-sponsored energy efficiency workshops on various technologies. The Program Administrators have also joined with the Northeast Energy Efficiency Council ("NEEC") Building Operator Certification ("BOC") regional training program that focuses on how O&M procedures and processes impact energy costs. The Program Administrators also offer Advanced Building™ ("AB") seminars as a suite of technical and training resources to improve the way buildings are designed, built and used. Using whole building patterns, design process tools, and education, this AB effort provides designers with the resources to incorporate integrated design strategies on their next project to reduce energy usage and improve indoor environmental quality. In addition, the Program Administrators will work with the Massachusetts Clean Energy Center ("CEC"), a quasi-public agency that serves as a clearinghouse and support center for the clean energy sector and focuses in part on workforce development and training.

ii. Energy Efficiency "Brands"

Building upon successful regional and statewide energy efficiency brands, the Program Administrators are currently working towards developing a complementary, statewide energy efficiency brand (or brands) with the expectation that once adopted, it will have created a clear, consistent, and recognizable message about the individual and social value of energy efficiency. This "branding" will serve as the foundation for all residential and business consumer information on energy efficiency products and incentive programs, and will encourage customers to strive for deeper savings. In addition, as the electric and gas programs become more

integrated and "fuel blind," joint branding will allow the Program Administrators to further pool resources and create targeted educational and marketing collateral materials that will provide residential and business consumers with an increased understanding of the full array of energy efficiency options available in Massachusetts.

iii. Mass Media

Newspaper articles, radio, and television news reports highlighting energy efficiency programs have consistently increased activity in the relevant spotlighted program. Consequently, the Program Administrators have utilized limited mass media advertising to educate and promote their energy efficiency program offerings. As the branding efforts described above are finalized, a larger scale, more frequent, mass media advertising plan will be implemented to create the desired effect of increased and broader consumer awareness for available programs, while striving to encourage deeper consumer savings. Moreover, the ability to promote a common, integrated website to a mass market will allow for further economies of scale and, in turn, more frequent, cost-effective mass media advertising in order to increase customer awareness.

iv. Community Based Outreach/Social Education and Marketing

The Program Administrators see an important opportunity to expand and develop relationships with community organizations that have existing influential relationships within cities, towns, regions, and demographic and special interest groups. Some of these organizations have already promoted efficiency to their members, while others have strong networks but have not yet focused on energy issues. The Program Administrators will seek to develop enhanced strategies to reach out to non-English speaking consumers, low-income consumers, and groups that have historically low participation, and explore increased efforts with representative

community organizations. The potential to leverage community-based organizations to educate and promote energy efficiency actions is significant and will be developed in the "community mobilization initiatives" being launched as pilot programs. The Program Administrators can learn from, and build upon, successful programs such as the Marshfield Energy Challenge (NSTAR), the MAPS Pilot which included outreach to the Portuguese-speaking community (NSTAR), and Energy Smack Down (National Grid/NSTAR), and will take note of positive developments experienced with the Western Mass Saves (WMECO) launch in August. The lessons learned from these community outreach programs will be the catalyst to the creation of future similar educational outreach efforts throughout the Commonwealth.

The Program Administrators will also explore a new pilot collaboration with community-based organizations that have long-standing relationships with homeowners, tenants and small businesses in economically marginalized communities, to assess the feasibility of a "community mobilization outreach model" that implements a neighborhood approach to energy efficiency service. This model has the potential to offer effective and appropriate energy education to underserved communities, including limited English speakers and economically marginalized groups.

The Program Administrators will also explore how "word of mouth" contact can be tapped to heighten motivation towards energy efficiency action. The Program Administrators will explore offering "incentives" for referrals that lead to other consumers participating in energy efficiency programs.

v. Internet—"Integrated Website"

The Program Administrators are engaged in developing a single point of entry for all residential and business audiences through a new integrated website. The Internet offers a powerful, cost-effective platform to provide energy efficiency information, promote programs, and inspire action. The integrated website will provide a point of access to a multitude of residential and commercial energy efficiency programs in a user-friendly environment. The statewide "brands" will be prominently featured throughout the website.

The increase in program participation levels over time indicates that the traditional education, outreach, and marketing efforts (such as direct mail, ethnic outreach, radio and print media, bill inserts, trade ally relationships, and training events, sponsorships, educational seminars, and program brochures) have been successful to a significant degree. In order to create even broader energy efficiency public awareness, however, and establish even deeper participation in the programs offered, additional methods of market defining techniques and barrier identification should be implemented, and the Program Administrators believe that an integrated website provides a distinct opportunity to reach a broader audience, increase energy efficiency awareness, and encourage deeper savings.

vi. Behavioral Research

Program Administrators understand that identifying the motivational factors that cause residential and business customers to take action and participate in programs is important in developing energy efficiency programs capable of achieving long-term sustainable success. Equally important is the ability to identify those barriers that could potentially block a motivated customer from participating in energy efficiency programs. The Program Administrators will research successful motivational actions that have worked in other states, determining which motivational strategies have succeeded, and which might be best suited for application with the

Plan. Additionally, the Program Administrators will sponsor primary market research in Massachusetts in order to answer critical questions regarding behavior related to energy efficiency. The Program Administrators will solicit input, through the Council and its Consultants, on existing barriers involving non-English speaking groups and members of communities in the state which have historically low rates of participation in energy efficiency programs. The Program Administrators will then incorporate the successful methods determined by the research in Massachusetts and other states into their education, outreach, and marketing programs.

One successful organization upon whose work the Program Administrators would like to build is Positive Energy, a corporation that is committed to persuading consumers to save energy through a combination of technology, analytic direct marketing, and behavioral science. Several Program Administrators have engaged the services of Positive Energy to "rate" consumers' energy usage in comparison to their neighbors. This "normative information" approach has been successful in California and will be considered for implementation in Massachusetts. In addition, focus groups, such as the recent series of meetings organized as part of the MassSAVE RCS effort, will be expanded to include all market segments, including residential, C&I, and low-income, to garner as much consumer information as possible to further identify barriers to participation and to assist the Program Administrators in formulating outreach efforts.

vii. Segmentation Research

Recently, through the use of the Warren Group Report, the Program Administrators have initiated an effort to better understand the demographics in each service territory. The Warren Group Report identifies the population of single homes, multi-family properties, and low-income residences that exist in each of the service areas. Other internal and external resources to

identify the characteristics and demographics of consumer populations—such as information that can be provided by local community groups—will be examined to assist in further identifying consumption, motivations, and barriers to positive action. Such reports and information will be used to identify specific customer profiles and will facilitate targeted outreach to these groups.

viii. Message Development

In creating energy efficiency messages, both high level and targeted, the ultimate goal is to have consumers understand the many benefits of energy efficiency and then take action. Further, to engage consumers who have already implemented energy efficiency measures, the message will include and highlight the additional benefits and importance of going "deeper" by implementing additional energy efficiency measures, such as deep retrofits. Traditional messages focusing on self interest ("*save money*"), the environment ("*help the planet*"), and social responsibility ("*do your part*") used in previous education and marketing campaigns have been effective to an important degree, but new messages need to be developed to help foster broader and deeper participation. In addition to the overall message, the Program Administrators will also develop messaging at the program level and at the sector level, in order to engage varied consumers and other important market actors (contractors, equipment suppliers, opinion leaders) with differing motivations. The Program Administrators plan to conduct qualitative and quantitative research to identify what consumers believe to be conservation and energy efficiency behaviors, and to determine what motivates consumers to practice more energy efficient behavior. This research will lead to the creation of a "call to action" for the residents and businesses of Massachusetts.

ix. Maintenance of Complementary Individual Efforts

While working diligently on the statewide public education efforts, the Program Administrators will also continue to maintain customer awareness, satisfaction, and participation goals. As the Program Administrators have noted in Section II.A.7.iii, consistency is a high priority and the Program Administrators will also continue outreach efforts utilizing customer representatives and company-specific efforts that complement and are consistent with statewide efforts.

x. Next Steps and Conclusion

The Program Administrators will be optimizing the budget for the statewide education action plan, and will continue to collaborate with the DOER, the Council, and its Consultants, and other interested parties as the budget is developed. The Program Administrators will explore how the rules governing cost-effectiveness could present challenges to this effort, despite the importance of the education and outreach campaign to the saving goals in the Plan, and are confident that these issues can be resolved and that overall program cost-effectiveness, even including increased public education and marketing costs, will remain robust.[17] Additionally, the Program Administrators will be developing and issuing RFPs for partners in some or all of the following areas: market research; segmentation research; message development; community-based education; and integrated education/behavior change campaigns.

The ultimate goal of these educational, community outreach, and marketing efforts is to develop a broad system of communication with Massachusetts citizens and businesses and deliver comprehensive energy efficiency programs. Through an array of effective messages and

[17] By way of example, the Program Administrators are reviewing including outreach efforts in the "hard to measure" category. *See* D.P.U. 08-50-A, at 24-31; *see also* G.L.c.25, §21(b)(2)(iv)(I). The DOER has noted in its memorandum titled Guidance on the Impact of 08-50 on Public Education Efforts for Energy Efficiency, dated June 30, 2009, that there is clear regulatory support to develop and implement public education programs on energy efficiency. The DOER specifically stated that market research to assess, *inter alia*, customer attitudes is allowed and strongly encouraged within the scope of education efforts.

valuable information resources, the Program Administrators will engage with a large portion of the population to assist in delivering value to residential and business customers and achieving the aggressive energy efficiency goals set forth in this Plan.

H. Evaluation and Monitoring

1. *Introduction*

This section proposes a framework for evaluation and monitoring for the three-year plan period, 2010-2012. The section begins with the text of the EM&V Resolution. Based on the principles of the EM&V Resolution, the Program Administrators and the Council have delineated specific research areas, based primarily on target markets. The section then provides an overview of the types of evaluation and monitoring strategies that are utilized by the Program Administrators, followed by a discussion of high-level evaluation budget levels. Finally, there is a discussion of the Program Administrators' transition strategy, as well as a detailed section on specific evaluation and monitoring priorities and activities planned for each of the research areas.

2. *EM&V Resolution*

On September 8, 2009, the Council approved its EM&V Resolution, which is quoted in full below:

> The Energy Efficiency Advisory Council recognizes that the deployment of the energy efficiency programs by the electric and gas Program Administrators ("PAs"), in support of the mandates of the Green Communities Act, is expected to produce energy savings and related benefits to the Commonwealth that involve the expenditures of unprecedented levels of customer and public monies. It is therefore critical that the programs be evaluated, measured, and verified in a way that provides confidence to the public at large that the savings are real and in a way that enables the Program Administrators to report those savings to the Department of Public Utilities with full confidence. There is a need to ensure both the reality and the perception of the independence and objectivity of EM&V

activities, as well as the need to help ensure consistency, timeliness, and credibility of the results.

The Council also recognizes that the evolution of more uniform statewide programs necessarily leads to greater use of statewide evaluation studies as well as other organizing principles.

Accordingly, the Council adopts the following principles and policies -- divided into the topics of policy /authority and implementation -- regarding the evaluation, measurement, and verification of energy efficiency programs:

POLICY/AUTHORITY

Decision Making:

- The EEAC will assume an oversight role over the EM&V activities of the Program Administrators to ensure the objectivity and independence of those activities, and the perception of such, and to help ensure consistency, timeliness, and credibility. While PAs and EEAC Consultants (acting on behalf of the EEAC) will continue to work diligently to reach a consensus on evaluation issues, where there are areas of difference that may arise that cannot be resolved through consensus during the on-going interactive process between the EEAC Consultant and the PA evaluation staff, authority for decision-making will reside with the EEAC or its Designee.

- **Appeals:** To enable the Program Administrators to fulfill their responsibility to report program savings to the DPU with full confidence, an appeals process shall be established, through which the Program Administrators may bring decisions made by the Council or its Designee for review and resolution. This process will be implemented through the formation of a standing evaluation committee ("Standing Committee") of the Council, whose responsibility in this area will be to hear the matter under dispute and rule so that the study may proceed in a timely way. In general, it is expected that this review process will be completed within 72 hours once an issue is elevated to the Standing Committee.

- **Resolution of Disputes:** This Standing Committee will consist of three voting members of the Council, including DOER. Consistent with general Council proceedings, the Standing Committee will include and consult with, in both deliberations and decision-making, a representative of both the Program Administrators and the EEAC consultant team, neither of whom shall have a vote in the standing committee. The Committee will review the issues related to the disputed matter, hear from the PA evaluation staff and EEAC Evaluation Consultant (the "principals"), and make a determination on the outcome of the matter. The decision will be recorded, along with a description of the applicable issues. The participants in the appeal will sign the record of the decision, indicating their acceptance of, the representation of

the issues and of the decision. In exceptional cases, where the Program Administrators perceive there to be significant risk to their ability to manage the energy efficiency programs in the near term, the Program Administrators will note their disagreement with the decision of the Standing Committee on the record of the decision and reserve the right to immediately petition the DPU on the Standing Committee's decision. The Program Administrators shall be able to submit any such documents to the DPU in conjunction with the filing of the Energy Efficiency Plans and Annual Reports. The DPU will be able to review the record of this decision in its review of Plans and Annual Reports.

IMPLEMENTATION

- **A. Statewide Focus:** Impact evaluations, and other studies, should be performed at a statewide rather than an individual Program Administrator level to the maximum extent possible, while enabling to the extent necessary results at the Program Administrator level. It is recognized that circumstances could occur where a service territory specific or non-statewide evaluation or study would be appropriate. Such EM&V activities should only be undertaken following an assessment of the need and value of a non-statewide study and agreement between the PA evaluation staff and EEAC Evaluation Consultant.

- **B. Research Areas:** The range of evaluation activities should be divided into 5 to 7 semi-permanent statewide research areas, each oriented primarily to specific target markets (e.g., residential retrofit, large C&I), each with a long-term research and contract manager from the Program Administrators, an independent evaluation contractor to conduct the studies under a long-term contract, and the EEAC Evaluation Consultant. The Program Administrators and the EEAC Evaluation Consultant shall jointly prepare a statewide research management plan to carry this out. The EEAC Evaluation Consultant shall have the opportunity to comment on the proposed assignments of the PA research area managers. The EEAC will have the authority to remove assigned research area managers if they do not perform effectively in accordance with pre-established objective standards for research area managers. Those standards will be developed jointly by the EEAC Consultant and the Program Administrators.

- **C. Evaluation Planning:** The research area managers and EEAC Evaluation Consultant will jointly prepare a proposed statewide evaluation plan and illustrative budget and submit it to the EEAC for approval[18]. We expect that

[18] The Program Administrators and the EEAC recognize that the DPU has the ultimate authority to review and approve each Program Administrator's energy efficiency plan, including the Program Administrators evaluation plan and budget.

this plan will be reviewed and updated annually. Consideration will be given to regional EM&V activities and FCM requirements, and will be responsive to DPU directives about EM&V in the development of the evaluation plan.

- **D. Coordination of Studies:** All studies[19] in which Massachusetts PAs participate should be included in the statewide evaluation plan for the purposes of coordination of evaluation and promotion of consistent methods, and conducted by the research area independent evaluation contractors. Some studies, however, may be excluded from the statewide research area contracts. The EEAC Consultant and PAs will develop guidelines for assessing which studies may be excluded from the statewide research contracts and will apply them as necessary to identify mutually agreed upon studies that will be conducted outside of the statewide evaluation contracts. Research area managers, the Program Administrators, and the EEAC Consultant should make every effort over time to determine if these studies may be included in research area contracts. Under the circumstances where a study is not included in a research area contract, the appropriate research area manager shall manage the study and represent Massachusetts statewide evaluation interests in the execution of the study. The EEAC Evaluation Consultant may participate in regional evaluation projects directly, upon the direction of the EEAC.

- **E. Integration:** Electric and gas evaluation efforts should be fully integrated to the maximum extent possible. Each of the statewide research areas should cover both electric and gas evaluation efforts.

- **F. Contracting:** The Program Administrators will be the main mechanism for contracting with the independent evaluation contractors.

- **G. Implementation:** As is current practice, statewide evaluation studies will be coordinated by staff from Program Administrators, with a lead from one of them (the "Study Manager"), and an EEAC Evaluation Consultant. This will enable Program Administrators and the EEAC to collaboratively provide their expertise in the planning, scoping, management, review of methods and draft protocols, and review, acceptance, and application of results of the individual studies. In many cases the Study Manager and the statewide research area manager will be the same individual. The Study Manager shall manage study efforts so that the approved evaluation study budgets are not exceeded[20]. The EEAC Evaluation Consultant should have the authority to recommend to the

[19] Some Massachusetts PAs are multi-jurisdiction utilities and may propose expanding some Massachusetts studies to include those other jurisdictions, where appropriate. If mutually agreed-to by the research area manager and the EEAC Consultant, these cross-jurisdictional efforts will proceed.

[20] At times, the scope of an evaluation study is modified for good reasons. The Study Manager and the EEAC Consultant agree to review proposed changes in scope with the Standing Committee when the change in scope is likely to lead to an increase in study cost of more than 10% or to adversely affect the study timeline.

EEAC removal of the assigned Study Manager if they do not perform effectively in accordance with pre-established objective standards for Study Managers. Those standards will be developed jointly by the EEAC Consultant and the Program Administrators.

- **H. Communication and Documentation**: The Study Manager will communicate regularly with the EEAC Evaluation Consultant about issues related to study execution. The Study Manager will document decisions made in the course of a study, for potential review by the EEAC, DOER, the DPU, and/or any other party.

We expect and encourage the Program Administrators to perform the evaluation roles assigned to them in this framework in an effective and timely way.

We recognize that there are details that remain to be worked out under this framework and that the framework may evolve over time. We encourage the EEAC Consultant and PAs to continue discussions on these topics to establish an effective process that leads to high quality and useful evaluation results, mindful of the need to maintain public confidence in the overall conduct of these programs. The process, roles and responsibilities should be reviewed and modified, as necessary, after twelve months first, and bi-annually thereafter.

3. *Descriptions of Research Areas*

Guided by and consistent with the EM&V Resolution, the Program Administrators worked collaboratively with the Consultants to develop six market research areas. They are organized primarily by target markets, which should help to maximize the statewide effectiveness of EM&V while presenting minimal overlap among areas. The research areas identified are as follows:

- **Residential Retrofit and Low Income.** This category would include residential cooling and heating equipment, residential heating and water heating, residential and low income retrofit 1-4 (MassSAVE) including weatherization, and residential and low-income retrofit (and new construction) multi-family programs.
- **Residential Retail Products**. This includes residential lighting and appliance programs.
- **Residential New Construction.** This includes residential and low income new construction and major renovations programs.

- **Non-Residential Large Retrofit and New Construction**. This includes C&I new construction (small and large) and major renovations, as well as large C&I retrofit programs.
- **Non-Residential Small Retrofit**. This includes the current C&I small retrofit, direct install programs. This category would also include future programs that may target small non-residential customers.
- **Special and Cross-Sector Studies**. This research area reflects the fact that not all studies will fall into the five market categories above, and some studies may be cross-sector in nature. Some types of studies could include: cross-sector free ridership and spillover studies; non-energy benefits; behavioral programs; community-based pilots; and marketing, public education, and outreach activities.

4. Transition Plan

Under the new Evaluation Framework, the Program Administrators must transition their current individual evaluation efforts to the new approach as soon as is possible. Some research areas, such as Residential New Construction, are already being evaluated on a statewide basis. In other research areas, specific needed studies, such as a comprehensive market assessment of the commercial and industrial market, have not been conducted before; these studies should be ready to launch under the new framework as soon as RFPs can be drafted.

The first step in the transition is to develop a detailed evaluation plan to be reviewed by the Council. The goal is to communicate expected evaluation projects and studies in each of the research areas for review and approval by the Council sometime before the end of the year. The plans will cover all types of evaluation (as described in Section 6) for each sector.

The Program Administrators intend to initiate evaluation efforts as soon as possible, while acknowledging that there are some short-term transitional challenges involved in moving to the new framework. Those challenges include:

- *Proper attention to 2009 program evaluation*. Program Administrators are committed to moving forward to the new 2010-2012 framework as soon as

possible but have a continuing obligation to conduct the necessary studies to evaluate the 2009 programs. Program Administrators must be allowed to initiate and complete studies that are necessary to document savings for their 2009 Energy Efficiency Annual Reports. While they will be performed under the oversight/management structure contemplated by the EM&V Resolution, these studies (a) may not be statewide in scope, and (b) must be initiated before statewide evaluation contracts are in place.

- *Working with individual Program Administrators' procurement departments.* The new framework requires large multi-year umbrella RFPs which cover all studies in a given research area on a much larger scale then employed before. Some RFPs may involve $5M-$10M of work over a three year period. Because it is not possible to provide detailed scopes of work for each study in a given research area ahead of time, the RFPs will be relatively open-ended, serving more as a request for qualifications ("RFQ"), with specified contractors and subcontractors providing rates and availability over a specified time period. Once contracts are signed, specific scopes of work not included in the RFQs will be developed on a time and materials basis. Because this type of large contract is new to the procurement staff and will involve more negotiation for the first year or so until all the details are ironed out, it may add to the length of time needed to develop and implement the new statewide framework. If development of the umbrella RFPs appears to be leading to excessive delays in the implementation of needed studies, the Program Administrators may develop and release more targeted, short-term RFPs covering high-priority projects. Any such targeted RFPs would be statewide in scope, performed under the new administrative framework, and administered by the appropriate Research Area Manager.

- *Lags in implementation changes*. Although this statewide plan requires increased coordination between Program Administrators and between gas and electric offerings, these efforts will take time to fully implement. Evaluating some areas before certain implementation changes have even begun may be difficult. For example, conducting a process evaluation of an integrated process or approach prior to the implementation of full integration would be problematic. However, market assessment activities or impact studies conducted before programs are fully integrated would be more feasible.

- *Coordinating with current and recently completed evaluation efforts*. Some programs or end-uses have not been evaluated in a number of years and are ready to be rolled into the new framework immediately. Others have been evaluated regularly and, in some cases, major evaluations were just kicked off by individual Program Administrators. Commercial lighting load shapes is an example of this synchronization challenge, with some Program Administrators having recently completed evaluations, others currently in the middle of large evaluation studies, and others ready to move forward with a new study as soon as possible. In such situations, it may take a year or more for the Program Administrators to coordinate their study schedules. It is more desirable to delay a study to get the

schedule in sync than to use finite evaluation resources to launch and manage a statewide study to replace recent vintage studies.

- *Differences in program tracking systems.* In order for evaluation results to be used, they must feed back into tracking systems. Differences in tracking systems can impact development of common sampling methodologies for studies and applicability of results. Because large investments have been made to develop individual PA tracking systems, the systems cannot be merged and differences will persist. In some cases, particularly for C&I projects, Program Administrators will have to navigate these differences before studies can begin.

- *Long-standing differences in evaluation methodologies and approaches.* A careful examination must be conducted as to how each Program Administrator has done evaluations in the past, selecting the most effective methodologies and combining them into one unified approach. A prime example of this is how large and small C&I custom projects are evaluated relative to similar prescriptive measures. Some Program Administrators may have itemized and studied specific custom end-uses, where others may have combined prescriptive and custom end-uses and evaluated a large retrofit program, for example, as a whole. These differences in approach will need to be reviewed and worked out to determine the best approach.

- *Staffing issues.* Some Program Administrators will need to hire additional staff to manage the increased emphasis on EM&V. The market for experienced evaluation project managers is extremely tight and it will take time to hire and train additional staff to manage these large complex research area RFPs.

- *Boundary Issues*. Planned studies must be coordinated with those being conducted by Program Administrators in other states, as well as studies being performed regionally under the NEEP EM&V Forum. In such situations, the objectives of the EM&V Resolution should be balanced with the interests of other jurisdictions that may have authority over the same study. It is in the interest of all parties to resolve these issues and achieve economy of effort, rather than unnecessarily duplicating studies.

5. Evaluation budgets

By agreement with the Consultants, the Program Administrators allocated 4% of total program budgets for evaluation and market research in each year of the three-year plan.[21] As program budgets increase, so will the evaluation budget.

6. Types of evaluation functions

EM&V refers to the systematic collection and analysis of information to document the impacts of energy efficiency programs and improve the effectiveness of these programs. EM&V includes the following types of studies:

- *Measurement and Verification* refers to the measurement of gross savings achieved in individual buildings.
- *Impact Evaluation* refers to the measurement of net or gross savings achieved within overall program populations.
- *Market Evaluation* refers to the measurement of the effects that programs have on the structure and functioning of their target markets.
- *Process Evaluation* refers to the systematic assessment of programs for the purpose of documenting their operations and developing recommendations to improve their effectiveness.
- *Market Characterization or Assessment* refers to the systematic assessment of energy efficiency markets for the purpose of improving the effectiveness of programs targeting those markets.
- *Evaluation of Pilots* refers to EM&V activities intended to assess the effectiveness of pilot programs, determine their potential for full-scale implementation, and develop recommendations for any changes in program approach. Under the new framework, evaluation of pilots will occur under the research area most closely related to the market being targeted.

[21] Agreement was made based on Consultant approximating 2010 total gas budget of approximately $225 million, thus resulting in an evaluation budget statewide of approximately $9 million for gas Program Administrators. For gas companies, given cost considerations, the budget 2010 amount is approximately 3% of total gas budgets.

7. *Specific Evaluation and Monitoring Activities for 2010-2012*

As noted above, the Program Administrators have worked with the Consultants to define statewide evaluation and research areas and specific evaluation needs for 2010-2012. Listed below are brief outlines of the highlights of possible studies for each research area.

Residential Retrofit and Low-Income

In early 2010, the Program Administrators will issue an RFP for an Evaluation Contractor for the residential retrofit and low-income programs. This research covers a wide range of areas, including retrofit 1-4, as well as all multi-family, including both multi-family retrofit and new construction. It also includes residential cooling & heating equipment (HVAC), and residential heating and water heating.

One outstanding issue that needs further discussion and resolution during 2010 pertains to the role of evaluation in the quality assurance/quality control process with regard to residential retrofit programs. However, listed below are agreed upon priority areas of research for each of the retrofit programs:

Residential Retrofit 1-4 (MassSAVE) Programs

- During 2010, the group will evaluate and determine whether or not a full impact evaluation on the MassSAVE program makes sense, or if concentrating on research and documentation of updated costs and savings values for the measures offered through this program, including new measures, is of more value.

- Process evaluation focusing on the statewide marketing effort, the new vendor delivery structure, including a review of the statewide vendor software, as well as other adjustments to the program that have occurred over the past few years;

- During the second part of the three-year plan, process evaluation focused on gas/electric integration efforts;

- Evaluation of Deep Energy Retrofit pilot(s) including a process-type evaluation, as well as a focus on the barriers and/or drivers to customer acceptance;

- Evaluation of other pilots, such as Marshfield Energy Challenge, Cambridge Energy Alliance, and/or Energy Smack-Down.

Low-Income Retrofit Programs

- Develop a research strategy through collaboration with the low-income advocates. Likely areas of research include both a process and an impact evaluation of the low income programs.

Multi-family Programs

- Study to determine the potential in the multi-family retrofit sector;

- Process evaluation, including effectiveness of statewide marketing efforts, role of Market Integrator approach, process flow, and all aspects of the program re-design, including low income and gas/electric integration;
- Assessment of the adoption rate for eligible measures to determine if incentive levels need adjustment or if there are other strategies that PAs can utilize to potentially achieve greater savings.

HVAC Programs

- Impact evaluation of the Brushless Fan Motor pilot;

- Systematic review of HVAC of EM&V conducted both in MA, as well as other New England states in order to develop a research plan.

Residential Heating and Water Heating

- Process and impact evaluations of both the residential heating and water heating programs are kicking off in late 2009 and will continue into 2010;

- Evaluation of the Heat Pump Water Heater pilot.

Residential Retail Products

In early 2010, the Program Administrators will issue an RFP for an Evaluation Contractor for the residential retail products category, which includes the Residential Lighting and Residential Appliance programs.

Recent evaluation results highlight the urgency of EM&V activities in this research area. The residential lighting market has been evolving very quickly, and has also been affected by the recession. In the face of these changes, early evaluation results suggest that the 2008 program may have had a limited impact on the market. As a result, there are ongoing discussions about changes to the program for 2010.

Given the size and potential of this market, this research area has several priority areas that require analyses:

- A new net-to-gross impact study, potentially including a CFL saturation study to get more recent data;
- A study to develop and verify applicable net-to-gross methods for specialty and hard-to-reach bulbs;
- A process evaluation to assess changes and re-design efforts made to the lighting program;
- Research on various market characteristics, such as pricing, retailer stocking, and promotional practices;
- Market research on appliance categories, such as consumer electronics (rapidly moving market) or pool pumps (potentially large demand characteristics).

Residential New Construction

In early 2010, the Program Administrators will issue an RFP for an Evaluation Contractor for the Residential New Construction Program. As has been done over the last seven years, the selected evaluation contractor will be responsible for conducting and managing all evaluation activities for the program.

In 2010, the two main evaluation activities slated for completion are a new baseline study of residential new construction practices and an Annual Progress Report. Although baseline

studies tend to be costly and time consuming, they are an important measurement of where typical market practices currently stand and how the program is influencing the market, and serve as an appropriate measure on which to base savings associated with the program. In evaluation planning discussions, the Evaluation Committee for the Joint Management Committee ("JMC") had determined that, due to the cost of baseline studies and the time required for construction practices to change, an appropriate time interval between baseline studies would be approximately five years. A baseline study for this program was last conducted in 2005.

Currently, the JMC Evaluation Committee is considering incorporating more detailed diagnostic measurements, measure code compliance, baseline information for heating and cooling equipment, and appliances into the baseline study. The specifics of how and to what extent these items will be included will be determined once an evaluation contractor has been selected.

An Annual Progress Report, which has been conducted each year since 2002, summarizes program activity over the past year. Program performance information detailed in the report includes historical as well as current information to show the growth of the program over time.

In addition to these two studies, other areas that will need evaluation efforts are Codes and Standards and Major Renovation. The Codes and Standards work will involve how the program can better influence upgrading codes and take credit for the resulting savings. The Major Renovation effort will involve integrating major renovation into the program. The specific timing and amount of evaluation work associated with these tasks will be determined once the initiatives are better defined.

Other selected evaluation activities may be undertaken as the need arises. Evaluation activities for 2011 and 2012 will be developed once an Evaluation Contractor has been selected and hired and will likely focus on impact and process evaluations to capture the effects of recent program changes.

Non-Residential Large Retrofit and New Construction

In early 2010, the Program Administrators will issue an RFP for an Evaluation Contractor for the Non-Residential Large Retrofit and New Construction programs. For the past decade or more, each Program Administrator has conducted most of its evaluation in this area independently, with oversight by the Department and various non-utility party consultants. The new framework will require the Program Administrators to develop a comprehensive research plan, taking into account the transition challenges discussed above.

The first step in that plan is to gain a better understanding of the commercial and industrial market for energy efficiency products and services. This includes collecting data on the efficiency of existing and new baseline efficiency equipment, overall building shell characteristics and operation and maintenance practices, the quantity and characteristics of new construction activity, and the number, characteristics, and business practices of various types of vendors.

At the same time, the Program Administrators need to conduct a wide variety of studies to help estimate program savings and inform planning estimates. At this point, the following studies are the top priorities for 2010:

- End-use metering for large commercial retrofit lighting program for those Program Administrators whose data is older than three years. This effort will be

coordinated through the EM&V Forum to maximize its use through the region by combining it with other existing data.

- An impact evaluation of non-prescriptive HVAC installations. Previous evaluation efforts for some Program Administrators have combined less complex measures such as unitary HVAC replacements with large comprehensive cooling system upgrades. This impact evaluation will provide more detailed feedback to program implementation and planning, as well as effectively documenting savings.
- A process and impact evaluation of comprehensive multi-measure new construction and major renovation projects. Previous evaluation efforts for some Program Administrators have combined this type of project with less complex measures. This type of installation involves the highest level of technical support and a separate evaluation of this effort is warranted. As an add-on, this effort could also include an evaluation of the Advanced Building Program, a less intensive comprehensive design offering for smaller buildings. This effort will provide more detail to feed back into program implementation and planning, and will effectively document savings. Through the EM&V Forum, a study of the load shape of unitary HVAC measures will be conducted. Savings from this measure category, which is offered by all Program Administrators, are relatively small; however, the last study was conducted over ten years ago. Because the costs associated with this type of study are prohibitive for an individual Program Administrator, it is an ideal candidate for a joint study through the EM&V forum.
- Gas prescriptive high efficiency heating and water heating equipment impact evaluation. An impact evaluation of this larger commercial and industrial gas rebate program has not previously been performed, so an appropriate methodology will need to be developed.
- Gas custom measure impact evaluation. An impact evaluation of non-prescriptive gas measures such as boiler controls and building shell measures. This measure category has not been evaluated. Part of the effort will be to select an appropriate methodology for an impact evaluation.
- An impact evaluation of prescriptive variable speed drives. Savings from this high potential measure category has not been systematically evaluated for a number of years due to the high cost relative to the savings. This situation is an ideal scenario for a joint study to assess how well this measure is performing when delivered in a simplified prescriptive manner.

Non-Residential Small Retrofit

In early 2010, the Program Administrators will issue an RFP for an Evaluation Contractor for the non-residential small retrofit area. The delivery mechanisms (direct install), size of projects, and incentive amounts for this program category (on the electric side) have become increasingly similar over the past five years, and in late 2007/2008, the electric Program Administrators worked together on a joint impact evaluation using billing analyses. The new framework will require the Program Administrators to develop a more comprehensive approach, incorporating small retrofit gas opportunities as well.

This program category tends to consist largely of lighting (approximately 85-90% for the current program), and also tends not to involve as much volatility in impact factors as some of the other research areas, with relatively minimal free ridership and spillover (as compared to the larger programs). With this in mind, priorities for research in the non-residential small retrofit area include:

- A lighting-only metering impact study focusing on load shape data, not energy savings; which have been recently studied through billing analysis;
- A market review and research on other non-lighting measures, including gas end uses, to see if there is merit in undertaking additional impact studies;
- A process evaluation, probably in late 2010 or in 2011. This evaluation could focus in areas such as: on gas/electric integration approaches, examination of alternative incentive levels, on-bill financing and repayment, and comprehensiveness of savings.

It is also assumed that the small retrofit area will be part of the larger C&I market characterization and market research analysis.

Special and Cross-Sector Studies

In early 2010, the Program Administrators will issue an RFP for an Evaluation Contractor for Special and Cross-Sector Studies. Given the diversity of topics, it may be necessary to issue more than one RFP, perhaps several months apart, to acquire contractors with expertise in diverse areas. Such studies will include:

- Cross-cutting free rider and spillover studies
- Behavioral programs
- Community-based pilots (geographically targeted programs)
- Non-energy benefits (low-income, residential, and business)
- Umbrella marketing efforts
- Input into regional long-run avoided costs.

Eventually, such studies might be expanded further to include equipment and building standards, commercial & residential plug loads and emissions reduction analyses, and other potential cross-sector programs or issues. However, studies are not likely to be rolled out in all these areas in 2010. In 2010, the Program Administrators expect to conduct the following studies:

- Free ridership and spillover study focusing on C&I customers and possibly some residential programs;
- Behavioral programs evaluation, starting with National Grid's OPower pilot, but spreading in later years to other Program Administrators' programs;
- Non-energy benefits applicable to low-income and several other programs;
- Evaluation of community-based pilots, starting with NSTAR and National Grid's Chinatown pilot;
- Long run avoided cost study, which should start up later in 2010.

8. *Technical Reference Manual*

An initial draft of the Technical Reference Manual ("TRM") is found on www.richmaylaw.com/eeplan and is incorporated herein by electronic reference given its volume. As a result of the passage of the Act, the creation of the Council and the significant energy efficiency mandates set out by the Act, a sub-group consisting of Program Administrators, the Council, its Consultants, and interested stakeholders, such as the Attorney General, was convened to develop the TRM. The TRM is intended, in its final form, to be used by Massachusetts energy efficiency Program Administrators to plan for, quantify, and report energy efficiency savings. The TRM will also provide the Department and interested stakeholders with comprehensive information related to energy efficiency savings. At this point, the TRM is in the initial phases of construction, and as such it is inappropriate to include in this filing. The Program Administrators commit to filing the TRM with the Department as soon as possible, after it has undergone thorough review and refinement, but no later than September 30, 2010.

I. Performance Incentives

The Green Communities Act requires energy efficiency plans to contain proposed performance incentive mechanisms. G.L. c. 25, § 21(b)(2). The Council's Priorities Resolution acknowledged this statutory requirement by addressing the development of performance incentive mechanisms to be incorporated by the Program Administrators in their energy efficiency plans.[22] Specifically, Council Priority #4 states that:

> The Commonwealth should employ the right structure and level of performance incentive for PAs who administer and deliver demand-side management programs striking the appropriate balance between fiscal responsibility and positive economic signals for the PAs to achieve strong efficiency performance and

[22] Performance incentives are not applicable to the Cape Light Compact.

> customer value. As set out in the GCA, the PAs shall coordinate with the Council, as part of the development of the statewide and individual three-year electric and gas energy efficiency plans, to develop appropriate performance incentive mechanisms.

The Department acknowledged this statutory requirement in its D.P.U. 08-50 orders (*see* D.P.U. 08-50, at 25-26; D.P.U. 08-50-A at 51), and found that establishing performance incentive principles, rather than a prescribed incentive mechanism, appropriately complied with the Green Communities Act. D.P.U. 08-50-A at 49-50. In reviewing the performance incentive requirement, the Department stated that it will rely on the following principles:

- Performance incentive mechanisms should be designed to encourage distribution companies to pursue all available cost-effective energy efficiency.
- The amount of funds available for performance incentive mechanisms should be kept as low as possible, in consideration of the other guiding principles, in order to minimize the costs to electricity and gas customers.
- Performance incentive mechanisms should be designed in such a way as to encourage energy efficiency program designs that will best achieve the Commonwealth's energy goals, particularly with regard to the goals stated in the Green Communities Act.
- Performance incentives should be based on clearly-defined goals and activities that can be sufficiently monitored, quantified and verified after the fact.
- Performance incentives should be available only for activities where the distribution company plays a distinct and clear role in bringing about the desired outcome.
- Performance incentive mechanisms should be as consistent as possible across all electric and gas distribution companies. Any deviations across distribution companies should be clearly justified.
- Performance incentive mechanisms should be created in such a way to avoid any perverse incentives.

- Any modifications to a previously approved performance incentive mechanism should be fully justified at the time they are proposed to the Department. The Department expects that stakeholders will consider and propose performance incentives that are relatively consistent from one three-year energy efficiency plan to the next. Distribution companies may propose modifications to an approved performance incentive mechanism in any subsequent three-year energy efficiency plan, but they must provide sufficient justification demonstrating how the proposed modifications will improve upon the performance incentive mechanism with consideration of each of the design principles listed above.

Id.

Program Administrator Performance Incentive Principles

Consistent with the Department's Performance Incentive guidelines, the Program Administrators have developed a high-level set of principles—after consulting with interested stakeholders and the Consultants—that provide support for a more detailed performance incentive proposal for inclusion in the Plan. These principles are as follows:

- A very substantial percentage of the savings should accrue to customers;
- Utility incentives should align with the Commonwealth's energy policy goals;
- Incentive structures for gas and electric programs should align;
- Incentives should recognize and reward achievement of aggressive targets;
- Incentives should send appropriate economic signals to the Program Administrator;
- Savings and net benefits should be the primary drivers of assessing performance;
- Incentive targets should be company-specific, recognizing differences in service territories;
- Incentive models should be performance-based to encourage stretch;

- Incentive awards should be based on performance against approved plan target which will be developed annually;
- The energy efficiency plans should be grounded in well-supported planning assumptions that withstand external scrutiny; and
- Goals for incentives should be developed annually.

Description of Incentive Provision

The Program Administrators have consulted with representatives of the Council to address financial performance incentives in 2010 through 2012. Over the course of numerous meetings and negotiations, the Council reached a consensus agreement that provides a monetary incentive spurring Program Administrators to focus on high levels of energy savings while maximizing the funding of energy efficiency programs. The Program Administrators plan to provide escalating levels of customer energy savings in each of the next three years, resulting in over 56 million therms of annual savings by the end of 2012. These are savings that will continue to accrue to the benefit of customers and the environment for many years.

Incentive Pool

The incentive provision provides for a state-wide pool of incentives that is shared among Program Administrators based on their savings targets expressed as annual energy savings in therms and the dollar value of both benefits and net benefits associated with Plan goals. Since the pool is not tied to spending levels, the amount of incentive earned is directly related to the achievement of savings. This aspect of the Program Administrators' incentive proposal, in particular, is consistent with the Department's articulated principle of designing performance incentive mechanisms in a manner that will encourage distribution companies to pursue all

available cost-effective energy efficiency. To the extent that the Program Administrators do not pursue all available cost-effective energy efficiency, it is unlikely that they will be able to achieve the significantly increased savings goals proposed in the Plan, and, correspondingly, unlikely to earn performance incentives. Moreover, tying incentives to savings goals that are themselves designed to result in a significant reduction in gas load and overall gas consumption, meets the Department's guideline that performance incentive mechanisms should be designed in such a way as to encourage energy efficiency programs that will best achieve the Commonwealth's energy goals.

The overall incentive pool increases during the three-year period along with the targeted savings levels. In 2010, the statewide savings target is 12,510,000 therms (roughly .6 percent of retail energy sales), which provides a $4.0 million incentive pool. In 2011, the statewide savings target is 19,000,000 therms (roughly .9 percent of retail energy sales), which provides a $4.5 million incentive pool. In 2012, the statewide savings target is 24,500,000 therms (roughly 1.15 percent of retail energy sales), which provides a $5.5 million incentive pool.

Program Administrators can earn higher incentives by exceeding performance targets. However the amount of the statewide incentive pool is capped in 2010 at $5.0 million, 125% of the incentive amount related to the achievement of target savings levels for each Program Administrator. No determination has been made about the imposition of a cap for 2011 and 2012 and, if a cap is defined, what the cap on performance incentives in those years will be.

The incentives are intended to encourage the Program Administrators to enthusiastically promote energy efficiency goals; these positive financial incentives are separate and distinct

from other ratemaking mechanisms, such as decoupling and lost base revenues, which only aim to remove the financial *disincentive* to promoting energy efficiency programs.

Historically, Massachusetts gas energy efficiency budgets included incentives at a level that varied based on a percentage of spending that could fluctuate through the years. In today's proposal, this variation in approach and levels of incentives across the gas Program Administrators is eliminated and a statewide approach is adopted that is consistent not only across gas Program Administrators but also with electric Program Administrators. The statewide incentive amounts at target performance for the three years is approximately $14 million or 4.7% (pre-tax) of spending based on the currently estimated $305,256,585 program budget costs. This aspect of the performance incentive proposal is consistent with the Department's principle that the amount of funds available for performance incentive mechanisms should be kept as low as reasonable, in order to minimize the costs of gas to customers.

Allocation of Incentive Pool

The incentive targets are allocated among the individual Program Administrators according to their target savings goals. Therefore, Program Administrators that commit in their energy efficiency plans to achieving higher savings goals will be eligible to earn more of the statewide incentive pool. Program Administrators that commit to lower or higher goals than the statewide plan have justification (e.g. unique service territory challenges) for the need for their deviation. Program Administrators committing to comparatively lower goals are correspondingly eligible for a lesser amount of the incentive pool. In this way, the Council is able to assure that Program Administrators with lower savings goals (and correspondingly lower target savings goals) have reasonably reduced PA-specific performance incentive goals. In short, the overall

system proposed by the Program Administrators is fundamentally equitable. The final allocation of the incentive pool is shown on table z below. Please see Appendix A for details of the calculation on how these figures were derived.

Table z:

Incentive Payouts Using Adjusted Goals

Assuming 100% Achievement at Target –Gas

Program Administrator **$**	**2010**	**2011**	**2012**
National Grid	$2,316,203	$2,702,978	$3,199,409
NSTAR	$832,615	$754,363	$1,141,187
Unitil	$41,566	$41,424	$53,997
Bay State	$903,935	$773,961	$836,422
Berkshire	$146,177	$123,753	$133,218
New England Gas Company—Fall River Service Area	$89,875	$80,315	$91,773
New England Gas Company—North Attleboro Service Area	$13,219	$11,076	$11,210
Total	$4,343,589	$4,487,870	$5,467,217

Thresholds

Program Administrators must achieve a threshold level of performance defined as 75% of the dollar value of plan savings to earn under the savings mechanism and 75% of the dollar value of net benefits compared to Plan targets in order to receive an incentive under the savings and value mechanisms. If a Program Administrator commits to a lower goal than the baseline because of the unique challenges in its service territory (e.g. low load growth or negative growth, small or challenged C&I base, high percentages low-income customers), the threshold is still 75% of their stated goal and not 75% of the baseline goal.

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In 2010, a Program Administrator can earn anywhere from 75% to 125% of its allocated incentive amount depending on the achievement of its goals.

Incentive Model

The proposed performance incentive model is under refinement and discussion with the Council and its Consultants. The performance incentive mechanism will continue to include three components: (1) a savings mechanism; (2) a value mechanism; and, (3) other performance metrics.

After further discussion with the Council and its Consultants on implementation mechanics, each Program Administrator plans to file specific goals with performance targets by component.

Performance Metrics

With respect to the performance metrics component, the Program Administrators note that each of them, in consultation with stakeholders, will establish individual performance metrics that are aligned with the statewide metrics and are appropriate to their customer base. The performance metric goals are intended to assure that the Program Administrators are properly motivated to undertake desirable programs that provide difficult to measure benefits.

The Program Administrators will propose a limited number of performance metrics for consideration by the stakeholders by November 9, 2009. It is anticipated that the Program Administrators and the stakeholders will conduct negotiations about these performance metrics over the next two weeks with an objective of reaching a consensus about proposed performance metrics that the Program Administrators can file with the Department in a supplemental filing prior to the commencement of evidentiary hearings at the Department on the company-specific three-year plans.

2010 Incentive Cap

In 2010, Program Administrators will sum the initial estimate of their earned performance incentive by component (savings mechanism, value mechanism, and performance metrics) and will compare that amount to 125% of the target incentive amount. The earned incentive will be capped at 125% of the target incentive level.

Application of Evaluation Measurement & Verification (EM&V) Results

For the purpose of the incentive calculation, for 2010, savings and benefits will be based on a deemed savings approach, consistent with the October 13th Resolution, which flow from the

savings planning assumptions reflected in this Plan. For 2011 and 2012, savings and benefits will be based on EM&V results, as reported in each Program Administrator's Energy Efficiency Annual Report submitted to the Department each summer. However, the impact of any resulting change as a result of the application of EM&V findings that either increases or decreases preliminary year-end results (*i.e.*, results that are based on the planning assumptions used to derive goals for the year) at the individual Program Administrator sector level will be limited to +/- 25%.[23]

The application of EM&V results to the Program Administrator's ultimate incentive calculation in 2011 and 2012 will ensure that, following the 2010 transition period, incentives will be tied to a Program Administrator's active and distinct role in achieving savings and related benefits. This aspect of the incentive plan adheres to the Department's guidelines that performance incentives should be: (1) available only for activities where the Program Administrator plays a distinct and clear role in bringing about the desired outcome; and (2) based on clearly-defined goals and activities that can be sufficiently monitored, quantified and verified after the fact.

Summary

The proposed Program Administrator performance incentive plan will align the interests of customers, Program Administrators, and the Commonwealth in working to achieve the goals established by the Green Communities Act.

1. *Performance Incentives Summary Table*

[23] There is one exception to this bandwidth limit. The Residential Lighting Program savings and value components shall have a collar of +/- 15% for 2010.

The following table is presented in accordance with the filing procedures developed in the D.P.U. 08-50 Working Group. It is based upon a "roll up" of the incentive allocations for the Program Administrators using the methods described above.

Performance Incentives, 2010					
Program	**Total Program Costs**	**After-Tax Performance Incentives (1)**	**% of Program Costs**	**Pre-Tax Performance Incentives**	**% of Program Costs**
Residential	$40,079,053	$536,777	1.3%	$2,109,174	5.3%
Low Income	$16,116,037	$182,109	1.1%	$428,167	2.7%
C&I	$19,473,759	$513,248	2.6%	$1,806,248	9.3%
GRAND TOTAL	**$75,668,849**	**$1,232,134**	**1.6%**	**$4,343,589**	**5.7%**

Performance Incentives, 2011					
Program	**Total Program Costs**	**After-Tax Performance Incentives**	**% of Program Costs**	**Pre-Tax Performance Incentives**	**% of Program Costs**
Residential	$54,552,381	$481,468	0.9%	$2,285,709	4.2%
Low Income	$20,806,101	$157,536	0.8%	$375,366	1.8%
C&I	$26,762,850	$445,755	1.7%	$1,826,796	6.8%
GRAND TOTAL	**$102,121,332**	**$1,084,758**	**1.1%**	**$4,487,870**	**4.4%**

Performance Incentives, 2012					
Program	**Total Program Costs**	**After-Tax Performance Incentives**	**% of Program Costs**	**Pre-Tax Performance Incentives**	**% of Program Costs**
Residential	$63,985,766	$576,201	0.9%	$2,679,374	4.2%
Low Income	$26,630,852	$210,534	0.8%	$491,129	1.8%
C&I	$36,849,787	$591,512	1.6%	$2,296,714	6.2%
GRAND TOTAL	**$127,466,405**	**$1,378,246**	**1.1%**	**$5,467,217**	**4.3%**

Performance Incentives, 2010-2012					
Program	**Total Program Costs**	**After-Tax Performance Incentives**	**% of Program Costs**	**Pre-Tax Performance Incentives**	**% of Program Costs**
Residential	$158,617,199	$1,594,446	1.0%	$7,074,257	4.5%
Low Income	$63,552,991	$550,178	0.9%	$1,294,661	2.0%
C&I	$83,086,396	$1,550,514	1.9%	$5,929,758	7.1%

GRAND TOTAL	**$305,256,585**	**$3,695,139**	**1.2%**	**$14,298,676**	**4.7%**

Note:

(1) The Program Administrators are currently reviewing the After-Tax Performance Incentives presented here and will provide updated figures if needed.

J. Cost Recovery

The Program Administrators emphasize that cost recovery, including the recovery of Lost Base Revenues ("LBRs") and performance incentives (or through implementation of a Department-approved decoupled rate structure), is a critical element of this Plan. In order for the Program Administrators to pursue the aggressive goals set forth herein – which goals have not been achieved on a sustained statewide basis in any other jurisdiction to the Program Administrators' knowledge – it is essential that the cost recovery be well understood and that the cost-recovery process provide a full and fair opportunity for the Program Administrators to be made economically whole for aggressively pursuing sales-reducing energy efficiency efforts and to earn a reasonable return on this investment based upon their performance and achievement.

As contemplated in the Act, recovery of all costs associated with the materially increased energy efficiency efforts reflected in the Plan, as well as recovery of LBR consistent with the established guidelines of the Department, and the opportunity to earn a performance incentive, are integral elements of this Plan. Accordingly, the gas Program Administrators propose to continue their energy efficiency cost recovery relating to their energy efficiency efforts.

The Department is directed by the Act to ensure that electric and natural gas resource needs are first met through the use of all cost-effective energy efficiency and demand resources. G.L. c. 25, § 21. To that end, the Act directs electric companies, gas companies and municipal aggregators to include in their Plans "a fully reconciling funding mechanism which may include, but which shall not be limited to, the charge authorized" by the Department pursuant to G.L. c. 25, § 19. *Id.*

Moreover, after reviewing a Program Administrator's proposed Plan, the Department is directed by the Act to approve recovery of all expenditures for the Program Administrator's energy efficiency measures that are screened through the cost-effectiveness test described herein in Section II.D. *Id.* In the event that program costs exceed available revenue sources, the Department must approve a fully reconciling funding mechanism to ensure that the costs for all cost-effective energy efficiency measures are recovered from customers. *Id.* Therefore, in reviewing a Program Administrator's proposed Plan, the Department must assure that the Program Administrator is able to implement all Plan offerings that are found to be cost-effective, even if the costs associated with providing those offerings are in excess of the established funding sources provided for in the SBC and through other sources.

In this context, and consistent with the standard that governs the calculations for and recovery of LBR, the gas companies have each filed with the Department their calculation of LBR in conjunction with their energy efficiency plan filings. For gas companies, LBR is defined as the non-gas portion of a gas utility's base rates that is lost between rate cases as a result of reduced sales cause by the implementation of demand-side management programs. *Boston Gas Company*, D.P.U. 90-17/18/55, at 139 (1990). Consistent with longstanding practice, the Department allows gas distribution companies to recover LBR. *See, e.g., Colonial Gas Company*, D.T.E. 01-73, at 6, 14 (2002); *Colonial Gas Company*, D.T.E. 97-112, at 33 (1999); D.P.U. 90-17/18/55, at 139. The collection of LBR was recently and expressly re-affirmed by the Department in its *Order on Decoupling*, D.P.U. 07-50-A, at 83-84 (2008), where the Department specifically found that gas distribution companies may continue to collect LBR through the term of their initial three-year energy efficiency plans. D.P.U. 07-50-A at 84.

The costs associated with LBR for gas Program Administrators will continue to be reconciled through the conservation charge ("CC") decimal calculation included in each company's local distribution adjustment clause. The CC decimal is applied to therm sales of a particular company to recover from firm ratepayers any demand side management program costs and associated expenditures. Included in that calculation is a determination of the Company's lost margins, determined by multiplying the rate category therm savings by the respective rate category recovery rate. Where applicable, the gas Program Administrators will include their LBR calculations for calendar year 2010 in their respective PA-specific Plan filings with the Department in October 2009, and will submit new LBR calculations annually for calendar years 2011 and 2012 during the course of the implementation of this three-year statewide Plan.

The purpose of the LBR calculation is to address the financial impact (lost base revenue) experienced by each of the Program Administrators as a result of implementing sales-reducing energy efficiency programs, initiatives, and measures. Generically, the LBR calculation is performed on a periodic basis for each type of measure installed in connection with the relevant rate class. The calculation begins with engineering benchmarks for therm savings of pre-approved measures installed by customers that participate in the energy efficiency programs offered by the Program Administrators. The therm savings used in the calculation are generated by a number of sources, including but not limited to each Program Administrator's administrative and energy auditing vendors who determine the energy savings. These vendors utilize software that has been approved by the DOER, or alternatively, use industry-accepted energy modeling software and practices. Additional sources include technical potential studies and impact evaluations performed by independent consultants. The annual energy saving values are transferred into the Program Administrator's LBR calculation model.

Given that it is not possible to forecast the precise mix of measures that will be installed by participating customers, and that it is difficult to anticipate the exact time during the year that a measure will be installed by participating customers and thereby project the annual value of LBR to be collected relative to these measures, it is difficult to isolate the exact value and provide an exact estimate of a Program Administrator's LBR related to the 2010 – 2012 proposed programs. The following table provides a preliminary, statewide estimate of LBR recovery for 2010-2012 in accordance with the filing processes developed by the D.P.U. 08-50 Working Group.

1. *Calculation of Lost Base Revenue*

Lost Base Revenue, 2010-2012					
Program	**2009**	**2010**	**2011**	**2012**	**Total LBR for 2010-2012**
Residential	**$1,810,520**	**$2,752,392**	**$3,694,606**	**$4,835,179**	**$11,282,177**
Low Income	**$56,561**	**$98,109**	**$104,705**	**$137,534**	**$340,348**
Commercial & Industrial	**$1,165,710**	**$1,852,405**	**$2,292,211**	**$3,151,501**	**$7,296,118**
GRAND TOTAL	**$3,032,791**	**$4,702,906**	**$6,091,523**	**$8,124,214**	**$18,918,643**

K. Mid-Term Revisions

Although the Program Administrators have endeavored to anticipate and analyze a wide range of possibilities in devising the Plan, it is not only inevitable, but indeed desirable, that the Program Administrators retain flexibility to make ongoing revisions and enhancements to the Plan during its three-year term ("Term") in order to reflect in-the-field conditions, actual achievements, technological advances and state-of-the-art techniques. During the Term, the Program Administrators will monitor and evaluate the effectiveness of various programs, and may determine that certain enhancements, reallocations, or modifications are appropriate to best achieve the Plan's energy efficiency goals. Likewise, the Program Administrators need to be

able to incorporate technological or financing advances as they become available without being unduly inhibited by the need to seek advance regulatory review and approval (with accompanying administration costs and implementation delays). While the Program Administrators propose to retain significant flexibility to make ongoing revisions and refinements, the Program Administrators also appreciate the importance of transparency and oversight.

The Department has balanced these interests in formulating the governing guidelines for Plan modifications, as set forth in its Order in D.P.U. 08-50-A. As stated in D.P.U. 08-50-A, the Department "expect[s] that Program Administrators will make minor modifications as a matter of course but that significant modifications will require Department review and approval." D.P.U. 08-50-A at 61. More specifically, D.P.U. 08-50-A expressly authorizes the Program Administrators to make modifications, reallocations and enhancements to their individual plans during the Term (including, without limitation, budgetary reallocations and additions or subtractions of program measures). However, any such modification, reallocation or enhancement shall be submitted to the Department (with a copy to the Council) for the Department's review and approval (with the advance opportunity for the Council to comment and work with the Program Administrators) if the contemplated modification, reallocation or enhancement meets any of the following prescribed conditions:

> (1) the addition of a new program or the termination of an existing program; (2) a change in a program budget of greater than 20 percent; (3) a program modification that leads to an adjustment in savings goals that is greater than 20 percent; or (4) a program modification that leads to a change in performance incentives of greater than 20 percent.

D.P.U. 08-50-A at 64.

With specific respect to the process for material modifications that fall within the D.P.U. 08-50-A standards, the Program Administrators propose to utilize the exact process set forth in D.P.U. 08-50-A, with one clarification/adjustment as highlighted below:

> A Program Administrator that seeks to make such a modification shall submit its proposal for review by the Council and submit a request for approval as part of its annual energy efficiency report filing to the Department or, if appropriate under the circumstances on account of timing concerns, through a separate proposal filed in advance of its annual energy efficiency report filing. Any such request must be accompanied with (1) a justification for why the modification is appropriate, and (2) a description of how the modification was reviewed and decided upon by the Council.

D.P.U. 08-50-A at 64 (italicized materials added).

This clarification/adjustment is appropriate in order to accommodate, in special circumstances, requests for program modifications that may be time sensitive or necessary to address potential lost opportunities and that, therefore, should not be delayed pending the filing of a Program Administrator's annual report (which typically is made in the summer); the adjustment also provides flexibility for potential savings or budgets updates for 2011 and 2012 as further described below. This limited clarification/adjustment to the process set forth in D.P.U. 08-50-A adds a reasonable degree of flexibility for unique circumstances, ensuring that customers can benefit in a timely fashion from material enhancements (as opposed to delaying the implementation of such enhancements until after an annual report filing). The Program Administrators expect that any usage of this timing exception would be finite. The Program Administrators would also recommend that the Council and the Department each adopt a 45-day standard timeframe (that can be exceeded as may be necessary) for a decision on any proposed mid-course modification. Such a 45-day standard timeframe seeks to balance the need for

prudent review with the need for implementation of material program enhancements on as timely a basis as reasonably practicable.

The Program Administrators note that, in adopting the appropriate flexibility provided by the Department in D.P.U. 08-50-A, they are not proposing that such flexibility apply to any of the mandatory low-income program funding levels established in G.L. c. 25, § 19(c). Any modification of such levels would only be undertaken with advance approval from the Department after an opportunity for Council participation and after discussions with LEAN.

The Program Administrators believe that the 20 percent bandwidth adopted by the Department will permit the Program Administrators to make the sort of on-the-ground assessments and refinements that are necessary to promote innovation and efficiency. Indeed, retaining the flexibility to make changes and reallocations within that bandwidth is critical. Further, requiring review for all modifications would carry a substantial administrative cost and would have the unfortunate effect of inhibiting valuable innovation. The balance struck by the Department in D.P.U. 08-50-A ensures regulatory oversight while permitting the Program Administrators to remain agile and responsive in implementing state-of-the-art energy efficiency programs for the benefit of customers during the Term.

Of special note regarding mid-course revisions to the Plan, it is an essential element of this Plan that in the event that targets for outside funding are not achieved by certain dates as set forth in this Plan, the Program Administrators are permitted reasonable flexibility to modify savings goals and budgets by specific stipulated dates (on or about September 30, 2010 and September 30, 2011, respectively[24]) in order to reflect the actual outside funding levels achieved, in order to prevent excessive bill impacts. *See* Section II.B.2.iv. Additionally, as the Program

[24] The Program Administrators will strive to meet these target dates in 2010 and 2011, but retain flexibility to account for holidays and in-the field experience.

Administrators gain experience with new programs under the Act, it may become appropriate to update savings goals and budgets for 2011 or 2012 for other reasons, in addition to modifications based on outside funding levels. In particular, the Program Administrators will examine actual 2010 experience in the field as the new programs set forth in this Plan are rolled out and implemented and, if appropriate after consultation with the Council, submit any updated savings goals or budgets based upon such experience for 2011 and 2012 on or about September 30, 2010. It is the Program Administrators' goal that such a filing would not be necessary, but given the nature of many of the new initiatives undertaken pursuant to the Act, it is foreseeable that such a filing may be appropriate.

III. GREEN COMMUNITIES ACT – DEPARTMENT OF PUBLIC UTILITIES

A. Acquisition of All Available Cost Effective Energy Efficiency

Please refer to Section II.A. above in this Plan.

B. Allocation of Funds

1. *Minimum Requirement for Low Income*

In compliance with the Green Communities Act, (c), "…at least 20 percent of the amount expended for gas energy efficiency programs shall be spent on comprehensive low-income residential demand side management and education programs." G.L. c. 25, § 19(c). Based on the budget figures set forth in this Plan, 21 percent will be allocated to the low-income residential subclass in 2010, and 20 percent in 2011, and 21 percent in 2012. Furthermore, the low-income sector represents 27 percent of the customer contribution to the CC charge in 2010, and 27 percent and 26 percent in years 2011 and 2012, respectively. See the Table below for more detail.

Gas Minimum Allocation to Low Income, 2010				
Sector	**Program Costs**	**% of Program Costs**	**Customer Contribution (1)**	**% of Total Contribution**
Residential	$40,079,053	53%	$8,229,421	51%
Low Income*	$16,116,037	21%	$4,374,090	27%
Commercial & Industrial	$19,473,759	26%	$3,632,527	22%
TOTAL	**$75,668,849**	100%	**$16,236,037**	100%

Gas Minimum Allocation to Low Income, 2011				
Sector	**Program Costs**	**% of Program Costs**	**Customer Contribution**	**% of Total Contribution**
Residential	$54,552,381	53%	$10,236,070	49%
Low Income*	$20,806,101	20%	$5,765,019	27%
Commercial & Industrial	$26,762,850	26%	$4,969,013	24%
TOTAL	**$102,121,332**	100%	**$20,970,101**	100%

Gas Minimum Allocation to Low Income, 2012				
Sector	**Program Costs**	**% of Program Costs**	**Customer Contribution**	**% of Total Contribution**
Residential	$63,985,766	50%	$13,840,058	52%
Low Income*	$26,630,852	21%	$6,892,014	26%
Commercial & Industrial	$36,849,787	29%	$6,093,781	23%
TOTAL	**$127,466,405**	100%	**$26,825,852**	100%

Gas Minimum Allocation to Low Income, 2010-2012				
Sector	**Program Costs**	**% of Program Costs**	**Customer Contribution**	**% of Total Contribution**
Residential	$158,617,199	52%	$32,305,549	50%
Low Income*	$63,552,991	21%	$17,031,122	27%
Commercial & Industrial	$83,086,396	27%	$14,695,320	23%
TOTAL	**$305,256,585**	100%	**$64,031,991**	100%

C. Minimization of Administrative Cost

General Laws c. 25, § 19(a) requires the Department, when authorizing energy efficiency programs, to ensure that such programs minimize administrative costs to the fullest extent practicable. Administrative costs, also commonly referred to as PP&A costs, have traditionally been defined as all in-house and outsourced costs associated with planning activities and program administration. These include costs associated with developing program plans, and day-to-day program administration, including labor, overhead costs, and any regulatory costs associated with energy efficiency activities.

As has been their historical practice, each of the Program Administrators is fully committed to pursuing both internal and external opportunities to streamline the administration of their energy efficiency programs and thus their associated administrative costs. To that end, and within the context of the D.P.U. 08-50 Working Group, the Program Administrators, the Department, the DOER, the Attorney General's Office, and other interested parties have begun discussions to review the definition of administrative costs and the classification of the costs in this category to ensure that all Program Administrators report such costs consistently. The results of this effort will allow all interested stakeholders to review administrative costs in an objective manner.

The Program Administrators also emphasize that, especially in light of the increased levels of activity contemplated under the Act, it is necessary and appropriate for all Program Administrators to maintain a skilled and dedicated administrative staff in order to ensure that: programs are delivered successfully; that the Act is complied with; that the directives of the Council, Department, and DOER are all responded to in a timely manner; and that substantial savings are achieved and documented. In sum, the Program Administrators seek to balance the

need to minimize administrative costs to the extent prudent with the need to maximize program quality and oversight.

1. *Competitive Procurement Process*

As set forth on Section 19(b) of the Act, the Department "may approve and fund gas energy efficiency programs proposed by gas distribution companies including, but not limited to, demand side management programs." G.L. c. 25, § 19(b).

In approving such programs, the Department shall "ensure that they are delivered in a cost-effective manner capturing all available efficiency opportunities, minimizing administrative costs to the fullest extent practicable and utilizing competitive procurement processes to the fullest extent practicable." *Id.* The Program Administrators are committed to utilizing the competitive procurement process to the fullest extent possible and expect to have more to report after the first year of the Plan and as the three-year Plan develops. Historically, the Program Administrators have utilized the competitive procurement process for retaining contractors and vendors for activities including but not limited to; audit delivery, quality control, monitoring and evaluation, marketing and website design.

Therefore, consistent with past practice in the procurement of energy efficiency services, the Program Administrators anticipate that they will issue RFPs to engage the appropriate third-party contractors and vendors for providing energy efficiency activities, will consider the input and direction of the Council and its Consultants with respect to the retention of necessary Consultants, and, where necessary, will work collaboratively to ensure that energy efficiency services have been procured in a manner that minimizes cost to the ratepayers while maximizing the associated return on that investment. The Program Administrators recognize, however, that there are firms who may be qualified to perform some, but not all of the tasks generally included

in the contracts for program delivery services. To further the job growth/retention goals of the GCA, the Program Administrators will work to expand the pool of qualified program vendors, to promote the entry of new market actors into sub-contractor roles and make transparent the sub-contractor bidding process and selection criteria used to evaluate proposals.

IV. GREEN COMMUNITIES ACT – ENERGY EFFICIENCY ADVISORY COUNCIL

A. Additional Benefits

1. *Reduction in Peak Load*

Please refer to discussion of DR in Section II.A.5 above.

2. *Economic Development and Job Growth/Retention*

The economic development and job creation benefits of energy efficiency are well documented. In developing this three-year Plan to meet the ambitious goals set forth in the Green Communities Act, the Program Administrators recognize the importance of thoughtful planning in ensuring that these benefits are fully realized by the Commonwealth and its citizens.

In its April 2007 report, "Massachusetts Saving Electricity: A Summary of the Performance of Electric Efficiency Programs Funded by Ratepayers Between 2003 and 2005," the DOER provides a compelling overview of how the benefits that accrue as a result of these programs are many times the initial investment. Indeed, the report indicates that for an investment of $371 million in ratepayer funds over the three-year period (2003-2005), the lifetime economic impacts of the efficiency investments made during those years will stimulate over 11,000 job years, increase personal disposable income by $650 million, and will add almost $1.4 billion to the Gross State Product.

The 2009 Study "Avoided Energy Supply Costs in New England" ("2009 AESC Study") confirms the economic impacts from expenditures in energy efficiency. "Exhibit A(1) - 1:

Economic Development Impacts of Massachusetts Electric and Gas Energy Efficiency (EE) (Net Impact Multipliers per $1 million)" of the 2009 AESC Study indicates that each $1 million in gas energy efficiency expenditures will create employment impacts of 19.1 job-years and value added (or gross domestic product in the state) of $891,500.[25]

Assuming the gas energy efficiency programs accrue economic development benefits at the rate projected in the 2009 AESC study, the economic development benefits of this three-year plan are 7,775 job years (which equates to approximately 778 jobs) and approximately $370 million in Gross State Product.

Energy efficiency puts cash in the pockets of consumers and helps free up capital for local businesses in multiple ways. First, customers who implement measures may see an immediate impact in terms of bill savings. In this Plan, the Program Administrators have proposed a number of measures to help defray upfront investment costs and deliver net savings from the beginning. One important example is the Small Business Services delivery model—which includes both direct installation and innovative financing practices that limit or reduce up-front cost share—has been held up as a national model to address the deep and broad savings potential in this market. Second, load reductions contribute to lower wholesale energy prices. According to the DOER analysis, over the three years analyzed, Massachusetts efficiency programs delivered a cumulative benefit of $19.5 million. As a result, funds that were going primarily to pay for natural gas and other fuels (a majority of which were likely left the state and even the country) are available to contribute to local economic development. Energy efficiency

[25] The employment impacts are a combination of jobs retained and jobs created. There is no indication how the impacts are split between these two categories. The jobs affected will be in energy efficiency, allied fields, as well as industries that consume energy across the whole economy.

investments save money for the consumers, who can reapply those savings to other investments, which impact the economy.

One of the most important economic impacts of energy efficiency is job growth and job retention. States that pursue energy efficiency spur job growth. Energy efficiency investments create jobs most directly through the work required to produce and install energy-efficiency products. A majority of the workforce needed to implement energy efficiency by necessity is local, as much of the work involved requires on-site construction and installation.

In Massachusetts, for example, an annual growth rate of 20 percent is expected in industries related to clean energy. The largest sector of this industry is jobs associated with energy efficiency and demand response, representing 44 percent of the sector.[26] The Clean Energy Census performed by the Massachusetts Renewable Energy Trust and Global Insight notes that the job creation is quite broad-based, with a number of clean energy businesses in the Berkshires, around Springfield and Worcester, and up and down the Massachusetts coastline. Moreover, this study notes that the job creation associated with clean energy requires workers at every level of the economic spectrum, from Ph.D. researchers to solar panel installers, energy auditors, and maintenance technicians for wind turbines.[27]

This three-year Plan represents a tremendous opportunity for job growth in Massachusetts. While this is one of the most highly anticipated positive results of the significant ramp up in energy efficiency spending, Program Administrators recognize that significant effort will be needed to ensure that demand for talent is consistently matched with supply of available labor.

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[26] Massachusetts Clean Energy Industry Census; prepared by Global Insight, Inc. for the Massachusetts Technology Collaborative Renewable Energy Trust, August 2007, p. 1.

[27] New England Clean Energy Council's Energy Workforce Summit Focused on Meeting Demand for the Fast-Growing Regional Clean Energy Industry.

Initial analysis indicates there is indeed potential for a labor shortfall over the next three years. Data suggest the largest sector impacted by job growth will be the construction trades.[28] The Governor's task force on the *Mobilization for Federal Recovery Infrastructure Investment Report* cautioned of the potential for short-term workforce shortages in energy efficiency contractors in place to do construction.[29] In order to better understand these trends, support has been provided to the New England Clean Energy Council's workforce development task force which is currently conducting a state assessment of job demands and job availability. The results of this study will help Program Administrators target workforce development initiatives at appropriate target markets.

One of the key roles played by Program Administrators is to interface with the energy efficiency service provider community (*e.g.*, builders, contractors, electricians and other trade allies) to communicate growing demand in specific areas and work together to identify and address potential gaps. Indeed, the Program Administrators have been participating in this type of dialogue to ensure sufficient infrastructure is in place to meet the savings targets included in the Program Administrators' respective 2009 plans.

Furthermore, the Program Administrators recognize that training will be essential to ensuring the availability of a highly qualified and well staffed network of efficiency providers. Many in the workforce will need to have skills upgraded or developed. The Program Administrators look forward to cooperating with the DOER and other state agencies interested in job training and workforce development over the three-year term of the Plan. The Program Administrators will also partner with union-supported training programs to ensure that both the experience of the training providers and associate curriculum will allow for meeting the safety

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28 *Mobilization for Federal Recovery Infrastructure Investment Report*, February 2009.

29 *Id.*

and quality standards currently being met through the delivery of existing programs. The Program Administrators recognize this workforce challenge and have accordingly addressed it in this Plan by supporting and allocating funds for workforce growth and training initiatives. Indeed, Program Administrators have already opened a training center in Fitchburg, and a second center will be opened in Springfield.

The Program Administrators believe that the three-year planning horizon will make it possible to effectively forecast and communicate demand. Without adequate assurances that work will be available over a significant period of time, individuals will be reluctant to invest in training and businesses will be slow to hire for fear of needed to turn around and downsize in the next season.

Job retention will be achieved with consistent, sustainable funding of energy efficiency programs. A sustainable level of programs refers to programs which do not run out of either markets to serve or energy efficiency products with which to serve those markets for a reasonable long-term frame. Achieving a sustainable level of programs and associated spending for a three-year period helps ensure that a consistent work flow can be achieved and maintained for an expanded term.

This three-year Plan represents a rapid growth in energy efficiency savings and programs. It is important to note that for job retention, a sustainable level of spending on energy efficiency programs is imperative. Inconsistent program spending creates uncertainly in the marketplace, leading to workforce and material shortages and oversupplies associated with spending that goes up and down unpredictability. Hence, a foundation for job retention will be to reach a sustainable level of program activities which signal on-going work demand to the marketplace.

V. APPENDICES

A. Glossary of Defined Terms

Appendix A

GLOSSARY OF DEFINED TERMS	
ABS	Advanced Buildings Systems
Act	An Act Relative to Green Communities, Chapter 169 of the Acts of 2008. Signed into law on July 2, 2008.
ACCA	Air Conditioning Contractors of America
AESC	Avoided Energy Supply Component
AESP	Association of Energy Service Professionals
ACEEE	American Council for Energy Efficient Economy
AFUE	Annual Fuel Utilization Efficiency
APS	Alternative Portfolio Standards

GLOSSARY OF DEFINED TERMS	
ARRA	American Recovery and Reinvestment Act
Assessment	Assessment of All Available Cost-Effective Electric and Gas Savings: Energy Efficiency and CHP adopted by the Council on July 14, 2009
BBRS	Massachusetts Board of Building Regulations and Standards
BCRs	Benefit/Cost Ratios
BFM	Brushless Fan Motors
BOC	Building Operator Certification
BPI	Building Performance Institute
CAP	Community Action Program
CC	Conservation Charge
CDC	Community Development Corporations

GLOSSARY OF DEFINED TERMS	
CEC	Clean Energy Center
CEE	Consortium for Energy Efficiency
CFL	Compact Fluorescent Light
CHP	Combined Heat and Power
C&I	Commercial and Industrial
CMI	Community Mobilization Initiatives
Consultants	Consultants employed by the Energy Efficiency Advisory Council
Council	Energy Efficiency Advisory Council
Department	Massachusetts Department of Public Utilities
DHCD	Massachusetts Department of Housing and Community Development

GLOSSARY OF DEFINED TERMS	
DHW	Domestic Hot Water
DOER	Massachusetts Department of Energy Resources
D.P.U. 08-50-A	Investigation by the Department of Public Utilities on its own Motion into Updating its Energy Efficiency Guidelines Consistent with An Act Relative to Green Communities issued on March 16, 2009.
D.P.U. 08-50-B	Investigation by the Department of Public Utilities on its own Motion into Updating its Energy Efficiency Guidelines Consistent with An Act Relative to Green Communities issued on October 26, 2009.
DR	Demand Response
DRIPE	Demand Reduction Induced Price Effect
DSM	Demand-Side Management
ECM	Electronically Commutated Motor
EER	Energy Efficiency Rating

GLOSSARY OF DEFINED TERMS	
EERF	Energy Efficiency Reconciliation Factor
EISA	Energy Independence Security Act
EM&V	Evaluation, Monitoring, and Verification
ENERGY STAR®	Brand name for the voluntary energy efficiency labeling initiative sponsored by the U.S. Environmental Protection Agency and Department of Energy.
EPA	U.S. Environmental Protection Agency
ERVs	Energy Recovery Ventilation Units
ESCos	Energy Service Companies
ESQI	ENERGY STAR Quality Installation standards.
EPA	Environmental Protection Agency
FCM	Forward Capacity Market

GLOSSARY OF DEFINED TERMS	
GCEC	Governor's Clean Energy Challenge
GHGs	Greenhouse Gas Emissions
GJC	Green Justice Coalition
Green Communities Act	An Act Relative to Green Communities, Chapter 169 of the Acts of 2008. Signed into law on July 2, 2008.
GWSA	Global Warming Solutions Act
HSPF	Heating Season Performance Factor
HERS	Home Energy Rating System
HVAC	Heating, Ventilation, and Air Conditioning
IAPMO	International Association of Plumbing and Mechanical Officials
ISO-NE	Independent System Operation – New England
JMC	Joint Management Committee

GLOSSARY OF DEFINED TERMS	
LEAN	The Low-Income Energy Affordability Network
July 28th Resolution	Resolution adopted by Council on July 28, 2009 concerning statewide plans
LED	Light Emitting Diode
LBR	Lost Base Revenue
MSSC	Multi-family Statewide Steering Committee
NATE	North American Technician Excellence
NCPs	Negotiated Cooperative Promotions
NEEC	Northeast Energy Efficiency Council
NEEP	Northeast Energy Efficiency Partnerships
Network	Low-Income Weatherization and Fuel Assistance Program Network

GLOSSARY OF DEFINED TERMS	
October 13h Resolution	Resolution adopted by the Council on October 13, 2009
OBF Working Group	On-bill Financing Working Group
OTF	Office of the Future
PAs or Program Administrators	Utilities and municipal aggregators that offer energy efficiency programs. Electric Program Administrators in Massachusetts include: Cape Light Compact, Unitil, National Grid, NSTAR Electric Company and Western Massachusetts Electric Company.
PHA	Public Housing Authority
PHCC	Plumbing Heating Cooling Contractors Association
Plan	Statewide electric efficiency investment plan submitted to the Energy Efficiency Advisory Council on April 30, 2009.
PP&A	Program Planning and Administration
Priorities Resolution	The Energy Efficiency Advisory Council's "Resolution Concerning Priorities to Guide the Development, Implementation and Evaluation of the PA Efficiency Plans" dated March 24, 2009.

GLOSSARY OF DEFINED TERMS	
QC	Quality Control
QIV	Quality Installation and Verification
RCS	Residential Conservation Services
RFP	Request For Proposal
RGGI	Regional Greenhouse Gas Initiative
RMC	Residential Management Committee
SBC	System Benefit Charge
SBS	Small Business Services
SEER	Seasonal Energy Efficiency Rating
SSL	Solid State Lighting

GLOSSARY OF DEFINED TERMS	
STC	Standing Technical Committee
T&D	Transmission and Distribution
Term	Three-year term of the energy efficiency plan
TBC	Thermal Bypass Inspection Checklist
TIPS	Treasury Inflation Protected Securities
TRC	Total Resource Cost
UDRH	User Defined Reference Home
USGBC	US Green Buildings Council
WBA	Whole Building Approach
Website	Refers to the website www.ma-eeac.org

B. Proposed Council Timeline: Remaining Dates

Appendix B

*Note: This is a working draft of the planning schedule

Electric and Gas Energy Efficiency Plan Filings, 2010-2012

Development of Program Administrator-Specific Plans: Remaining Key Dates

(Note: Program Administrators expect Council input and guidance on the development of the individual PA Plans. Such guidance includes the Council's ongoing review of the statewide Plan from which the individual PA Plans will flow, its ongoing participation in program and other working groups, and/or Council (or its consultants) review and comment on a draft of each of the PA-specific Plans prior to the Plans being filed with the Department. This interactive and iterative process will be filled out at a later date.)

October 27, 2009	-	Council Meeting.
October 30, 2009	-	PA-specific Plans filed at the Department.
October 30, 2009	-	Updated, integrated statewide Plans (Electric and Gas) filed that include any updated information revised through the process of developing the separate PA-specific October 30 Plans filed by the Program Administrators.
January 1, 2010	-	PA-specific three-year Plans go into effect, pending Department approval.

Notes:

1) Department review of the October 2009 filings is being addressed by the Department separately and is beyond the scope of this draft timeline.

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D. Evolving Trends in Costs/Budgets

1. *Market EE Activity Table*

Gas PA's Master Summary												
		TRC Benefits ($)						TRC Costs ($)				
Year	Sector	Gas	Electric		Non-gas Non-elec Resource	Non-Resource	TOTAL BENEFITS (1)	PA	Customer	TOTAL (2)	TRC B/C Ratio	Net Benefits
			Capacity (Summer)	Energy								
	Residential	$132,693,546	$82,003	$296,941	$28,214	$0	$133,115,111	$45,844,900	$18,062,099	$63,906,999	2.08	$69,132,871
	Low Income	$22,909,977	$585	$320,543	$0	$11,932,805	$35,163,910	$16,544,204	$0	$16,544,206	2.13	$18,619,705
	C&I	$114,457,530	$0	$0	$1,590,972	$0	$116,048,502	$21,280,007	$20,731,979	$42,011,986	2.76	$74,036,516
2010	**Total**	**$270,061,054**	**$82,589**	**$617,484**	**$1,619,186**	**$11,932,805**	**$284,327,523**	**$83,669,111**	**$38,794,078**	**$122,463,190**	**2.32**	**$161,789,091**
	Residential	$184,363,756	$117,971	$359,512	$35,463	$0	$184,895,439	$60,743,150	$23,714,374	$84,443,305	2.19	$100,452,134
	Low Income	$27,508,923	$720	$346,433	$0	$13,485,160	$41,341,236	$20,928,464	$0	$20,893,746	1.98	$20,447,490
	C&I	$162,290,228	$0	$0	$2,847,123	$0	$165,137,350	$28,261,368	$26,764,066	$55,023,532	3.00	$110,113,819
2011	**Total**	**$374,162,907**	**$118,692**	**$705,945**	**$2,882,586**	**$13,485,160**	**$391,374,025**	**$109,932,981**	**$50,478,440**	**$160,360,583**	**2.44**	**$231,013,442**
	Residential	$221,103,902	$149,632	$470,749	$45,780	$0	$221,792,948	$70,880,496	$27,255,366	$98,106,441	2.26	$123,686,506
	Low Income	$36,279,594	$1,082	$495,484	$0	$18,758,530	$55,534,690	$26,462,418	$0	$26,386,809	2.10	$29,147,881
	C&I	$227,318,599	$0	$0	$3,643,081	$0	$230,961,680	$38,137,467	$36,513,510	$74,647,045	3.09	$156,314,635
2012	**Total**	**$484,702,095**	**$150,714**	**$966,233**	**$3,688,861**	**$18,758,530**	**$508,289,318**	**$135,480,381**	**$63,768,877**	**$199,140,296**	**2.55**	**$309,149,022**
	Residential	$538,161,204	$349,606	$1,127,202	$109,457	$0	$539,803,497	$177,468,546	$69,031,839	$246,456,745	2.19	$292,952,218
	Low Income	$86,698,494	$2,388	$1,162,460	$0	$44,176,494	$132,039,836	$63,935,086	$0	$63,824,761	2.07	$68,215,075
	C&I	$504,066,357	$0	$0	$8,081,175	$0	$512,147,533	$87,678,842	$84,009,555	$171,682,563	2.98	$340,464,970
GRAND TOTAL		**$1,128,926,056**	**$351,995**	**$2,289,662**	**$8,190,632**	**$44,176,494**	**$1,183,990,866**	**$329,082,474**	**$153,041,394**	**$481,964,069**	**2.46**	**$701,632,263**

Gas PA's Master Summary													
Savings								Avg Measure Life (yrs.)	TR Energy Cost ($/Lifetime-Therm saved)	GHG Reductions (Tons)			Participants
Gas (Therms)		Electric Energy (kWh)		Electric Capacity (KW)		Non-gas non-elec Resources (Gallons)				Nox	Sox	CO2	
Annual	Lifetime	Annual	Lifetime	Annual (Summer)	Lifetime	Annual (Water)	Lifetime						
6,504,911	113,185,458	331,865	5,774,454	47	817	363,033	6,316,774	17.4	$0.56	NA	NA	665,821	190,386
912,102	19,701,412	162,020	3,499,639	1	13	0	-	21.6	$0.84	NA	NA	117,869	3,949
6,181,084	80,972,200	-	-	-	-	76,012,100	995,758,510	13.1	$0.52	NA	NA	473,055	5,931
13,598,098	**213,859,070**	**493,886**	**9,274,093**	**48**	**830**	**76,375,133**	**1,002,075,284**	**15.7**	**$0.57**	**NA**	**NA**	**1,256,745**	**200,265**
9,233,555	160,663,857	381,352	6,635,526	64	1,114	457,371	7,958,255	17.4	$0.53	NA	NA	943,880	286,675
1,083,764	23,409,302	170,760	3,688,426	1	14	0	-	21.6	$0.89	NA	NA	139,681	4,807
8,779,986	115,017,813	-	-	-	-	132,709,650	1,738,496,415	13.1	$0.48	NA	NA	671,956	7,588
19,097,305	**299,090,972**	**552,113**	**10,323,952**	**65**	**1,128**	**133,167,021**	**1,746,454,670**	**15.7**	**$0.54**	**NA**	**NA**	**1,755,517**	**299,070**
11,377,476	197,968,084	489,461	8,516,617	81	1,408	579,424	10,081,978	17.4	$0.50	NA	NA	1,163,308	405,424
1,405,804	30,365,375	239,562	5,174,548	1	20	0	-	21.6	$0.87	NA	NA	181,496	6,210
11,923,515	156,198,044	-	-	-	-	165,668,995	2,170,263,835	13.1	$0.48	NA	NA	912,539	9,345
24,706,795	**384,531,503**	**729,023**	**13,691,165**	**82**	**1,428**	**166,248,419**	**2,180,345,812**	**15.6**	**$0.52**	**NA**	**NA**	**2,257,342**	**420,980**
27,115,942	471,817,399	1,202,678	20,926,597	192	3,339	1,399,828	24,357,007	17.4	$0.52	NA	NA	2,773,009	882,485
3,401,671	73,476,088	572,343	12,362,613	2	47	0	-	21.6	$0.87	NA	NA	439,046	14,967
26,884,584	352,188,057	-	-	-	-	374,390,745	4,904,518,760	13.1	$0.49	NA	NA	2,057,550	22,864
57,402,198	**897,481,544**	**1,775,021**	**33,289,211**	**194**	**3,385**	**375,790,573**	**4,928,875,767**	**15.6**	**$0.54**	**NA**	**NA**	**5,269,604**	**920,315**

GHG for information purposes only; it is not included in TRC test

Notes:

(1) Total benefits on this table do not add across because Electric Capacity (Winter) value not on this table.

(2) Total TRC Costs do not exactly equal PA costs plus Customer costs because TRC Costs are NPV, and PA/Customer Costs are in 2010$.

E. Assessment of All Available Cost-Effective Electric and Gas Savings from Energy Efficiency and Combined Heat & Power (CHP)

1. *Assessment*

Assessment of

All Available Cost-Effective Electric and Gas Savings: Energy Efficiency and CHP

Submitted to the MA EEAC by its Consultants

July 9, 2009

Based on the data collected and presented to the Council on May 26, 2009 (memo attached as Appendix A) and considering the limitations of energy efficiency potential studies (described in more detail in Appendix A), the Consultants have estimated that a reasonable long-term value for all available cost-effective electric energy savings from the combination of energy efficiency programs and combined heat and power (CHP) is about 3 percent per year.[1] This is composed of at least 2.5 percent per year from electric efficiency programs and about 0.3 to 0.5 percent per year from CHP. For natural gas, the Consultants estimated that a long-term value for all available cost-effective energy efficiency program savings is about 2 percent per year. These values reflect average annual potential over a ten year horizon and therefore are longer term values. It would take several years for the Massachusetts energy efficiency programs to ramp up to these levels of annual energy savings.

[1] The level of about 3% annual energy savings would be reached at the end of the initial ramp up period, not immediately in 2010.

Range	Electric Programs	CHP	Total Electric Savings	Natural Gas Programs
Low	2.5%	0.3%	2.8%	2.0-%
High	2.5+%	0.5%	3.0+%	2.0+%

It should be noted that the longer it takes to ramp up to these savings levels, the higher future savings would need to be to capture all available cost-effective savings. In addition, we believe that for retrofit and early retirement markets it is possible to expedite savings acquisition and exceed these annual figures.[2]

See the sections below for the derivation of the individual estimates for electric energy efficiency programs, CHP, and gas energy efficiency programs.

[2] For example, Efficiency Vermont captured approximately 4.5% electric efficiency savings in 2008 among geo-targeted areas by aggressively pursuing retrofit opportunities.

All Available Cost-Effective Electric Energy Efficiency Program Savings

Based on the data collected and presented to the Council on May 26th, the Consultants have estimated that a reasonable value for all available cost-effective electric energy efficiency savings is at least 2.5 percent per year.

The Consultants selected three studies, all from New England, from the thirteen studies reviewed and summarized for the Council (Appendix A) as most representative of the likely available cost-effective savings in Massachusetts. These are summarized in the following table:

State	Year of Study	Analysis Period (yrs.)	Achievable* (% of total forecast load)	Average Annual Achievable** (% of total forecast load)	Source	Notes
Connecticut	2009	10	22.5%	2.3%	KEMA	Total achievable potential estimated at 31% including codes & appliance/lighting standards. Accounted for the impact of federal lighting standards in 2012-2014 to reduce the program achievable savings.
New Hampshire	2009	10	22.7%	2.3%	GDS	Ignored most retrofit (early retirement) savings, so viewed as substantially low.
Vermont	2007	10	22.0%	2.2%	GDS	Constrained analysis to 50% of incremental cost incentive levels. For some markets, estimate of achievable was already being exceeded by Efficiency VT at the time of the study. In 2008 EVT achieved 2.5% savings statewide and 4.5% in geotargetted areas (unevaluated results).
Averages		**10.0**	**22.4%**	**2.24%**		Mean of data available.

Of the ten studies not included in the table above:

- Four did not present an estimate of achievable potential,
- Two were from mid-Atlantic states,
- Two others were older studies (one of which has been superseded by a newer study showing a lower potential), and

- Two (the study for NSTAR and the study of New England for NEEP) were not primary data studies, but were high-level assessments (similar to this assessment) drawing from a compilation of other, older studies, some of which have been superseded by more recent studies.

The three studies listed above:

- Cover a New England setting,
- Include an estimate of achievable potential,[3] and
- Were performed by different entities.

The average annual achievable potential reported by these studies is approximately 2.24% per year, all over a ten year horizon. This is very close to the 2.2% average of all nine studies in the list in Appendix A that presented an estimate of achievable potential. Therefore, whether the three studies in the table above or the longer list of studies in Appendix A are used, the studies report average achievable potential of about 2.2%.

There are several reasons why these studies are likely to have understated the available cost-effective savings in Massachusetts.

- As stated in the May 26 memo (Appendix A) and summarized directly below, potential studies generally underestimate the true potential for many reasons, including:
    - Many studies are arbitrarily constrained in scope.
    - Many studies ignore technology advancement.
    - Economic analyses tend to exclude all benefits.
    - Studies are limited by time and resources, and thus simplified by exclusion of many measures and/or categories of measures.
    - Interactions that magnify opportunities and systems that treat whole buildings comprehensively are often ignored.
    - Studies stretch out early replacement opportunities throughout the full analysis period.

In addition to these general conservatisms, we note below some specific issues with the above studies that would lead them to be low estimates of the true achievable potential.

- At least one entity in the region (Efficiency Vermont) has *already achieved statewide electric efficiency program savings of 2.5%*, higher than the estimate of achievable potential in the Vermont study, thus establishing this is possible. Note that only two (out of 13) studies have implied annual achievable potential that meets or exceeds Vermont's 2008 statewide achievement. Further, EVT achieved 4.5% electric efficiency savings across several geographical targeted areas in 2008.[4]

[3] The Consultants consider the achievable potential values in these studies to be equivalent to "all available cost effective energy efficiency savings" because achievable potential includes only those savings that are cost-effective and available or achievable.

[4] *Efficiency Vermont (EVT) Preliminary Annual Report*, March 2009

- The New Hampshire study excluded most retrofit measures, and is therefore considered a highly conservative estimate of potential.
- The Vermont study was widely criticized as conservative. In some markets, the potential estimate was lower than actual achievements by Efficiency Vermont. A prior VT study completed in 2003 estimated 30% achievable potential, or roughly 36% greater potential.

Because the studies are likely to understate achievable potential, the Consultants estimated that the value for all available cost-effective savings in Massachusetts is *at least* 10 to 15 percent greater than the 2.24 percent per year average from the studies above. The Consultants therefore believe that a target of at least 2.5 percent savings per year from electric energy efficiency programs is a reasonable long-term estimate of all available cost-effective savings.

Combined Heat and Power

The Consultants previously reviewed two studies that estimated achievable CHP savings of 0.3 and 1.1 percent of load annually. We have reviewed additional efforts to estimate cost-effective electric savings from CHP in Massachusetts, one conducted by KEMA on behalf of the Massachusetts Renewable Energy Trust and one conducted by NESCAUM.[5] The two studies have been added to the table below. Because the number of available studies is limited, none was removed from consideration of the available cost-effective savings. Note that experience in large scale CHP programs and experience relating actual CHP program savings to prior estimates of CHP achievable potential are limited, relative to such work for electric and gas energy efficiency programs.

[5] KEMA, *The Market Potential for Combined Heat and Power in Massachusetts*, prepared for the Massachusetts Technology Collaborative, June 2006; and NESCAUM, *The Economic Potential for Combined Heat and Power in Massachusetts*, November 2007.

State	Year of Study	Analysis Period (yrs.)	Achievable Potential (% of total forecast load)	Average Annual Achievable* (% of total forecast load)	Source	Notes
Massachusetts (NSTAR Only)	2007	10	3.2%	0.3%	OEI	Constrained potential recognizing no programs existed at the time, no clear ability to coordinate with gas utilities, or assumptions about improved stand-by or interconnection policies.
New York	2002	10	10.5%	1.1%	Energy Nex	Estimates are net of expected natural market adoption. The study did not estimate achievable potential. "Achievable" estimate represents assumed market penetration without any state or utility programs but with reduction by 50% of stand-by charges and a 10% federal tax credit only. Figures are based on installed load estimates, 65% of electricity used on-site (Study estimate for existing NY CHP load) and assumed 80% load factor.
Massachusetts	2008	see notes	4.3%	0.4%	KEMA/RET	Study extended through 2026, but figures here are based on reported results from 2010 through 2019. Figures are based on installed capacity estimate, assuming load factor of 80%.
Massachusetts	2007	see notes	5.7%	0.6%	NESCAUM	Study extended through 2026, but figures here are interpolated to the period 2010 through 2019. Figures are based on installed capacity estimate, assuming load factor of 75%.
Averages		**10**	**5.9%**	**0.6%**		Mean of data available.

The two newly-listed Massachusetts state-wide studies are both based on the Massachusetts technical potential study conducted by the University of Massachusetts Amherst in 2006 and included in the previous memo (Appendix A). Both studies assessed the economic feasibility of CHP installations, and the NESCAUM study included the effect of policy actions to encourage CHP installations. The potential estimates reported here are net of baseline installations assumed to occur in the absence of any changes to current conditions or policies.

The Consultants also considered the effect of the Alternative Portfolio Standard (APS) on CHP installations. The APS calls for 25% of load to come from "clean energy" by 2020, with 20% coming from renewables. This leaves 5% for three specific non-renewable clean energy technologies: CHP, flywheel storage, and IGCC with carbon capture and sequestration. The latter two technologies are not commercially viable at this time. Given that CHP is a commercially viable technology with an extensive installed base, it is extremely likely that the entire 5% non-renewable APS will need to be met with CHP within the next 11 years, rather than the other technologies. This translates to 0.45% per year for 11 years (2010-2020). As a

result, in order to meet the APS standards, PAs would need to capture roughly half a percent of load per year on average from CHP.

Given these data points, the Consultants feel that the cost-effective electric energy savings available from CHP is about 0.3 to 0.5 percent per year for the next 10 years. The low end of this range is lower than the average of the quantitative studies available, and the high end of the range is comparable to the requirements of the APS, which can be viewed as a minimum level of effort. A range for available cost-effective CHP energy savings is appropriate given the limited experience with large scale CHP programs and CHP potential studies,

All Available Cost-Effective Gas Energy Efficiency Program Savings

Based on the data collected and presented to the Council on May 26th, the Consultants have determined that a reasonable estimate for available cost-effective gas savings from energy efficiency programs is about 2.0 percent per year.

The Consultants selected three of the four studies reviewed and summarized for the Council as most representative of the available savings in Massachusetts. These are summarized in the following table:

State	Year of Study	Analysis Period (yrs.)	Achievable * (% of total forecast load)	Average Annual Achievable** (% of total forecast load)	Source	Notes
Connecticut	2009	10	17.0%	1.7%	KEMA	Final draft. Gas efficiency only. Total achievable including codes & standards estimated at 22%.
New Hampshire	2009	10	21.1%	2.1%	GDS	Ignored most retrofit (early retirement) savings. Typically retrofit measures account for a large portion of EE opportunities over 10 years.
New York	2006	10	19.0%	1.9%	OEI	Conservative estimate of max achievable based on 67% of economic, without detailed analysis.
Averages		**10.0**	**19.0%**	**1.9%**		Mean of data available.

The only study excluded from those initially considered did not present an achievable potential estimate. The remaining studies:

- Included achievable potential[6] estimates, though we believe the studies understate the potential rather than overstate it, based on known factors discussed above and in Appendix A, and
- Were performed by three different entities.

The average annual achievable potential reported by these studies is approximately 1.9 percent per year. In addition to the general discussion above and in Appendix A about study results tending to be conservative, there are several specific reasons why these studies are likely to have understated the efficiency potential.

- The New Hampshire study excluded most retrofit measures, and is therefore likely highly conservative, as retrofit opportunities typically account for the majority of potential.
- The New York Study reported only economic potential, from which the Consultants derived achievable potential using a conservative factor of 67 percent. This is the same ratio of achievable potential to economic potential estimated by the Connecticut gas potential study, and lower than that from the three electric potential studies which reported both economic and achievable potential (i.e., 80, 78 and 68 percent).

Because these studies are likely to understate achievable potential, the Consultants estimated that about 2.0 percent per year is a reasonable estimate of all available cost-effective natural gas savings from energy efficiency programs in Massachusetts.

Note that the Consultants have not estimated the amount of natural gas that will be used in CHP projects (thereby increasing natural gas consumption). The Consultants recommend that the gas savings from the energy efficiency programs be tracked specifically, distinct from the impacts of the CHP projects, and therefore have estimated the 2.0% gas savings for the energy efficiency programs specifically.

[6] The Consultants consider the achievable potential values in these studies to be equivalent to "all available cost effective energy efficiency savings" because achievable potential includes only those savings that are cost-effective and available or achievable.

Appendix A

Assessment of All Available Cost-Effective Energy Efficiency and Combined Heat and Power Resources: Regional Findings

Submitted to the MA EEAC by its Consultants

May 26, 2009 (Revised)

Introduction and Caveats

The Green Communities Act requires the electric and gas program administrators to assess the available energy efficiency and combined heat and power (CHP) cost-effective potential as a part of establishing their statewide and individual goals. The assessments need to demonstrate that Program Administrators are seeking to acquire all available cost effective efficiency over the life of each three year plan. Correctly determining the assessment is an iterative process, a significant part of which is reviewing past work in Massachusetts and other states. All assessments are estimates, subject to many variables which are discussed in this paper.

This document provides the EEAC with historic results from relatively recent electric and gas energy efficiency and combined heat and power (CHP) potential studies. We also provide a summary of current efficiency program goals or legislative mandates in various states. Below are tables summarizing the results. It should be noted that many energy analysts believe that virtually all studies tend to produce conservative (*i.e.,* low) estimates of potential for a variety of reasons. Indeed, some studies have estimated achievable potential for some markets that were already being exceeded by reported results in the same

area. There are many reasons why studies tend to estimate low potential.[7] Below are some of the major biases:

- **Many studies are arbitrarily constrained in scope.** For example, some studies have only considered efficiency opportunities from "lost opportunity" markets (driven by natural investments in buildings and equipment over time), thus eliminating large opportunities for early retirement (retrofit) of equipment and systems. Other studies constrain overall funding available, program designs, incentive levels, policies and other parameters. Where possible, we have tried to note major constraints.
- **Many studies ignore technology advancement.** Advances in technology can range from reductions in costs and improvements in performance over time, as well as dramatic new technologies that have potentially large impacts on future efficiency opportunities (*e.g.,* LED lighting). Even those studies that attempt to include emerging technologies typically only include a very limited set.
- **Economic analyses tend to exclude all benefits.** For example, rarely are demand induced price effects considered. It is also common to omit non-electric benefits from electric studies (and non-gas benefits from gas studies). Many analyses of retrofit opportunities (early retirement) do not take full accounting of the long term cost savings from deferral of the natural equipment replacement cycle and often substantial O&M benefits.
- **Studies are limited by time and resources, and thus simplified by exclusion.** An analyst can never include a fully comprehensive assessment of all possible technologies and practices. As a result, any exclusions are implicitly valued at zero, simply because they are not researched and analyzed. Rather than including approximate estimates for their inclusion, they are completely eliminated. For example, many studies omit measures that do not address the major end uses such as lighting, HVAC and refrigeration. As a result, things like plug load and other miscellaneous measures may be ignored. Some studies also do not fully address industrial process opportunities.
- **Interactions that magnify opportunities and systems that treat whole buildings comprehensively are often ignored.** Most studies do a good job of reducing savings from one measure as a result of prior assumed measures (*e.g.*, if a building shell is improved, it can reduce the savings from an efficient air conditioner). However, they nonetheless consider discrete measures rather than using a more systems-based approach. These approaches can often take advantage of significant synergies that may allow for dramatic down-sizing or even eliminating of major capital equipment, thus rendering a much greater package of measures with deeper savings cost-effective.
- **Studies stretch out early replacement opportunities throughout the full analysis period.** Many studies do not consider the ability to fast-track early retirement savings, but simply spread the estimated achievable participation rates across the whole timeframe. In some cases, with unconstrained funding programs could target and capture these opportunities faster.

Indeed, the mean of annual achievable program electric efficiency potential shown in the table below is 2.2%. However, Efficiency Vermont has already exceeded this level in 2008 with statewide savings of

[7] See, for example, Goldstein, David, *Extreme Efficiency: How Far Can We Go if We Really Need To?*, Natural Resources Defense Council, ACEEE Summer Study, 2008 for a more comprehensive list of reasons studies tend to be biased on the low side.

2.5%.[8] Further, EVT captured 4.5% of the current electric load from efficiency savings in specifically targeted geographic areas in 2008.[9]

One should not view efficiency potential as a finite amount that goes away once captured. Indeed, experience has shown that technologies have generally at least kept pace with past improvements in codes & standards, public efficiency program investments, and naturally adopted efficiency. For example, in 1989 the American Council for an Energy Efficient Economy (ACEEE) estimated the economic potential in New York to be approximately 30% of forecast load. After more than two decades of significant electric DSM program delivery in NY, a team led by Optimal Energy in 2003 (which included ACEEE) re-estimated the efficiency economic potential at 32.7% of forecast load, or approximately the same level. Thus, in a state that has been a leader in efficiency programs throughout the 1990s and 2000s, roughly the same proportional electric efficiency opportunities exist now as did when programs began. As a result, studies with longer time horizons tend to result in conservative implied annual achievable potential estimates.

Potential Results

The tables below provide summaries of results from available studies throughout the Northeastern U.S. -- most within the past decade. While we report, where available, the estimates of technical and economic potential, our focus is on achievable potential, as that should most closely align with Massachusetts' goal of capturing all *available* cost-effective efficiency. All figures should reflect *net* savings, excluding naturally occurring efficiency and codes & standards.

While definitions can vary from one study to the next, in general *technical* potential is defined as the net savings from all technically feasible efficiency opportunities without regard to economics or a customer's willingness to adopt them. *Economic* potential refers to the subset of technical potential that is cost-effective based on an economic screening. The cost-effectiveness test used varies among jurisdiction. However, the prevailing cost-effectiveness criteria in the region is the total resource cost test (TRC), which is also used in MA. However, rarely if ever is DRIPE included. *Achievable* potential is generally defined as the maximum amount of efficiency that can be expected to be captured with fully funded, well designed programs. However, in some cases, estimates reflect achievable potential subject to various economic, programmatic, budgetary, or other constraints. As such, the average results for achievable potential can be viewed as a low estimate of true maximum achievable potential.

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[8] Efficiency Vermont 2008 Annual Report, March 2009. These figures are not yet fully verified by the VT DPS and are subject to adjustment. Past adjustments based on VT DPS EM&V process have ranged from 2% to 12% reduction in tracking estimates.

[9] Ibid. Analysis of geo-targeted loads based on 2006 actual electric loads and assumed 1.5% annual underlying (*i.e.,* without efficiency programs) growth.

Electric Efficiency

Achievable electric efficiency potential estimates range from a low in Maine (14%)[10] to a high in the Mid-Atlantic (37%). The mean from these studies is 24.3% of the forecasted future load (at the end of the analysis period) assuming no other interventions in the market. The study periods range from 5-20 years, with an average of 12. The implied *annual* achievable potential is shown by dividing the ultimate achievable potential by the analysis period. This ranges from 1.4% to 3.1%, with a mean of 2.2%. It should be noted that only two (out of 13) studies have implied annual achievable potential that meets or exceeds Vermont's 2008 statewide achievement, and none that approach EVT's 2008 geo-targeting achievement. These numbers do not include any savings potential from CHP.

Note that the New England study for NEEP was a meta-analysis that relied on several older studies that reported relatively low potential, typically as a result of a limited scope.[11] For example, a 2005 study for Connecticut (that was also applied to Rhode Island) estimated only 13.5% achievable potential savings. However, this study has been superseded by the newer KEMA study shown above estimating 22.5%. Given the significant share of New England electric load represented by these two states, this single change to the estimated CT and RI potential would have dramatically increased the NEEP study findings for the region.

Also note that the 2007 study for NSTAR was not a primary data study, but was a high-level assessment (similar to the assessment developed by the Council's Consultants) drawing from a compilation of other, older studies, some of which have been superseded by more recent studies.

[10] The Maine study excluded some major efficiency markets, including low income retrofit and all new construction opportunities.

[11] For instance, a potential study for Maine that was included in the meta-analysis excluded all low-income retrofit opportunities and the entire new construction market.

Electric Efficiency Potential

State	Year of Study	Analysis Period (yrs.)	Technical Potential (% of total forecast load)	Economic Potential (% of total forecast load)	Achievable * (% of total forecast load)	Average Annual Achievable** (% of total forecast load)	Source	Notes
Connecticut	2009	10	36.4%	33.1%	22.5%	2.3%	KEMA	Total achievable potential estimated at 31% including codes & appliance/lighting standards. Accounted for the impact of federal lighting standards in 2012-2014 to reduce the program achievable savings.
Maine	2002	10	N/A	18.0%	14.0%	1.4%	Exeter/ OEI	Simplified analysis based on prior utility data. Did not include low income retrofit (early retirement) nor all new construction markets.
Maryland	2008	17	N/A	N/A	29.0%	1.7%	ACEEE	
Mass (Nstar only)	2007	10	N/A	N/A	17.9%	1.8%	OEI	High level analysis, electric efficiency only figure. With CHP estimate is 21.1%.
Massachusetts	2001	5	N/A	24.0%	N/A		RLW	
Mid-Atlantic (NY/NJ/PA)	1997	14	N/A	N/A	37.0%	2.6%	ACEEE	Represents approximate weighted average of sector-specific estimates of 35% Residential, 35% Commercial and 41% Industrial.
New England	2004	10			23.0%	2.3%	OEI	Meta-analysis for NEEP. Older relatively low CT and ME estimates drove result down. CT study was also assumed to apply to RI. More recent CT and RI studies would have resulted in significantly higher estimate.
New Hampshire	2009	10	27.6%	N/A	22.7%	2.3%	GDS	Ignored most retrofit (early retirement) savings, so viewed as substantially low.
New Jersey	2003	17	N/A	17.0%	N/A		KEMA	
New York	2003	20	35.1%	32.7%	N/A	N/A	OEI	Forthcoming update with achievable potential has initially estimated about18% over 7 years, or approximately 2.5%/yr. Still in draft.
Rhode Island	2008	10	28.0%	24.0%	N/A		KEMA	Phase 1 high level study. Detailed study forthcoming in 2009.
Vermont	2003	10	N/A	38.4%	30.7%	3.1%	OEI	
Vermont	2007	10	34.6%	N/A	22.0%	2.2%	GDS	Constrained analysis to 50% of incremental cost incentive levels. For some markets, estimate of achievable was already being exceeded by Efficiency VT at the time of the study. In 2008 EVT achieved 2.5% savings statewide and 4.5% in geotargetted areas (unevaluated results).
Averages		**11.8**	**32.3%**	**26.8%**	**24.3%**	**2.18%**		Mean of data available.

* "Achievable potential" definitions can vary significantly. In some cases this is estimated as the maximum amount of EE that can be achieved from programs, with no constraints. However, many studies only analyze what could be achieved for a particular set of programs, incentive levels, or budget or rate impact constraints. In addition, some studies exclude some major EE markets completely. For example, some studies have excluded new construction, industrial process, early retirement, fuel switching, or other major opportunities. As a result, these figures should generally be viewed as conservative estimates. Finally, none of the these studies any savings from CHP.

** Average Annual Achievable represents the total estimated achievable potential percent divided by the planning period.

Combined Heat and Power

In MA the goal is to capture all available cost-effective energy efficiency *and* combined heat and power opportunities. As a result, it is useful to also consider estimates of CHP opportunities. There is less available experience and research on CHP achievable potential. CHP has generally not been promoted by efficiency programs. Rather, the installed CHP capacity now existing in the region has been mostly developed through natural market forces, and in some cases very limited incentives or tax breaks. As a result, the ability to dramatically influence CHP adoption with MA programs is unclear. However, a review of studies in NY and MA indicate *technical* CHP potential of between 40% and 62% of total electric load, with a mean of 51%.[12] Thus, it seems clear that the theoretical opportunities for CHP in MA are very large.

The NY study estimated "market potential" assuming a halving of current NY stand-by charges and a federal tax credit of 10% of installed cost, however, no other interventions in the market. Based on these assumptions it projected 10.5% CHP market potential, or 1.05% of total electric load per year. Certainly, well funded aggressive CHP programs in MA would presumably have been estimated by this study's authors to exceed this limited intervention scenario. In addition, a study for NSTAR that considered whether it was feasible to meet all load growth with EE and CHP made a high level estimate that, starting from scratch and assuming no changes to policies such as stand-by rates or interconnection agreements, could provide 3.2% of total load savings in 10 years, or 0.32%/yr. The mean implied annual achievable CHP potential from the two studies that provide estimates is 0.7%. Because the CHP studies are limited, and the range of estimated potential is large, more research is needed on CHP opportunities and likely customer adoption from well designed programs. This is being undertaken in RI, and will also be further analyzed in MA this year.

[12] The studies estimated installed capacity rather than energy production. Estimates assume 65% of electric generation is used on-site (thus reducing line losses, based on the historic CHP installed in NY) and an average load factor for CHP systems of 80%.

Electric CHP Potential

State	Year of Study	Analysis Period (yrs.)	Technical Potential (% of total forecast load)	Economic Potential (% of total forecast load)	Achievable Potential (% of total forecast load)	Average Annual Achievable* (% of total forecast load)	Source	Notes
Massachusetts	2006	Instan-taneous	62.0%	N/A	N/A	N/A	U of MA, Amherst	Figure based on installed load estimate, 65% of electricity used on-site (NY Study estimate for existing NY CHP load) and assumed 80% load factor. Based on fraction of current MA load.
Massachusetts (NSTAR Only)	2007	10	N/A	N/A	3.2%	0.3%	OEI	Constrained potential recognizing no programs existed at the time, no clear ability to coordinate with gas utilities, or assumptions about improved stand-by or interconnection policies.
New York	2002	10	40.4%	N/A	10.5%	1.1%	Energy Nexus	Estimates are net of expected natural market adoption. The study did not estimate achievable potential. "Achievable" estimate represents assume market penetration without any state or utility programs but with reduction by 50% of stand-by charges and a 10% federal tax credit only. Figures are based on installed load estimates, 65% of electricity used on-site (Study estimate for existing NY CHP load) and assumed 80% load factor.
Averages		**10**	**51.2%**	**N/A**	**6.9%**	**0.7%**		Mean of data available.

Total Electric Efficiency and CHP Potential

The mean implied annual achievable potential estimates for both electric efficiency and CHP sum to 2.9%. The range of annual levels is from a low of 1.7% to a high of 4.2%.[13]

Gas Efficiency

As with CHP, gas energy efficiency has not benefited from as long or as aggressive efficiency efforts as the electric sector. As a result, there are fewer studies for the region, and less experience with fully funded programs and portfolios. The table below includes 4 studies done in the past 6 years. The achievable potential ranges from a low in Connecticut 17% to a high in New Hampshire of 21%. The mean is 19%. Implied annual achievable potential from these studies is a mean of 1.9%, with a range of 1.7% to 2.1%. The 4 studies have substantially less variation than the electric studies, despite the fact that one study excluded all but a few retrofit (early retirement measures) because the policy focus was on capturing savings only at the time of natural customer investment in equipment and systems, and another study excluded new construction and other opportunities related to new load growth. The one study (NJ) that did not provide *achievable* potential had a slightly higher *economic* potential estimate than any of the other studies, indicating it likely would have found achievable potential to be equal or higher than the mean.

[13] Summing the lowest efficiency and CHP values for the low range and the highest for the high range.

Gas Efficiency Potential

State	Year of Study	Analysis Period (yrs.)	Technical Potential (% of total forecast load)	Economic Potential (% of total forecast load)	Achievable * (% of total forecast load)	Average Annual Achievable** (% of total forecast load)	Source	Notes
Connecticut	2009	10	29.0%	25.0%	17.0%	1.7%	KEMA	Final draft. Gas efficiency only. Total achievable including codes & standards estimated at 22%.
New Hampshire	2009	10	29.2%	N/A	21.1%	2.1%	GDS	Ignored most retrofit (early retirement) savings. Typically retrofit measures account for a large portion of EE opportunities over 10 years.
New Jersey	2003	17	N/A	30.0%	N/A		KEMA	Constrained to existing load, so excluded new construction opportunities and other efficiency from load growth.
New York	2006	10	N/A	28.3%	19.0%	1.9%	OEI	Conservative estimate of max achievable based on 67% of economic, without detailed analysis.
Averages		**11.8**	**29.1%**	**27.8%**	**19.0%**	**1.9%**		Mean of data available.

* "Achievable potential" definitions can vary significantly. In some cases this is estimated as the maximum amount of EE that can be achieved from programs, with no constraints. However, many studies only analyze what could be achieved for a particular set of programs, incentive levels, or budget or rate impact constraints. In addition, some studies exclude some major EE markets completely. For example, some studies have excluded new construction, industrial process, early retirement, fuel switching, or other major opportunities. As a result, these figures should generally be viewed as conservative estimates. Finally, none of the these studies any savings from CHP.

** Average Annual Achievable represents the total estimated achievable potential percent divided by the planning period.

Energy Efficiency Resource Standards

In addition to the above data on regional potential studies, shown below are recent state regulatory or legislative goals set for electric and (where noted) gas efficiency. This is based on *Laying the Foundation for Implementing a Federal Energy Efficiency Standard,* ACEEE, March 2009, report no. E091. The far right column provides the "implied annual efficiency savings target" as a percentage of the ultimate years load. For some EERS, goals were set based on reducing load to a portion of current load. In this case, average annual underlying growth in the load forecast net of energy efficiency programs was assumed to be 1.5%. In some cases, states have adopted *Renewable* Portfolio Standards (RPS) that allow some goals to be met with efficiency. In this case, EE targets are shown based on the maximum allowable use of EE to meet the RPS.[14] In some cases, goals are not clearly defined, and the table shows current plans.

[14] Energy efficiency is generally far cheaper to capture than renewable energy. Experience has shown that utilities generally plan to maximize use of energy efficiency in meeting RPS goals.

Annual electric efficiency savings goals (as a percent of total electric load) range from a low of 0.4% in NC to a high of 3.25% in MD. Ten of 22 states have implied annual electric efficiency goals of 2.0% or more. Of the 9 states in the Mid-Atlantic and New England region, all but 3 have electric efficiency goals in excess of 2.0% per year.[15] It is likely that most if not all of these estimates exclude CHP, although a thorough analysis of whether any do include CHP has not been completed.

Annual gas efficiency goals are much more limited. Of the 5 states with established goals, all but one (IA at 0.3%) are 1.5% or greater. Within the Region's 4 states, NY has a goal of 1.5%/yr., while the others require all cost-effective achievable potential (assumed here to be 2.0% or more).

[15] Note, a number of states – including MA -- require all available cost-effective efficiency. This is assumed to equal at least 2.0%/yr.

State Energy Efficiency Resource Standards Activity

State	Date Established	Goal	Target End Date	Implied Annual % savings* (% of total forecast load)
Texas	2007	20% of load growth	2010	0.5%
Vermont	2008	2.0% per year (contract goals)	2011	2.0%
California	2004	EE is first resource to meet future electric needs[1]	2013	2.0% +
Hawaii	2004	.4% - .6% per year[2]	2020	0.5%
Pennsylvania	2008	3.0% of 2009-2010 load	2013	0.6%
Connecticut	2007	All Achievable Cost Effective[3]	2018	2.0% +
Nevada	2005	0.6% of 2006 annually[4]	n/a	0.6%
Washington	2006	All Achievable Cost Effective	2025	2.0% +
Colorado	2007	1.0% per year	2020	1.0%
Minnesota (elec & gas)	2007	1.5% per year	2010	1.5%
Virginia	2007	10% of 2006 load	2022	2.2%
Illinois	2007	2.0% per year	2015	2.0%
North Carolina	2007	5% of load[5]	2018	0.4%
New York (electric)	2008	10.5% of 2015 load[6]	2015	1.5%
New York (gas)	2009	15% of 2020 load[6]	2020	1.5%
New Mexico	2009	All achievable cost-effective, minimum 10% of 2005 load	2020	1.0% +
Maryland	2008	15% of 2007 per capita load[7]	2015	3.3%
Ohio	2008	2.0% per year	2019	2.0%
Michigan (electric)	2008	1.0% per year	2012	1.0%
Michigan (gas)	2008	0.75% per year	2012	0.8%
Iowa (electric)	2009	1.5% per year	2010	1.5%
Iowa (gas)	2009	0.85% per year	2013	0.3%
Massachusetts	2008	All Achievable Cost Effective		2.0% +
New Jersey (electric & g	2008	20% of 2020 load[8]	2020	≤2.0%
Rhode Island	2008	All Achievable Cost Effective		2.0% +

Source: ACEEE, Laying the Foundation for Implementing a Federal Energy Efficiency Standard, March 2009, report no. E091.

Notes:

* Implied annual reduction for targets based on current year loads assumes average underlying load growth (not accounting for EE) of 1.5% per year. Texas based on recent load growth of 3%/yr.

1 CA programs exceeded 1.5%/yr. in 2007. While current mandated goals are lower, CA policy requires investment in efficiency whenever it is less costly than alternative new supply.

2 HI established a renewable portfolio standard that includes efficiency as a resource and requires 20% savings by 2020, or approximately 2.8%/yr. However, this can come from efficiency or renewable resources. Current efficiency savings has ranged from 0.4% - 0.6%/yr.

3 CT requires capture of all available cost-effective efficiency resources. Current utility plans reflect goals of about 1.5%/yr.

4 NV has an RPS requiring 15-20% of load and allows EE to meet 25% of the goal. Utilities are ramping up to meet the maximum level of 5% of load from efficiency. Figure reflects 2006 program achievements.

5 NC RPS ramps up to 12.5% of load in 2021, with EE capped at 40% of this target, or 5%.

6 NY established a 15% savings goal (July 2008) for electric efficiency by 2015, however this includes an estimated 4.5% savings from codes & standards. Electric figure is for efficiency programs only. NY just established a 14.7% goal for gas efficiency by 2020. However, it is unclear whether this includes any savings that might come from codes & standards.

7 MD goal is set as a reduction off of 2007 per capita load. Implied annual goal assumes underlying load growth per capita (net of efficiency programs) of 0.75%.

8 NJ legislature recently authorized the BPU to set electric and gas goals of 20% savings each by 2020. Goals still under development.

2. *Resolution*

Assessment of
All Available Cost-Effective Electric and Gas Savings from Energy Efficiency and Combined Heat & Power (CHP)

Resolution of the Massachusetts Energy Efficiency Advisory Council

Adopted July 14, 2009

Be it resolved:

The attached *Assessment of All Available Cost-Effective Electric and Gas Savings* provides a useful and appropriate estimate of the level of all available cost-effective energy efficiency and combined heat and power (CHP) in the Commonwealth; serves the purpose of helping all stakeholders to prepare and optimize the 2010-2012 plans; is appropriate for inclusion in the plans; and, for the first three-year plans developed under the Green Communities Act (GCA), reasonably satisfies the requirement of the GCA to perform such an assessment. The estimates in the Assessment are summarized below.

Estimates of All Available Cost-Effective Annual Energy Savings				
Range	**Electric Programs**	**CHP Electric Savings**	**Total Electric Savings**	**Natural Gas Programs**
Low	2.5%	0.3%	2.8%	2.0-%
High	2.5+%	0.5%	3.0+%	2.0+%

These estimates are reasonable approximations of high end, aggressive levels of all available cost-effective savings from energy efficiency and CHP. The levels of electric and gas savings potential in the Assessment are distinct from the savings goals that will be set forth in the still-developing 2010-2012 energy efficiency plans, and the 2010-2012 savings goals will take into account a number of additional factors, including, but not limited to, the ramp up to higher savings levels, the benefits and net benefits

provided by achieving higher savings levels, and the consideration of rate and bill impacts associated with additional ratepayer funding.

The Council (including voting members and Program Administrators) agrees that a detailed potential study or set of targeted studies, as appropriate, will be performed in 2011, during the course of the initial three-year Plan period, and that an updated assessment of all available cost-effective energy efficiency will be prepared in connection with the next three-year plan to take effect in 2013. The detailed potential study will be informed by the actual experience of enhanced programs in the field in Massachusetts and other states implementing programs to acquire higher energy savings approaching all available cost-effective potential.

Requirements of the Green Communities Act, Section 21:

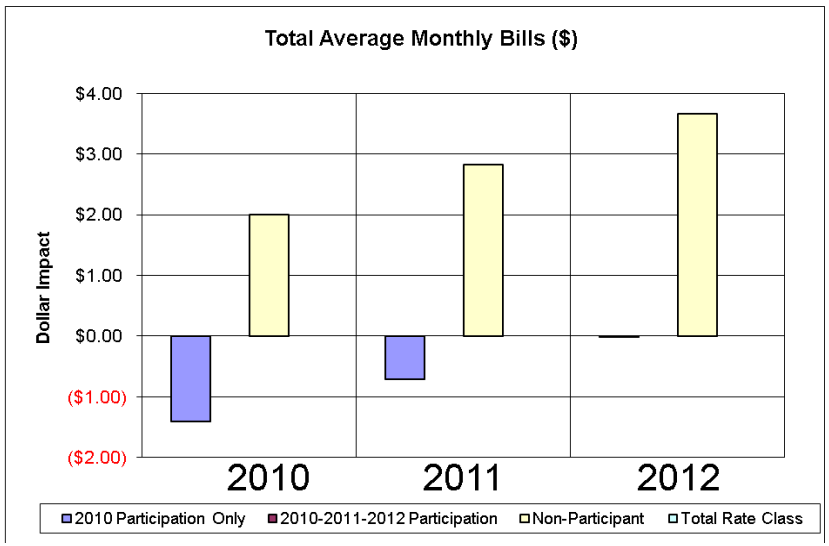
"(2) A plan shall include: (i) an assessment of the estimated lifetime cost, reliability and magnitude of all available energy efficiency and demand reduction resources that are cost effective or less expensive than supply"

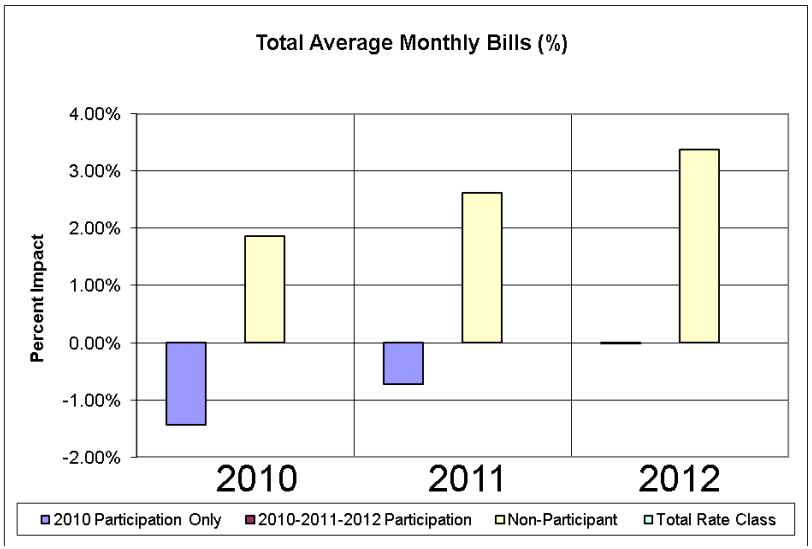
F. Sample Residential Rate and Bill Impact Analyses

1. *Bay State Gas Company*

Bay State Gas Company
Bill Impacts - Effect on a 2010 Only Participant and Non-Participant
For all Program Years
Residential Heating (R-3) Without Other Funding

2010 PARTICIPANT										NON-PARTICIPANT									
	Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills			Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills		
2010	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill
	$	Therm	$	$	Therm	$	$	Therm	$	$	Therm	$	$	Therm	$	$	Therm	$
Current Funding	$1.1614	75.00	$98.05	$0.8141	75.00	$61.06	$0.3473	75.00	$36.99	$1.1614	83.33	$107.73	$0.8141	83.33	$67.84	$0.3473	83.33	$41.89
Incremental Funding	$1.1855	72.29	$96.64	$0.8141	72.29	$58.85	$0.3714	72.29	$37.79	$1.1855	83.33	$109.73	$0.8141	83.33	$67.84	$0.3714	83.33	$41.89
Differences																		
In Units	$0.0240	(2.71)	($1.41)	$0.0000	(2.71)	($2.21)	$0.0240	(2.71)	$0.80	$0.0240	0.00	$2.00	$0.0000	0.00	$0.00	$0.0240	0.00	$2.00
%	2.07%	-3.61%	-1.44%	0.00%	-3.61%	-3.61%	6.92%	-3.61%	2.15%	2.07%	0.00%	1.86%	0.00%	0.00%	0.00%	6.92%	0.00%	5.02%
2011																		
Current Funding	$1.1636	75.00	$98.21	$0.7927	75.00	$59.45	$0.3709	75.00	$38.76	$1.1636	83.33	$107.91	$0.7927	83.33	$66.06	$0.3709	83.33	$41.85
Incremental Funding	$1.1975	72.29	$97.51	$0.7927	72.29	$57.31	$0.4048	72.29	$40.20	$1.1975	83.33	$110.73	$0.7927	83.33	$66.06	$0.4048	83.33	$44.67
Differences																		
In Units	$0.0339	(2.71)	($0.70)	$0.0000	(2.71)	($2.15)	$0.0339	(2.71)	$1.44	$0.0339	0.00	$2.82	$0.0000	0.00	$0.00	$0.0339	0.00	$2.82
%	2.91%	-3.61%	-0.72%	0.00%	-3.61%	-3.61%	9.13%	-3.61%	3.72%	2.91%	0.00%	2.62%	0.00%	0.00%	0.00%	9.13%	0.00%	6.74%
2012																		
Current Funding	$1.1706	75.00	$98.74	$0.7709	75.00	$57.82	$0.3997	75.00	$40.92	$1.1706	83.33	$108.49	$0.7709	83.33	$64.24	$0.3997	83.33	$44.25
Incremental Funding	$1.2145	72.29	$98.73	$0.7709	72.29	$55.73	$0.4435	72.29	$43.00	$1.2145	83.33	$112.14	$0.7709	83.33	$64.24	$0.4435	83.33	$47.90
Differences																		
In Units	$0.0438	(2.71)	($0.00)	$0.0000	(2.71)	($2.09)	$0.0438	(2.71)	$2.09	$0.0438	0.00	$3.65	$0.0000	0.00	$0.00	$0.0438	0.00	$3.65
%	3.75%	-3.61%	0.00%	0.00%	-3.61%	-3.61%	10.97%	-3.61%	5.10%	3.75%	0.00%	3.37%	0.00%	0.00%	0.00%	10.97%	0.00%	8.26%

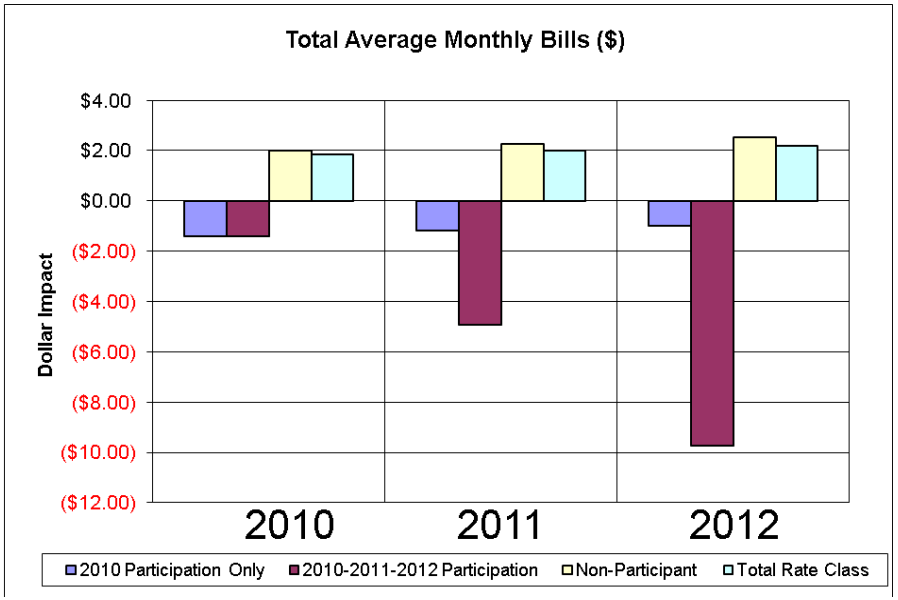


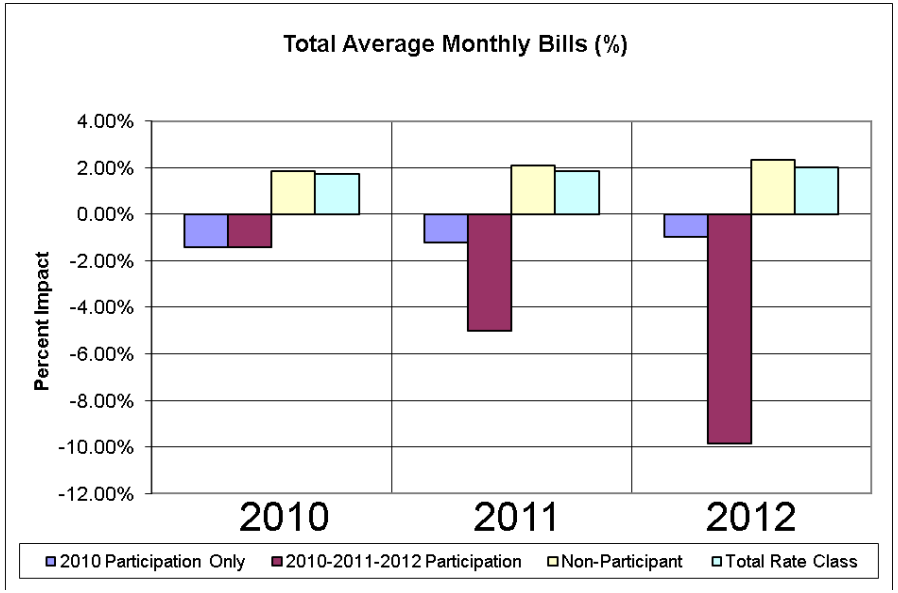


Bay State Gas Company
Bill Impacts - Effect on a 2010 Only Participant and Non-Participant
For all Program Years
Residential Heating (R-3) With Other Funding

2010 PARTICIPANT									
	Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills		
2010	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill
	$	Therm	$	$	Therm	$	$	Therm	$
Current Funding	$1.1614	75.00	$98.05	$0.8141	75.00	$61.06	$0.3473	75.00	$36.99
Incremental Funding	$1.1855	72.29	$96.64	$0.8141	72.29	$58.85	$0.3714	72.29	$37.79
Differences									
In Units	$0.0240	(2.71)	($1.41)	$0.0000	(2.71)	($2.21)	$0.0240	(2.71)	$0.80
%	2.07%	-3.61%	-1.44%	0.00%	-3.61%	-3.61%	6.92%	-3.61%	2.15%
2011									
Current Funding	$1.1636	75.00	$98.21	$0.7927	75.00	$59.45	$0.3709	75.00	$38.76
Incremental Funding	$1.1907	72.29	$97.02	$0.7927	72.29	$57.31	$0.3980	72.29	$39.71
Differences									
In Units	$0.0271	(2.71)	($1.19)	$0.0000	(2.71)	($2.15)	$0.0271	(2.71)	$0.95
%	2.33%	-3.61%	-1.22%	0.00%	-3.61%	-3.61%	7.30%	-3.61%	2.46%
2012									
Current Funding	$1.1706	75.00	$98.74	$0.7709	75.00	$57.82	$0.3997	75.00	$40.92
Incremental Funding	$1.2010	72.29	$97.76	$0.7709	72.29	$55.73	$0.4300	72.29	$42.03
Differences									
In Units	$0.0303	(2.71)	($0.98)	$0.0000	(2.71)	($2.09)	$0.0303	(2.71)	$1.11
%	2.59%	-3.61%	-0.99%	0.00%	-3.61%	-3.61%	7.59%	-3.61%	2.71%

NON-PARTICIPANT									
	Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills		
	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill
	$	Therm	$	$	Therm	$	$	Therm	$
	$1.1614	83.33	$107.73	$0.8141	83.33	$67.84	$0.3473	83.33	$41.89
	$1.1855	83.33	$109.73	$0.8141	83.33	$67.84	$0.3714	83.33	$41.89
	$0.0240	0.00	$2.00	$0.0000	0.00	$0.00	$0.0240	0.00	$2.00
	2.07%	0.00%	1.86%	0.00%	0.00%	0.00%	6.92%	0.00%	5.02%
	$1.1636	83.33	$107.91	$0.7927	83.33	$66.06	$0.3709	83.33	$41.85
	$1.1907	83.33	$110.17	$0.7927	83.33	$66.06	$0.3980	83.33	$44.11
	$0.0271	0.00	$2.26	$0.0000	0.00	$0.00	$0.0271	0.00	$2.26
	2.33%	0.00%	2.09%	0.00%	0.00%	0.00%	7.30%	0.00%	5.39%
	$1.1706	83.33	$108.49	$0.7709	83.33	$64.24	$0.3997	83.33	$44.25
	$1.2010	83.33	$111.02	$0.7709	83.33	$64.24	$0.4300	83.33	$46.77
	$0.0303	0.00	$2.53	$0.0000	0.00	$0.00	$0.0303	0.00	$2.53
	2.59%	0.00%	2.33%	0.00%	0.00%	0.00%	7.59%	0.00%	5.71%

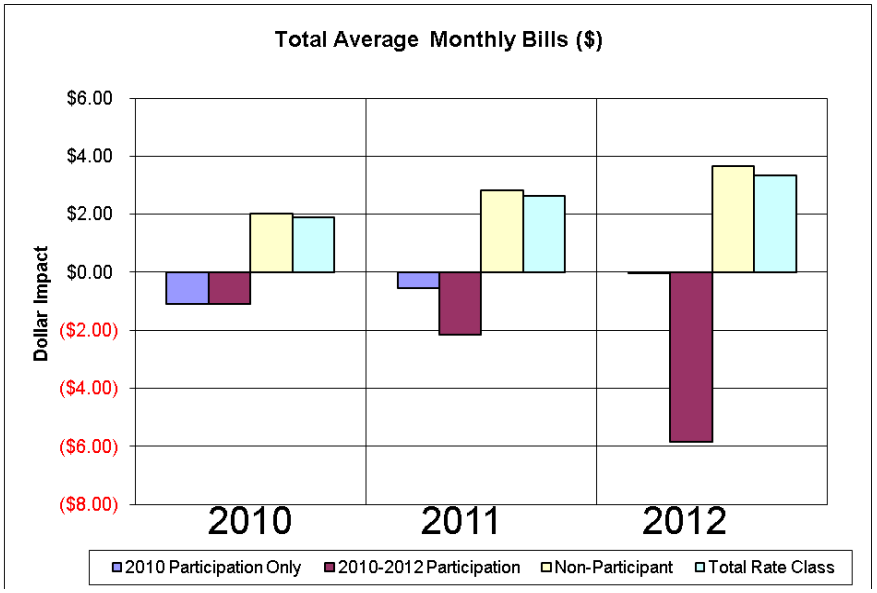


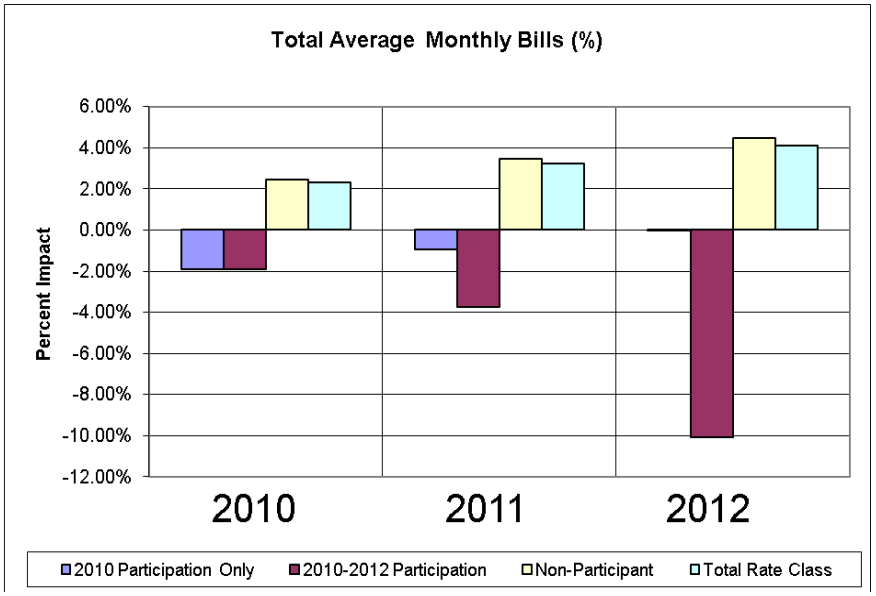


Bay State Gas Company
Bill Impacts - Effect on a 2010 Only Participant and Non-Participant
For all Program Years
Residential Heating Low Income (R-4) Without Other Funding

2010 PARTICIPANT									
	Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills		
2010	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill
	$	Therm	$	$	Therm	$	$	Therm	$
Current Funding	$0.9381	59.57	$57.52	0.8392	59.57	$49.99	$0.0989	59.57	$7.53
Incremental Funding	$0.9618	56.97	$56.44	0.8392	56.97	$47.81	$0.1226	56.97	$8.62
Differences									
In Units	$0.0237	(2.60)	($1.09)	$0.0000	(2.60)	($2.18)	$0.0237	(2.60)	$1.09
%	2.52%	-4.36%	-1.89%	0.00%	-4.36%	-4.36%	23.94%	-4.36%	14.50%
2011									
Current Funding	$0.9400	59.57	$57.63	$0.8178	59.57	$48.72	$0.1222	59.57	$8.92
Incremental Funding	$0.9733	56.97	$57.09	$0.8178	56.97	$46.59	$0.1555	56.97	$10.50
Differences									
In Units	$0.0333	(2.60)	($0.54)	$0.0000	(2.60)	($2.12)	$0.0333	(2.60)	$1.58
%	3.54%	-4.36%	-0.94%	0.00%	-4.36%	-4.36%	27.26%	-4.36%	17.72%
2012									
Current Funding	$0.9456	59.57	$57.97	$0.7960	59.57	$47.42	$0.1496	59.57	$10.55
Incremental Funding	$0.9887	56.97	$57.97	$0.7960	56.97	$45.35	$0.1927	56.97	$12.62
Differences									
In Units	$0.0431	(2.60)	($0.00)	$0.0000	(2.60)	($2.07)	$0.0431	(2.60)	$2.07
%	4.55%	-4.36%	0.00%	0.00%	-4.36%	-4.36%	28.79%	-4.36%	19.58%

NON-PARTICIPANT									
	Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills		
	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill
	$	Therm	$	$	Therm	$	$	Therm	$
Current Funding	$0.9381	85.10	$81.47	0.8392	85.10	$71.42	$0.0989	85.10	$12.07
Incremental Funding	$0.9618	85.10	$83.49	0.8392	85.10	$71.42	$0.1226	85.10	$12.07
Differences									
In Units	$0.0237	0.00	$2.01	$0.0000	0.00	$0.00	$0.0237	0.00	$2.01
%	2.52%	0.00%	2.47%	0.00%	0.00%	0.00%	23.94%	0.00%	20.03%
Current Funding	$0.9400	85.10	$81.63	$0.8178	85.10	$69.60	$0.1222	85.10	$12.04
Incremental Funding	$0.9733	85.10	$84.46	$0.8178	85.10	$69.60	$0.1555	85.10	$14.87
Differences									
In Units	$0.0333	0.00	$2.83	$0.0000	0.00	$0.00	$0.0333	0.00	$2.83
%	3.54%	0.00%	3.47%	0.00%	0.00%	0.00%	27.26%	0.00%	23.54%
Current Funding	$0.9456	85.10	$82.11	$0.7960	85.10	$67.74	$0.1496	85.10	$14.37
Incremental Funding	$0.9887	85.10	$85.78	$0.7960	85.10	$67.74	$0.1927	85.10	$18.04
Differences									
In Units	$0.0431	0.00	$3.67	$0.0000	0.00	$0.00	$0.0431	0.00	$3.67
%	4.55%	0.00%	4.46%	0.00%	0.00%	0.00%	28.79%	0.00%	25.51%

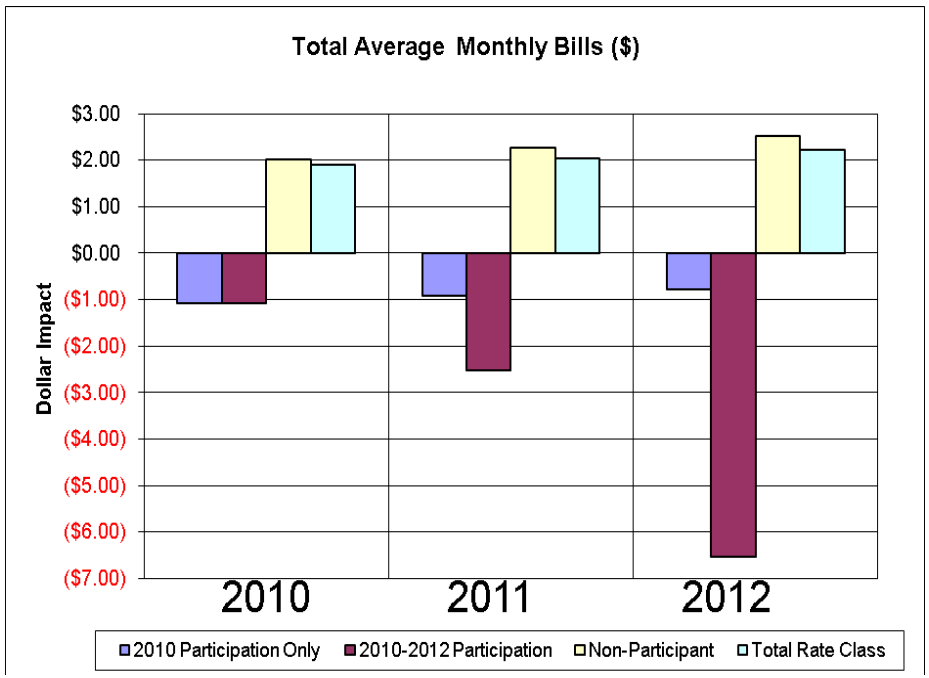


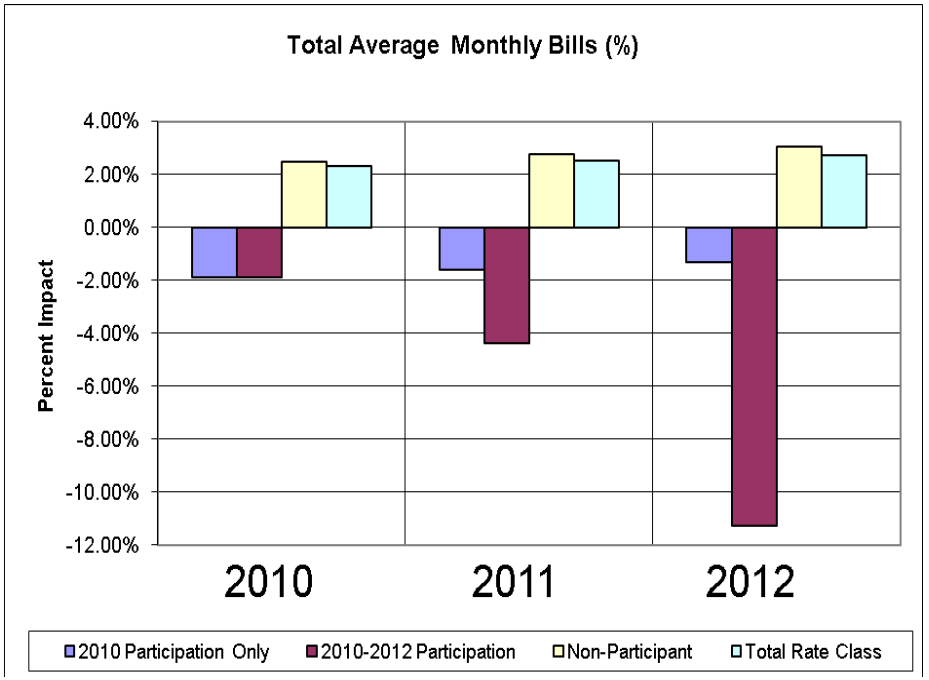


Bay State Gas Company
Bill Impacts - Effect on a 2010 Only Participant and Non-Participant
For all Program Years
Residential Heating Low Income (R-4) With Other Funding

2010 PARTICIPANT	Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills		
2010	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill
	$	Therm	$	$	Therm	$	$	Therm	$
Current Funding	$0.9381	59.57	$57.52	0.8392	59.57	$49.99	$0.0989	59.57	$7.53
Incremental Funding	$0.9618	56.97	$56.44	0.8392	56.97	$47.81	$0.1226	56.97	$8.62
Differences									
In Units	$0.0237	(2.60)	($1.09)	$0.0000	(2.60)	($2.18)	$0.0237	(2.60)	$1.09
%	2.52%	-4.36%	-1.89%	0.00%	-4.36%	-4.36%	23.94%	-4.36%	14.50%
2011									
Current Funding	$0.9400	59.57	$57.63	$0.8178	59.57	$48.72	$0.1222	59.57	$8.92
Incremental Funding	$0.9665	56.97	$56.70	$0.8178	56.97	$46.59	$0.1487	56.97	$10.11
Differences									
In Units	$0.0265	(2.60)	($0.93)	$0.0000	(2.60)	($2.12)	$0.0265	(2.60)	$1.19
%	2.82%	-4.36%	-1.61%	0.00%	-4.36%	-4.36%	21.70%	-4.36%	13.38%
2012									
Current Funding	$0.9456	59.57	$57.97	$0.7960	59.57	$47.42	$0.1496	59.57	$10.55
Incremental Funding	$0.9752	56.97	$57.20	$0.7960	56.97	$45.35	$0.1792	56.97	$11.85
Differences									
In Units	$0.0296	(2.60)	($0.77)	$0.0000	(2.60)	($2.07)	$0.0296	(2.60)	$1.30
%	3.13%	-4.36%	-1.33%	0.00%	-4.36%	-4.36%	19.77%	-4.36%	12.29%

NON-PARTICIPANT	Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills		
	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill
	$	Therm	$	$	Therm	$	$	Therm	$
Current Funding	$0.9381	85.10	$81.47	0.8392	85.10	$71.42	$0.0989	85.10	$12.07
Incremental Funding	$0.9618	85.10	$83.49	0.8392	85.10	$71.42	$0.1226	85.10	$12.07
Differences									
In Units	$0.0237	0.00	$2.01	$0.0000	0.00	$0.00	$0.0237	0.00	$2.01
%	2.52%	0.00%	2.47%	0.00%	0.00%	0.00%	23.94%	0.00%	20.03%
Current Funding	$0.9400	85.10	$81.63	$0.8178	85.10	$69.60	$0.1222	85.10	$12.04
Incremental Funding	$0.9665	85.10	$83.89	$0.8178	85.10	$69.60	$0.1487	85.10	$14.29
Differences									
In Units	$0.0265	0.00	$2.26	$0.0000	0.00	$0.00	$0.0265	0.00	$2.26
%	2.82%	0.00%	2.76%	0.00%	0.00%	0.00%	21.70%	0.00%	18.75%
Current Funding	$0.9456	85.10	$82.11	$0.7960	85.10	$67.74	$0.1496	85.10	$14.37
Incremental Funding	$0.9752	85.10	$84.63	$0.7960	85.10	$67.74	$0.1792	85.10	$16.89
Differences									
In Units	$0.0296	0.00	$2.52	$0.0000	0.00	$0.00	$0.0296	0.00	$2.52
%	3.13%	0.00%	3.06%	0.00%	0.00%	0.00%	19.77%	0.00%	17.51%

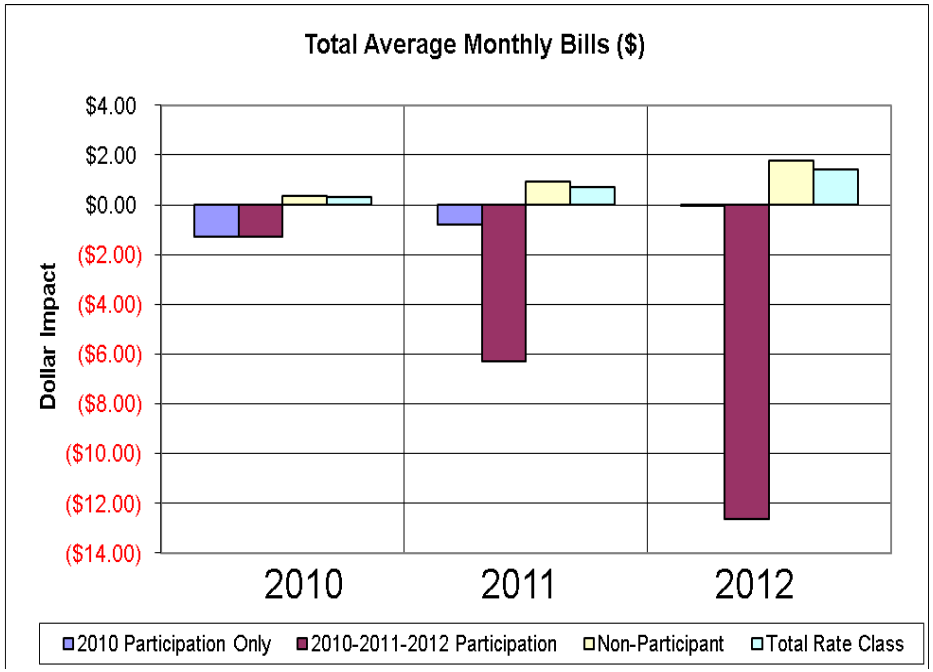


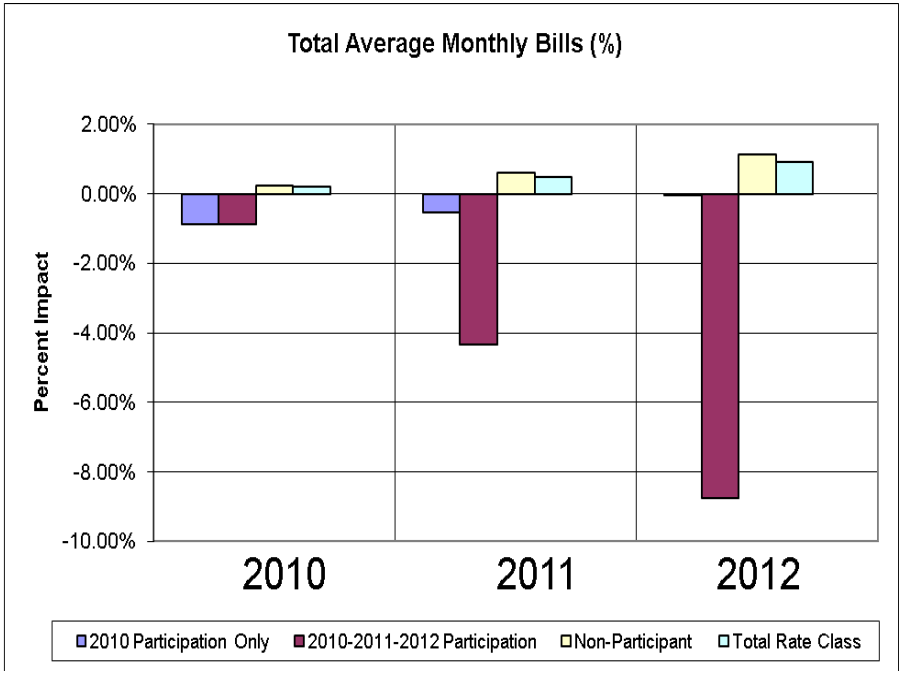


Bay State Gas Company
Bill Impacts - Effect on a 2010 Only Participant and Non-Participant
For all Program Years
C & I - Low Annual Use/High Peak Period - Rate (G40) Without Other Funding

2010 PARTICIPANT									
	Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills		
2010	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill
	$	Therm	$	$	Therm	$	$	Therm	$
Current Funding	$1.2481	100.96	$143.51	0.9052	100.96	$91.39	$0.3429	100.96	$52.13
Incremental Funding	$1.2514	99.68	$142.25	0.9052	99.68	$90.23	$0.3462	99.68	$52.02
Differences									
In Units	$0.0034	(1.28)	($1.26)	$0.0000	(1.28)	($1.16)	$0.0034	(1.28)	($0.10)
%	0.27%	-1.27%	-0.88%	0.00%	-1.27%	-1.27%	0.98%	-1.27%	-0.20%
2011									
Current Funding	$1.2683	100.96	$145.55	$0.8886	100.96	$89.72	$0.3796	100.96	$55.84
Incremental Funding	$1.2767	99.68	$144.77	$0.8886	99.68	$88.58	$0.3880	99.68	$56.19
Differences									
In Units	$0.0084	(1.28)	($0.79)	$0.0000	(1.28)	($1.14)	$0.0084	(1.28)	$0.35
%	0.66%	-1.27%	-0.54%	0.00%	-1.27%	-1.27%	2.21%	-1.27%	0.63%
2012									
Current Funding	$1.2545	100.96	$144.17	$0.8715	100.96	$87.98	$0.3830	100.96	$56.18
Incremental Funding	$1.2706	99.68	$144.16	$0.8715	99.68	$86.87	$0.3991	99.68	$57.29
Differences									
In Units	$0.0160	(1.28)	($0.01)	$0.0000	(1.28)	($1.12)	$0.0160	(1.28)	$1.11
%	1.28%	-1.27%	0.00%	0.00%	-1.27%	-1.27%	4.19%	-1.27%	1.97%

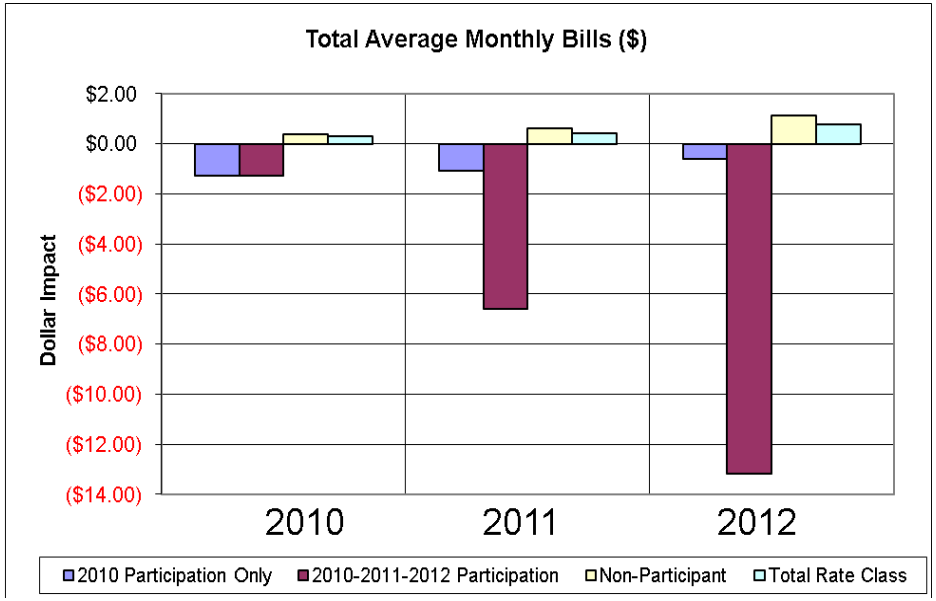
NON-PARTICIPANT									
	Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills		
	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill
	$	Therm	$	$	Therm	$	$	Therm	$
Current Funding	$1.2481	112.18	$157.52	0.9052	112.18	$101.55	$0.3429	112.18	$56.35
Incremental Funding	$1.2514	112.18	$157.90	0.9052	112.18	$101.55	$0.3462	112.18	$56.35
Differences									
In Units	$0.0034	0.00	$0.38	$0.0000	0.00	$0.00	$0.0034	0.00	$0.38
%	0.27%	0.00%	0.24%	0.00%	0.00%	0.00%	0.98%	0.00%	0.67%
Current Funding	$1.2683	112.18	$159.79	$0.8886	112.18	$99.69	$0.3796	112.18	$60.10
Incremental Funding	$1.2767	112.18	$160.73	$0.8886	112.18	$99.69	$0.3880	112.18	$61.04
Differences									
In Units	$0.0084	0.00	$0.94	$0.0000	0.00	$0.00	$0.0084	0.00	$0.94
%	0.66%	0.00%	0.59%	0.00%	0.00%	0.00%	2.21%	0.00%	1.57%
Current Funding	$1.2545	112.18	$158.24	$0.8715	112.18	$97.77	$0.3830	112.18	$60.48
Incremental Funding	$1.2706	112.18	$160.04	$0.8715	112.18	$97.77	$0.3991	112.18	$62.28
Differences									
In Units	$0.0160	0.00	$1.80	$0.0000	0.00	$0.00	$0.0160	0.00	$1.80
%	1.28%	0.00%	1.14%	0.00%	0.00%	0.00%	4.19%	0.00%	2.98%

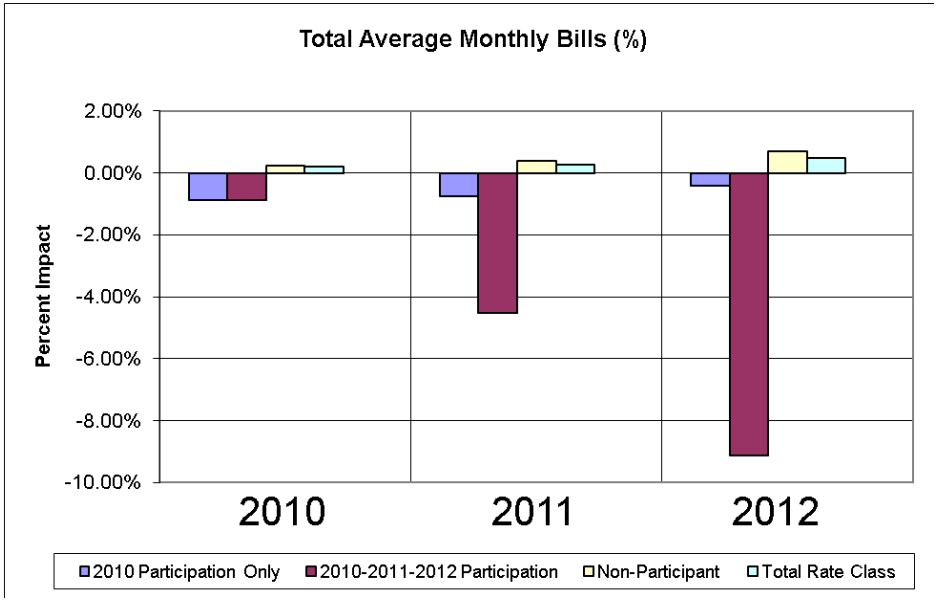




Bay State Gas Company
Bill Impacts - Effect on a 2010 Only Participant and Non-Participant
For all Program Years
C & I - Low Annual Use/High Peak Period - Rate (G40) With Other Funding

2010 PARTICIPANT										NON-PARTICIPANT								
	Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills			Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills		
2010	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill
	$	Therm	$	$	Therm	$	$	Therm	$	$	Therm	$	$	Therm	$	$	Therm	$
Current Funding	$1.2481	100.96	$143.51	0.9052	100.96	$91.39	$0.3429	100.96	$52.13	$1.2481	112.18	$157.52	0.9052	112.18	$101.55	$0.3429	112.18	$56.35
Incremental Funding	$1.2514	99.68	$142.25	0.9052	99.68	$90.23	$0.3462	99.68	$52.02	$1.2514	112.18	$157.90	0.9052	112.18	$101.55	$0.3462	112.18	$56.35
Differences																		
In Units	$0.0034	(1.28)	($1.26)	$0.0000	(1.28)	($1.16)	$0.0034	(1.28)	($0.10)	$0.0034	0.00	$0.38	$0.0000	0.00	$0.00	$0.0034	0.00	$0.38
%	0.27%	-1.27%	-0.88%	0.00%	-1.27%	-1.27%	0.98%	-1.27%	-0.20%	0.27%	0.00%	0.24%	0.00%	0.00%	0.00%	0.98%	0.00%	0.67%
2011																		
Current Funding	$1.2683	100.96	$145.55	$0.8886	100.96	$89.72	$0.3796	100.96	$55.84	$1.2683	112.18	$159.79	$0.8886	112.18	$99.69	$0.3796	112.18	$60.10
Incremental Funding	$1.2737	99.68	$144.47	$0.8886	99.68	$88.58	$0.3850	99.68	$55.89	$1.2737	112.18	$160.39	$0.8886	112.18	$99.69	$0.3850	112.18	$60.70
Differences																		
In Units	$0.0054	(1.28)	($1.09)	$0.0000	(1.28)	($1.14)	$0.0054	(1.28)	$0.05	$0.0054	0.00	$0.61	$0.0000	0.00	$0.00	$0.0054	0.00	$0.61
%	0.43%	-1.27%	-0.75%	0.00%	-1.27%	-1.27%	1.42%	-1.27%	0.09%	0.43%	0.00%	0.38%	0.00%	0.00%	0.00%	1.42%	0.00%	1.01%
2012																		
Current Funding	$1.2545	100.96	$144.17	$0.8715	100.96	$87.98	$0.3830	100.96	$56.18	$1.2545	112.18	$158.24	$0.8715	112.18	$97.77	$0.3830	112.18	$60.48
Incremental Funding	$1.2645	99.68	$143.55	$0.8715	99.68	$86.87	$0.3930	99.68	$56.68	$1.2645	112.18	$159.36	$0.8715	112.18	$97.77	$0.3930	112.18	$61.59
Differences																		
In Units	$0.0099	(1.28)	($0.62)	$0.0000	(1.28)	($1.12)	$0.0099	(1.28)	$0.50	$0.0099	0.00	$1.11	$0.0000	0.00	$0.00	$0.0099	0.00	$1.11
%	0.79%	-1.27%	-0.43%	0.00%	-1.27%	-1.27%	2.59%	-1.27%	0.89%	0.79%	0.00%	0.70%	0.00%	0.00%	0.00%	2.59%	0.00%	1.84%

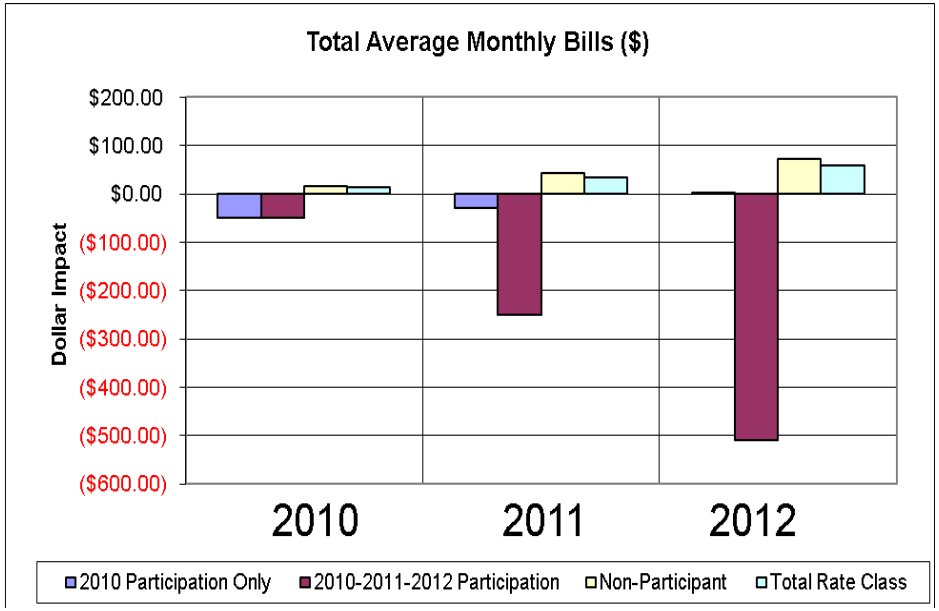


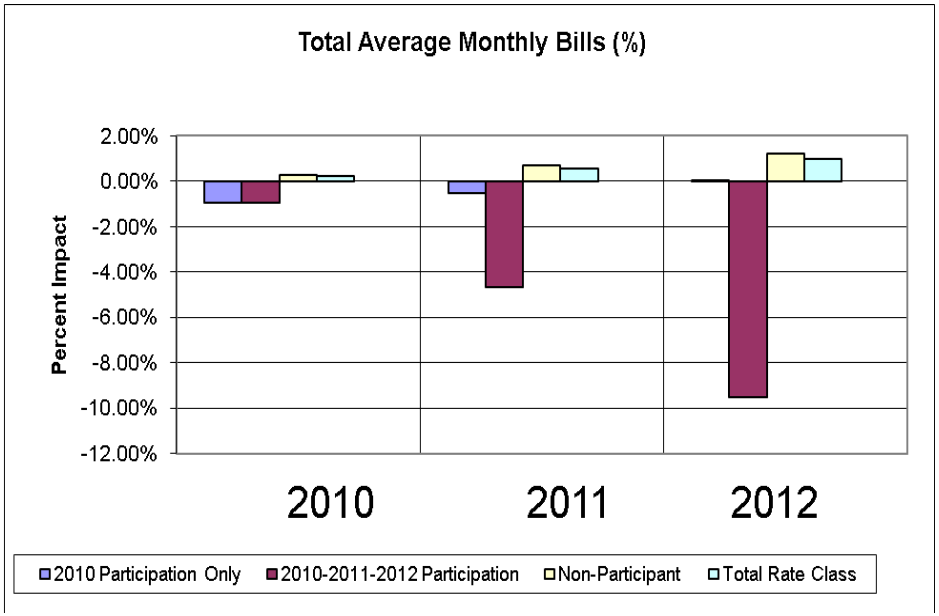


Bay State Gas Company
Bill Impacts - Effect on a 2010 Only Participant and Non-Participant
For all Program Years
C & I - High Annual Use/High Peak Period - Rate (G42) Without Other Funding

2010 PARTICIPANT									
	Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills		
2010	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill
	$	Therm	$	$	Therm	$	$	Therm	$
Current Funding	$1.0672	4,761.23	$5,314.23	0.8831	4,761.23	$4,204.64	$0.1841	4,761.23	$1,109.59
Incremental Funding	$1.0703	4,700.37	$5,264.05	0.8831	4,700.37	$4,150.90	$0.1872	4,700.37	$1,113.16
Differences									
In Units	$0.0031	(60.86)	($50.18)	$0.0000	(60.86)	($53.75)	$0.0031	(60.86)	$3.57
%	0.29%	-1.28%	-0.94%	0.00%	-1.28%	-1.28%	1.71%	-1.28%	0.32%
2011									
Current Funding	$1.0846	4,761.23	$5,397.26	$0.8663	4,761.23	$4,124.51	$0.2184	4,761.23	$1,272.75
Incremental Funding	$1.0927	4,700.37	$5,368.91	$0.8663	4,700.37	$4,071.79	$0.2264	4,700.37	$1,297.12
Differences									
In Units	$0.0080	(60.86)	($28.35)	$0.0000	(60.86)	($52.72)	$0.0080	(60.86)	$24.37
%	0.74%	-1.28%	-0.53%	0.00%	-1.28%	-1.28%	3.67%	-1.28%	1.92%
2012									
Current Funding	$1.0730	4,761.23	$5,342.05	$0.8487	4,761.23	$4,041.00	$0.2243	4,761.23	$1,301.04
Incremental Funding	$1.0869	4,700.37	$5,342.05	$0.8487	4,700.37	$3,989.35	$0.2382	4,700.37	$1,352.70
Differences									
In Units	$0.0139	(60.86)	$0.00	$0.0000	(60.86)	($51.65)	$0.0139	(60.86)	$51.66
%	1.29%	-1.28%	0.00%	0.00%	-1.28%	-1.28%	6.19%	-1.28%	3.97%

NON-PARTICIPANT									
	Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills		
	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill
	$	Therm	$	$	Therm	$	$	Therm	$
Current Funding	$1.0672	5,290.26	$5,878.81	0.8831	5,290.26	$4,671.83	$0.1841	5,290.26	$1,223.61
Incremental Funding	$1.0703	5,290.26	$5,895.44	0.8831	5,290.26	$4,671.83	$0.1872	5,290.26	$1,223.61
Differences									
In Units	$0.0031	0.00	$16.63	$0.0000	0.00	$0.00	$0.0031	0.00	$16.63
%	0.29%	0.00%	0.28%	0.00%	0.00%	0.00%	1.71%	0.00%	1.38%
Current Funding	$1.0846	5,290.26	$5,971.06	$0.8663	5,290.26	$4,582.79	$0.2184	5,290.26	$1,388.28
Incremental Funding	$1.0927	5,290.26	$6,013.45	$0.8663	5,290.26	$4,582.79	$0.2264	5,290.26	$1,430.67
Differences									
In Units	$0.0080	0.00	$42.39	$0.0000	0.00	$0.00	$0.0080	0.00	$42.39
%	0.74%	0.00%	0.71%	0.00%	0.00%	0.00%	3.67%	0.00%	3.05%
Current Funding	$1.0730	5,290.26	$5,909.72	$0.8487	5,290.26	$4,490.01	$0.2243	5,290.26	$1,419.71
Incremental Funding	$1.0869	5,290.26	$5,983.22	$0.8487	5,290.26	$4,490.01	$0.2382	5,290.26	$1,493.22
Differences									
In Units	$0.0139	0.00	$73.50	$0.0000	0.00	$0.00	$0.0139	0.00	$73.50
%	1.29%	0.00%	1.24%	0.00%	0.00%	0.00%	6.19%	0.00%	5.18%

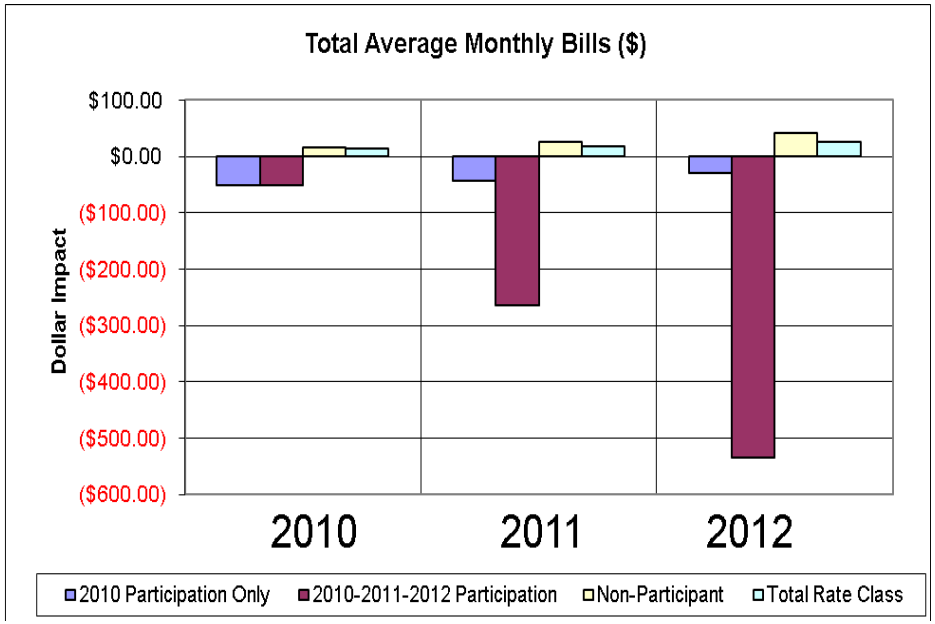


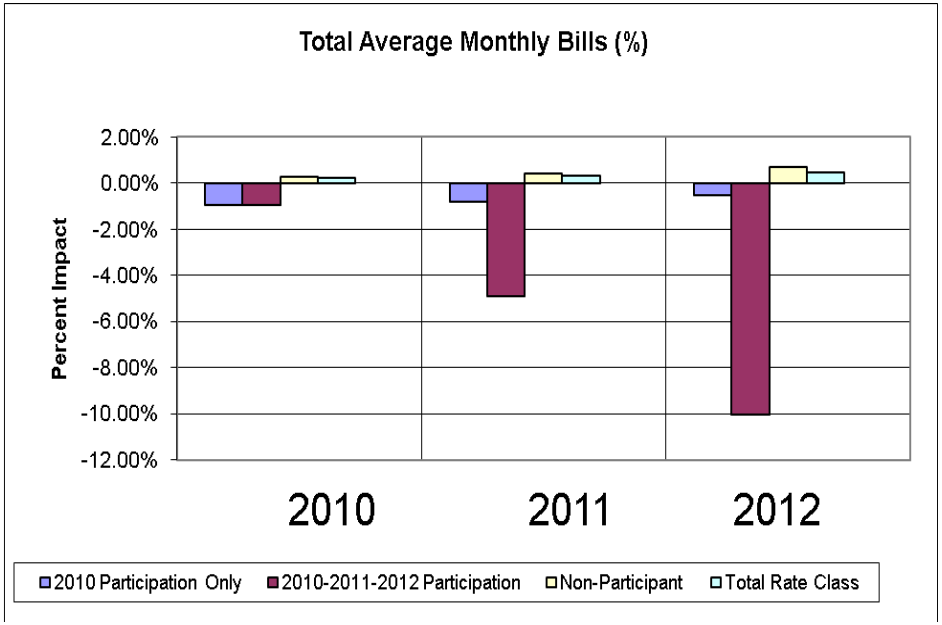


Bay State Gas Company
Bill Impacts - Effect on a 2010 Only Participant and Non-Participant
For all Program Years
C & I - High Annual Use/High Peak Period - Rate (G42) With Other Funding

2010 PARTICIPANT									
	Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills		
2010	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill
	$	Therm	$	$	Therm	$	$	Therm	$
Current Funding	$1.0672	4,761.23	$5,314.23	0.8831	4,761.23	$4,204.64	$0.1841	4,761.23	$1,109.59
Incremental Funding	$1.0703	4,700.37	$5,264.05	0.8831	4,700.37	$4,150.90	$0.1872	4,700.37	$1,113.16
Differences									
In Units	$0.0031	(60.86)	($50.18)	$0.0000	(60.86)	($53.75)	$0.0031	(60.86)	$3.57
%	0.29%	-1.28%	-0.94%	0.00%	-1.28%	-1.28%	1.71%	-1.28%	0.32%
2011									
Current Funding	$1.0846	4,761.23	$5,397.26	$0.8663	4,761.23	$4,124.51	$0.2184	4,761.23	$1,272.75
Incremental Funding	$1.0896	4,700.37	$5,354.77	$0.8663	4,700.37	$4,071.79	$0.2234	4,700.37	$1,282.99
Differences									
In Units	$0.0050	(60.86)	($42.48)	$0.0000	(60.86)	($52.72)	$0.0050	(60.86)	$10.24
%	0.46%	-1.28%	-0.79%	0.00%	-1.28%	-1.28%	2.29%	-1.28%	0.80%
2012									
Current Funding	$1.0730	4,761.23	$5,342.05	$0.8487	4,761.23	$4,041.00	$0.2243	4,761.23	$1,301.04
Incremental Funding	$1.0808	4,700.37	$5,313.37	$0.8487	4,700.37	$3,989.35	$0.2321	4,700.37	$1,324.02
Differences									
In Units	$0.0078	(60.86)	($28.68)	$0.0000	(60.86)	($51.65)	$0.0078	(60.86)	$22.97
%	0.73%	-1.28%	-0.54%	0.00%	-1.28%	-1.28%	3.47%	-1.28%	1.77%

NON-PARTICIPANT									
	Total Rates and Bills			Supply Rates and Bills			Delivery Rates and Bills		
	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Total Gas Rate	Monthly Energy Consumption	Average Monthly Bill	Delivery Gas Rate	Monthly Energy Consumption	Average Monthly Bill
	$	Therm	$	$	Therm	$	$	Therm	$
Current Funding	$1.0672	5,290.26	$5,878.81	0.8831	5,290.26	$4,671.83	$0.1841	5,290.26	$1,223.61
Incremental Funding	$1.0703	5,290.26	$5,895.44	0.8831	5,290.26	$4,671.83	$0.1872	5,290.26	$1,223.61
Differences									
In Units	$0.0031	0.00	$16.63	$0.0000	0.00	$0.00	$0.0031	0.00	$16.63
%	0.29%	0.00%	0.28%	0.00%	0.00%	0.00%	1.71%	0.00%	1.38%
Current Funding	$1.0846	5,290.26	$5,971.06	$0.8663	5,290.26	$4,582.79	$0.2184	5,290.26	$1,388.28
Incremental Funding	$1.0896	5,290.26	$5,997.54	$0.8663	5,290.26	$4,582.79	$0.2234	5,290.26	$1,414.76
Differences									
In Units	$0.0050	0.00	$26.48	$0.0000	0.00	$0.00	$0.0050	0.00	$26.48
%	0.46%	0.00%	0.44%	0.00%	0.00%	0.00%	2.29%	0.00%	1.91%
Current Funding	$1.0730	5,290.26	$5,909.72	$0.8487	5,290.26	$4,490.01	$0.2243	5,290.26	$1,419.71
Incremental Funding	$1.0808	5,290.26	$5,950.94	$0.8487	5,290.26	$4,490.01	$0.2321	5,290.26	$1,460.94
Differences									
In Units	$0.0078	0.00	$41.22	$0.0000	0.00	$0.00	$0.0078	0.00	$41.22
%	0.73%	0.00%	0.70%	0.00%	0.00%	0.00%	3.47%	0.00%	2.90%





G. Massachusetts New Homes with ENERGY STAR®

Program Theory 2010-2012 Final Report

MASSACHUSETTS New Homes with ENERGY STAR®

PROGRAM THEORY

2010-2012

Final Report

July 13, 2009

Submitted to:

The Joint Management Committee

Submitted by:
Dorothy Conant, Consultant

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1 Introduction

An effective Program theory needs to be firmly grounded in the reality of the market it targets. It needs to recognize the dynamics of that market and be ready to capitalize on changes in market conditions that provide increased opportunities for getting market players to change their behavior and to produce sustainable changes in the market. It also needs to address the roles of all key players in the market. The first step in presenting the theory behind the Massachusetts New Homes with ENERGY STAR® Program (Program) plans for 2010 through 2012 is describing where the Program stands today. This need is met by providing a history of Massachusetts residential new construction programs, their achievements to date, and a current picture of the residential new construction market in Massachusetts.

2 Program History

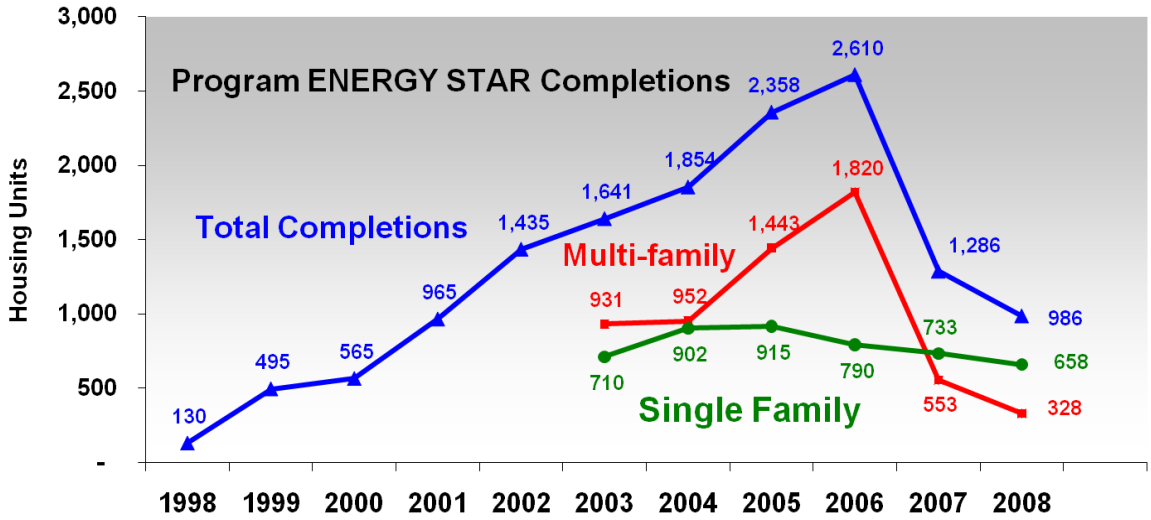
Residential new construction programs in Massachusetts began in 1991 with The Energy Crafted Homes (ECH) Program. The ECH Program, sponsored by a consortium of New England electric utilities and the Joint Management Committee (JMC), promoted state-of-the-art construction for electrically heated homes. The ECH Program provided leading edge technical information to builders and was successful in getting participating builders to incorporate the best building science and energy efficiency approaches in their homes. However, the market for new electrically heated homes in New England is small, and the potential for a program focused on only electrically heated homes to produce significant and sustainable energy-efficiency advances in the broader residential new construction market was negligible.

In April of 1998 the ECH Program was retired, and the Massachusetts ENERGY STAR Homes Program was introduced. Opening the Program to multi-family building projects and switching to fuel-neutral incentives greatly increased the number of new construction projects eligible to participate. In addition, fuel-neutral based incentives enabled gas utility participation. Greater emphasis on energy-efficient lighting and the introduction of incentives for installing energy-efficient appliances increased potential savings per home. Use of the national ENERGY STAR name and logo took advantage of existing brand name recognition. Basing ENERGY STAR-qualification criteria on Home Energy Rating System (HERS) performance made the Program accessible to all builders. The Program is a fully integrated gas and electric program managed by the JMC, a consortium of electric and gas Program Sponsors.

Figure 2-1-1 shows that the number of housing units qualified annually through the Program grew steadily from 130 housing units in 1998 to 2,610 units in 2006, and then dropped sharply in 2007. In 2006, Environmental Protection Agency (EPA) requirements for ENERGY STAR qualification changed. The new standards went into effect on January 1, 2007 and most multi-family buildings over three stories became ineligible for ENERGY STAR qualification. In addition, all qualifying homes had to meet new duct leakage standards and pass a strict Thermal Bypass Checklist (TBC) inspection. The drop in the number of housing units qualified through the Program in 2007 primarily reflects the fact that most multi-family buildings over three stories

became ineligible for ENERGY STAR qualification; one-third of all housing units qualified in 2006 were multi-family units in four-story or higher buildings. A second factor contributing to fewer housing units being qualified in 2007 and 2008 is the overall slowdown in residential new construction activity; the number of housing permits issued in Massachusetts in 2008 was half (50%) the number issued in 2006. As of the end of 2008, more than 14,300 housing units had been ENERGY STAR qualified through the Program.

Figure 2-1: Program ENERGY STAR Completions



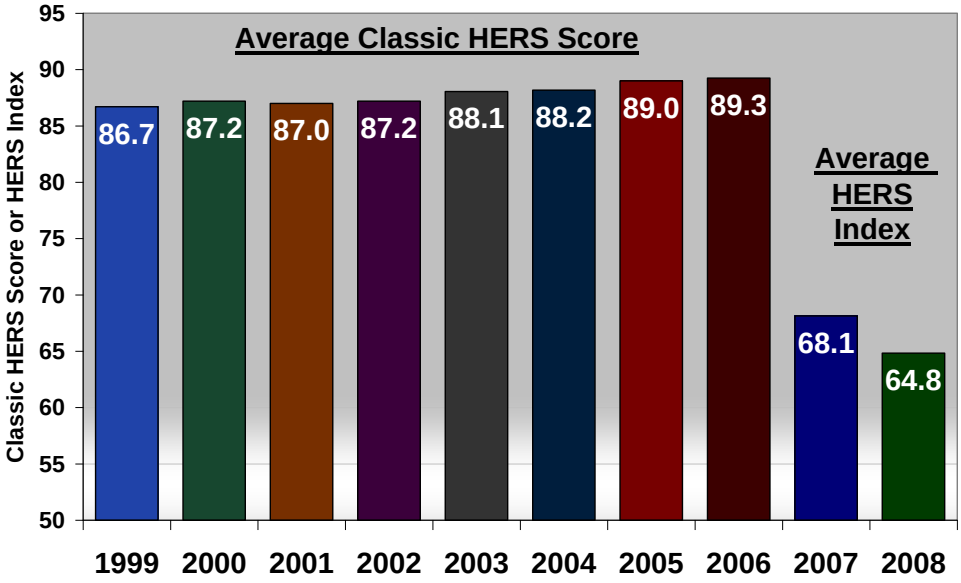
The average HERS rating of ENERGY STAR-qualified housing units has improved each year. Through 2006, ENERGY STAR-qualified housing units were rated using the classic HERS score[45]. Homes completed in 2007 and 2008 were rated using the HERS index[46] approach. Figure 2-2Figure 2-2 shows the average classic HERS score for housing units ENERGY STAR qualified in 1999 through 2006 and the average HERS index for housing units ENERGY STAR qualified in 2007 and 2008. As shown, the average classic HERS score of housing units qualified in 1999 was 86.7 and by 2006 climbed to 89.3; this 2.6 point increase in the average classic HERS score equates to an increase of 13% in energy efficiency. The average classic HERS score of 89.3 achieved in 2006 corresponds to a home 46.5% more energy efficient than

[45] The classic HERS Score is a scoring system established by the Residential Energy Services Network (RESNET) in which a home built to the specifications of the HERS Reference Home (based on the 1993 Model Energy Code) has a HERS Score of 80. Each 1-point increase in a HERS Score is equivalent to a 5% increase in energy efficiency. Source: http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_HERS

[46] The HERS Index is a scoring system established by RESNET in which a home built to the specifications of the HERS Reference Home (based on the 2006 International Energy Conservation Code) scores a HERS Index of 100, while a net zero energy home scores a HERS Index of 0. The lower a home's HERS Index, the more energy efficient it is in comparison to the HERS Reference Home. Each 1-point decrease in the HERS Index corresponds to a 1% reduction in energy consumption compared to the HERS Reference Home. Source: http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_HERS

the 1993 Model Energy Code reference home. The average HERS index improved from 68.1 in 2007 to 64.8 in 2008, representing a 3.3% increase in energy efficiency. The average 64.8 HERS index achieved in 2008 corresponds to a home 35.2% more energy efficient than the 2006 International Energy Conservation Code reference home.

Figure 2-2: 1999 – 2008 Average HERS Ratings



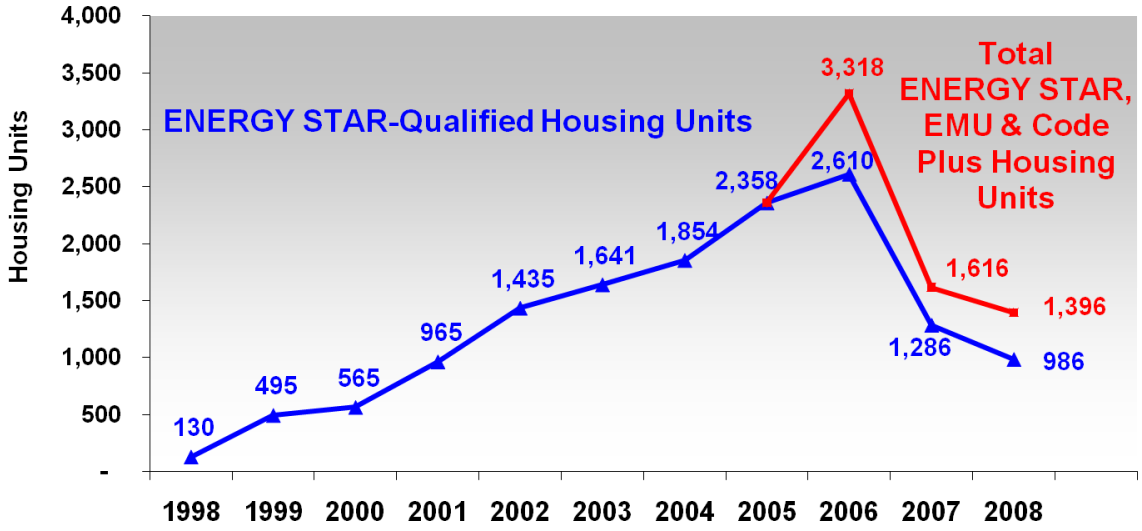
2.1 Expanded Participation Options

In response to the 2006 changes in EPA requirements for ENERGY STAR qualification, the Massachusetts Program introduced Energy Measure Upgrade (EMU) participation options designed to capture energy savings from builders who, for whatever reason, were not able to meet the new EPA ENERGY STAR requirements. The three primary goals of EMUs were:

- To keep builders who did not meet ENERGY STAR standards from dropping out of the Program entirely
- To enable the Program to work with and train builders who did not meet the new ENERGY STAR standards in their current homes to meet the new standards in their future homes
- To install compact fluorescent lamps (CFLs) to increase overall Program electric energy savings

In 2007, the Program replaced the EMU participation option with a Code Plus participation option for builders coming close to, but falling short of, meeting all requirements for ENERGY STAR certification. As of 2009, the Code Plus option is available only to builders new to the Program who strive for ENERGY STAR qualification, but fall shy of meeting all ENERGY STAR requirements; these builders may be allowed to have their first project default to the Code Plus participation path. Figure 2-3 shows the total number of housing units (ENERGY STAR, EMU and Code Plus) served annually by the Program from 1998 through 2008. Overall, more than 1,400 housing units have participated in the EMU or Code Plus options, bringing the total number of housing units served through the Program to over 15,700.

Figure 2-3: Total ENERGY STAR, EMU and Code Plus Housing Units



2.2 Market Penetration

While the number of housing units ENERGY STAR qualified annually has dropped in recent years, the number of new housing units constructed in Massachusetts has also dropped. Looking at ENERGY STAR-qualified housing units as a percentage of all new housing units completed in Massachusetts, Figure 2-4 shows that the Program consistently qualified an estimated 7% of new single family homes from 2005 through 2007, and in 2008 increased the penetration rate to 10% of new single family homes. As described earlier, the 2006 to 2007 drop in qualified multi-family units primarily reflects the Program not being able to serve most buildings over three stories. Figure 2-4 shows that multi-family units qualified in 2006 represented 35% of all multi-family units constructed. ENERGY STAR-qualified multi-family units in buildings three stories or under represented an estimated14% of all multi-family units constructed in 2007 and 11% of all multi-family units constructed in 2008. Putting the 2007 and 2008 multi-family ENERGY STAR penetration rates into perspective, ENERGY STAR-qualified multi-family units in three

story and under buildings represented 17% of all constructed multi-family units in 2005 and 18% in 2006.

Figure 2-4: ENERGY STAR Completions as Percentage of Statewide Completions

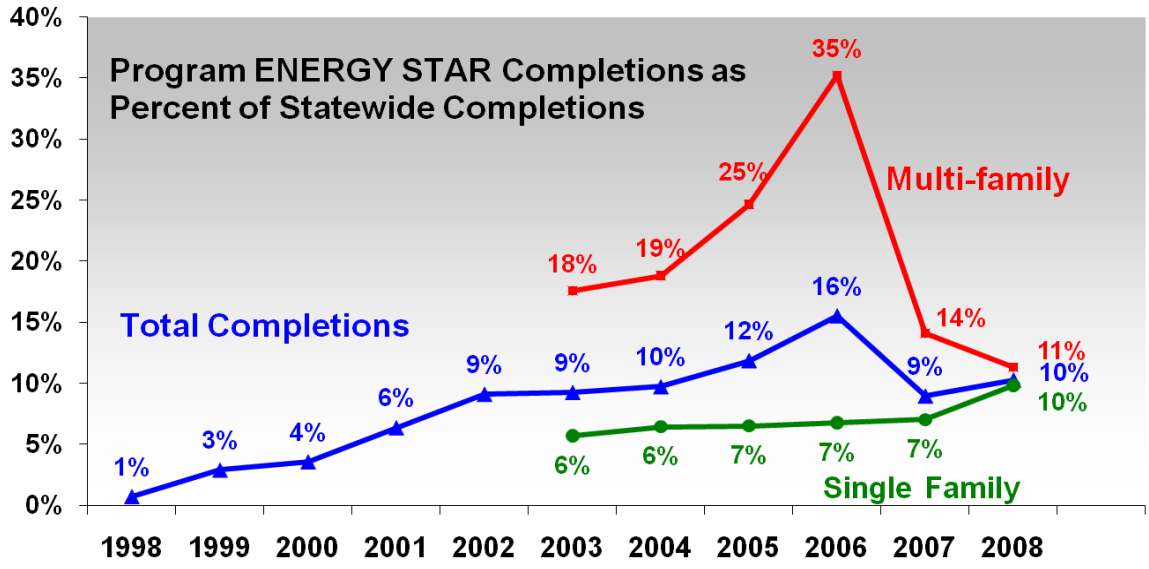
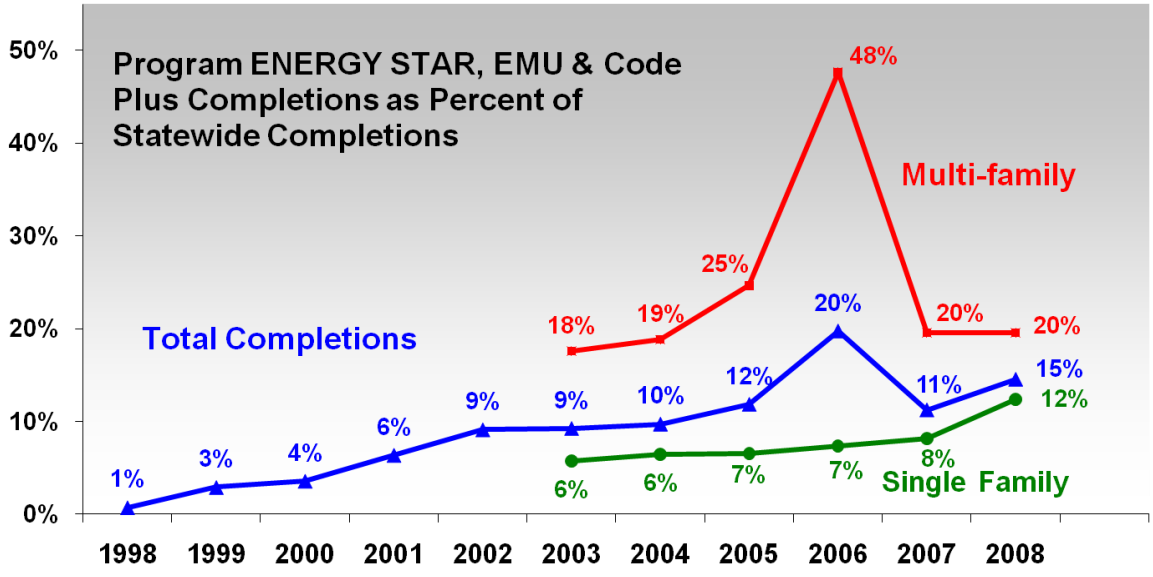


Figure 2-5Figure 2- shows that including Code Plus units raises the percentages of new housing units served through the Program in 2008 from 10% to 12% of single family homes, from 11% to 20% of multi-family units and from 10% to 15% of all housing units constructed in 2008.

Figure 2-5: ENERGY STAR, EMU and Code Plus Completions as Percentage of Statewide Completions



2.3 Transition to Market-Driven Model

In 2007, the Program selected a new implementation contractor and took steps to move toward a market-driven model. The Program subcontracted independent HERS raters to work with participating builders. In 2007, the Program assigned HERS raters to builders. In 2008, the Program provided a list of qualified HERS raters from which builders choose their preferred rater. In 2009, builders can choose to work with any RESNET-certified rater for Massachusetts. Currently, the Program pays the majority of the cost of HERS rater services.

2.4 Beyond ENERGY STAR Standards

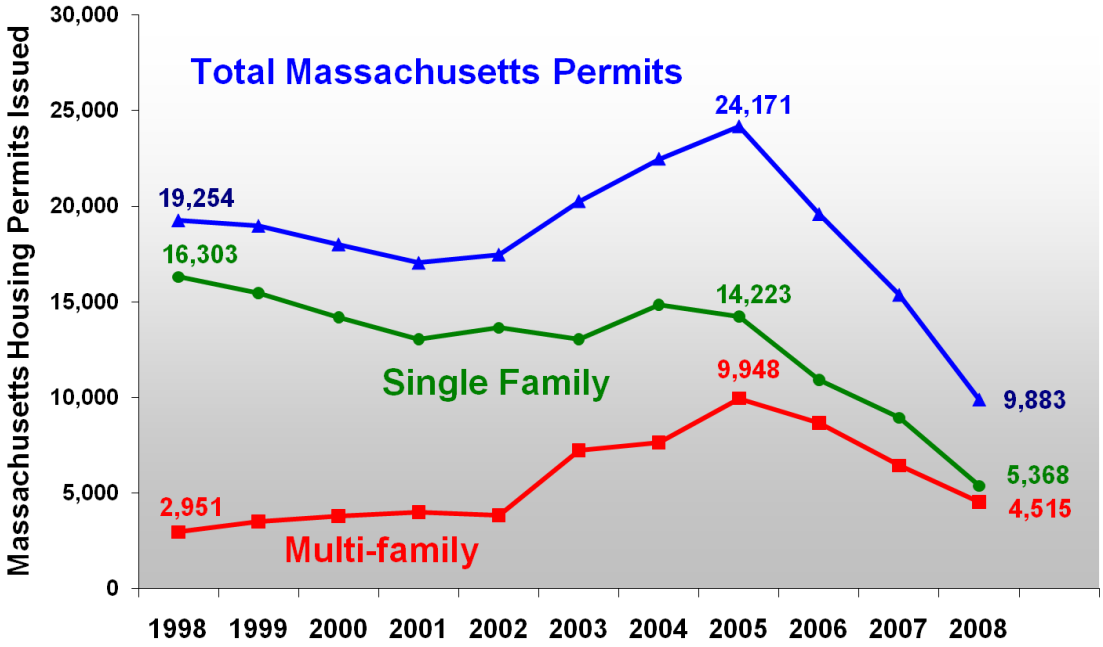
The Program consistently encourages builders to build homes that go far beyond meeting the minimum requirements for ENERGY STAR qualification and offers tiered incentives—higher incentives for more energy-efficient homes. In 2008, the Program invited builders to participate in the "***Zero Energy Challenge***" pilot program. This pilot was established to encourage builders and developers who already recognize the benefits of energy-efficient construction to design and construct homes that use considerably less energy than traditional homes. The pilot's format was competitive, providing selected builders an opportunity to compete against each other to deliver single-family detached residences with HERS indices well below 35. Five home builders competed in the pilot and were awarded prizes totaling $50,000. Two of the five completed super-energy-efficient single-family homes are market-rate homes and three are affordable homes.

3 Current Massachusetts New Residential Construction Market

For several years the demand for new homes exceeded the supply, allowing builders to more easily sell new homes regardless of energy efficiency. During this time, many builders of ENERGY STAR-qualified homes did not market the ENERGY STAR status of their homes. A survey of 100 owners of ENERGY STAR homes conducted in January 2007 showed only slightly more than one-half (55%) were aware that they lived in an ENERGY STAR-qualified home.[47]

Figure 3-1 shows that the number of housing permits issued in Massachusetts has steadily fallen since 2005; the number of housing permits issued in 2008 was less than half (41%) the number issued in 2005. Housing permits continue to fall in 2009; total permits issued January through May 2009 are 33% lower, single family permits 32% lower and multi-family permits 35% lower than in January through May 2008.

Figure 3-1: Annual Massachusetts Housing Permits Issued



With housing permits falling and the market for new homes much more competitive, builders participating in the Program gained a better appreciation of the value in marketing the ENERGY STAR status of their homes as a way to differentiate themselves and their homes. Over three-fourths (78%) of 40 ENERGY STAR builders interviewed in November and December 2007[48]

47 Nexus Market Research, Inc. *2006 ENERGY STAR® HOMES NEW HOME BUYER SURVEY REPORT.* Submitted to Joint Management Committee, March 2007.

48 Nexus Market Research Inc. and Dorothy Conant. *2007 Massachusetts ENERGY STAR® Homes Builder Interview Report.* Submitted to the Joint Management Committee of the Massachusetts New Homes with ENERGY STAR® Program, April 2008.

said they thought it was very important for the Program to market to end users, educating them about the benefits of living in an ENERGY STAR home and encouraging them to look for an ENERGY STAR home when shopping for a new home. In general, interviewed builders said that homebuyers are aware of ENERGY STAR-qualified appliances and lighting, but not ENERGY STAR homes. Almost three-fourths (73%) of interviewed builders reported they would be more likely to use ENERGY STAR in their marketing, or to increase the emphasis on ENERGY STAR in their marketing, if the Program marketed directly to end users.

Thirty ENERGY STAR builders interviewed in December 2008 and January 2009[49] were asked, "How important, or valuable, is it to you to build ENERGY STAR homes and be able to market them as ENERGY STAR-qualified homes in the current housing market?" Almost all of the interviewed builders (28 of 30) responded it was valuable. Most builders (27 of 30) also said that homebuyers are showing more interest in energy efficiency. A smaller majority of interviewed builders (57% or 17 builders) report homebuyers are showing more awareness of and/or interest in buying an ENERGY STAR-qualified home. Several additional builders mentioned that once they explain what an ENERGY STAR home is, buyers are interested. Four builders say buyers came to them specifically looking for an ENERGY STAR home in 2008 and another two builders say that ENERGY STAR qualification helped sell some of their homes. Of the15 interviewed builders who say that they are taking advantage of marketing support offered by the Program, 11 (79%) say that they think it is helping them sell their ENERGY STAR homes by letting buyers know they build energy-efficient homes and moving people to ask questions about what is involved in building an ENERGY STAR home.

4 The Story

The Program will face several challenges in the next three years. Given the current recession, depressed new residential construction market, and unknown timetable for recovery, the Program will need to be flexible and prepared to adapt to changing market conditions. In addition, EPA will be implementing new requirements for ENERGY STAR qualification in 2011, which will require additional builder training and more involved compliance verification. These new requirements will also likely increase the cost of building an ENERGY STAR-qualified home, which could make it harder to retain participating builders who are already struggling in today's depressed and highly competitive new housing market.

The overall goals of the Program will not change over the next three years. The Program will continue to focus on capturing lost opportunities, encouraging energy-efficient construction, and transitioning to a market-driven model. The Program will continue its commitment to a comprehensive whole-house approach to energy efficiency, offer financial incentives for homes that meet and exceed Program standards, incorporate incentives for selected high-efficiency

[49] Nexus Market Research Inc. and Dorothy Conant. *2008 Massachusetts New Homes with ENERGY STAR® Builder Interview Report.* Submitted to the Joint Management Committee of the Massachusetts New Homes with ENERGY STAR® Program, June 2009.

appliances and HVAC equipment, provide free CFLs for all appropriate hard-wired sockets in participating homes, and provide builder training. The Program will work with eligible multi-family buildings–multi-family buildings eligible to be ENERGY STAR labeled under EPA rules–and, to maintain builder participation, will offer participation options for builders who fall short of meeting all the requirements for ENERGY STAR qualification. The Program will also explore ways to more actively support energy code activities to help pull up the energy performance of those homes that do not seek out ENERGY STAR qualification.

To achieve deeper savings going forward, the Program will encourage builders to build homes that exceed minimum ENERGY STAR standards by offering tiered incentives that reward them for building homes that achieve very high energy savings. To achieve broader participation, the Program will enhance media marketing to consumers, builders and trade allies. Participating HERS raters will also recruit new builders and projects. (Program marketing and recruiting efforts in 2008 resulted in signing up new housing units representing 49% of housing permits issued in 2008.)

Program Sponsors believe their plans for the next three years address the reality of current market conditions and will enable them to be prepared to capitalize on changes in market conditions that provide increased opportunities for getting market players to change their behavior and to produce sustainable changes in the market. Program Sponsors believe the Program can increase the penetration of ENERGY STAR Homes and achieve deeper savings in participating homes, as well as increase energy efficiency in construction not eligible for ENERGY STAR qualification, and produce measurable changes in builder and homebuyer behavior over the next three years.

4.1 ENERGY STAR Awareness

The Program will work with builders to increase homebuyer awareness of ENERGY STAR-qualified homes and the benefits of owning and living in an ENERGY STAR-qualified home. Despite ever increasing general awareness of the ENERGY STAR label, many Massachusetts homebuyers are not aware of ENERGY STAR-labeled homes or the Massachusetts New Homes with ENERGY STAR Program. At the national level, unaided recognition[50] of the ENERGY STAR label grew from 25% in 2001 to 58% in 2007 and 62% in 2008, while aided recognition[51] grew from 40% in 2001 to 74% in 2007 and 76% in 2008.[52] Awareness of the ENERGY STAR label is higher among Massachusetts homebuyers. The results of a survey of 200 Massachusetts homebuyers conducted in January 2007[53] showed that unaided recognition of the ENERGY

50 Unaided recognition of the ENERGY STAR label is when the survey respondent recalls seeing or hearing of the label before being shown the label.

51 Aided recognition of the ENERGY STAR label is when the survey respondents recall seeing or hearing of the label after being shown the label.

52 http://www.cee1.org/eval/2008_ES_survey_rep.pdf

53 Nexus Market Research, Inc. *2006 Massachusetts ENERGY STAR® Homes New Home Buyer Survey Report.* Submitted to the Joint Management Committee of the Massachusetts ENERGY STAR® Homes Program, March 2007.

STAR label was 81%. However, many fewer homebuyers were aware of ENERGY STAR homes or the Massachusetts ENERGY STAR Homes Program; only 36% had seen or heard of an ENERGY STAR-labeled home and only 13% were aware of the Massachusetts ENERGY STAR Homes Program. Almost two-thirds (66%) of 40 builders participating in the Massachusetts New Homes with ENERGY STAR Program interviewed in late 2007[54] said that fewer than half of homebuyers were aware of ENERGY STAR homes, and three-fourths of interviewed builders said that none or very few homebuyers aware of ENERGY STAR homes were aware of the Massachusetts Program.

Thirty builders participating in the Massachusetts New Homes with ENERGY STAR Program interviewed in December 2008 and January 2009[55] report an increase in homebuyer awareness of and interest in energy efficiency and ENERGY STAR homes. Almost all interviewed builders (90%) report an increase in homebuyer awareness of or interest in energy efficiency and over half (57%) report an increase in homebuyer awareness of or interest in buying an ENERGY STAR home.

Increasing homebuyer awareness of what an ENERGY STAR-qualified home is and the benefits of owning and/or living in an ENERGY STAR-qualified home is critical. Many builders tell potential homebuyers their homes are energy efficient. What many homebuyers do not know is that the only way to be sure a home is energy efficient is to have it tested. One of the most important things the Program offers to homebuyers is third-party verification that a home is energy efficient. Therefore, a key component of messaging to homebuyers is explaining that if they buy an ENERGY STAR home they will know they have an energy-efficient home—they will not have to wonder if energy-efficiency claims made by the builder or real estate agent are accurate. ENERGY STAR homes are not the only energy-efficient homes being built today, but if a home has the ENERGY STAR label potential buyers can be confident the home is energy efficient instead of relying on promises that it is energy-efficient. In addition, many owners of ENERGY STAR homes value non-energy related benefits associated with living in an ENERGY STAR home such as having a more quiet, comfortable and less drafty home; better indoor air quality; better lighting features; protection against energy bill increases; and a higher resale or rental value.[56]

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54 Nexus Market Research, Inc. and Dorothy Conant. *2007 Massachusetts ENERGY STAR® Homes Builder Interview Report*. Submitted to the Joint Management Committee of the Massachusetts New Homes with ENERGY STAR® Program, April 2008.

55 Nexus Market Research, Inc. and Dorothy Conant. *2008 Massachusetts ENERGY STAR® Homes Builder Interview Report.* Submitted to the Joint Management Committee of the Massachusetts New Homes with ENERGY STAR® Program, June 2009.

56 Nexus Market Research, Inc. and Dorothy Conant. *Massachusetts New Homes with ENERGY STAR® Assessment of Non-Energy Impacts*. Submitted to the Joint Management Committee of the Massachusetts New Homes with ENERGY STAR® Program, March 2009.

4.2 More than ENERGY STAR

Over the last few years, Program offerings expanded beyond ENERGY STAR qualification to incorporate participation options, including incentives, for builders who want to increase the energy efficiency of the homes they build, but may fall short of meeting all ENERGY STAR requirements, and for developers of four-and five-story multi-family buildings not eligible under EPA rules to be ENERGY STAR labeled.

In order to maintain and grow participation in the Program over the next three years, additional non-ENERGY STAR participation options may be introduced. For example, many experienced builders are building fewer or, in some cases, no new homes in today's market; they are predominately building additions and/or doing major renovations. Large additions and major renovations, similar to new homes, offer significant opportunities for energy savings through energy-efficient construction. Depending on market conditions and participation levels, the Program will consider offering participation options for addition and renovation projects that meet ENERGY STAR standards, but are not eligible to receive the ENERGY STAR label.

4.3 Something for Everyone

To make sustainable changes in the marketplace, ENERGY STAR homes need to be available in all size and price ranges. The Program has a history of working with all types of builders, ranging from high-end custom-home builders to developers of low income and affordable housing.

4.4 Low-income and Affordable Housing

More than one-third of the housing units served by the Program in 2008 were low income (housing units built for households with income not more than 60% of estimated Massachusetts State Median Income). Affordable housing (housing that serves families and individuals with annual incomes at or below 80% of area median income) is likely to be one sector of the new housing market that will continue to initiate new projects in a depressed housing market. In addition to working with publically funded housing projects in Massachusetts, which are required to meet ENERGY STAR standards, the Program will work to recruit developers of privately funded affordable housing projects and work with Habitat for Humanity and other non-profit builders of affordable housing.

4.5 Multi-family Housing

Units in all multi-family buildings with three or fewer stories are eligible to earn the ENERGY STAR label. Through 2006, high-rise (four story or higher) multi-family buildings were grandfathered for ENERGY STAR qualification in Massachusetts, and many participated in the Program; they accounted for one-third of all of housing units ENERGY STAR qualified through the Program in 2006. In 2007 and 2008, only units in four- or five-story multi-family buildings permitted as residential structures by local building departments or units over commercial space in five-story or fewer commercial buildings could qualify for ENERGY STAR qualification using the HERS rating system. In 2009, EPA expanded the eligibility requirements for

qualifying individual multi-family units under the ENERGY STAR New Homes Program to include more over-three-story buildings. The Program will work with interested developers of any multi-family building that meets EPA eligibility requirements for ENERGY STAR qualification.

4.6 Green Building

Media coverage of environmental issues, the importance of reducing our carbon footprint, and how to become more "green" has increased homebuyer interest in incorporating green building practices in their new homes. Meeting ENERGY STAR standards is a requirement of several green building programs, including the Leadership in Energy and Environmental Design (LEED) and Green Building Rating System™ and the soon to be launched Home Builders Association of Massachusetts Build Green Massachusetts initiative. The Program will continue to work with and encourage green building programs to adopt ENERGY STAR standards.

4.7 Renewable Energy

The Program will continue to promote incorporation of renewable-energy technologies—photovoltaics and solar thermal. In addition, the Program will encourage builders to make homes "renewable ready" by siting homes to maximize solar potential and running wiring and insulated copper piping from mechanicals to the roof, which makes it easier and less expensive to add solar options at a later date.

4.8 Zero Energy and Passive House Homes

The Program will pursue deeper savings by encouraging builders to move toward building zero-energy and low-energy homes, offering more worthwhile tiered incentive levels as homes get closer to zero-energy status or Passive House standards. The Program will provide information on existing zero-energy and Passive House models that work, and promote links to building science resources, zero energy home plans and other resources that can help interested builders develop and complete a zero-energy home.

4.9 Marketing Approach

Marketing strategies to reach builders and other market players will be expanded over the next three years. The Program will market to consumers, but the main focus of marketing efforts will be on reaching as many builders as possible. The Program conducts aggressive direct builder outreach; provides information for both builders and consumers on its website (www. massenergystarhomes.com)—information will also be available on the new consolidated statewide website being developed that will provide information on all utility sponsored energy-efficiency programs; gives presentations at home builder association and other interested organization meetings; and participates in home and trade shows, builders' conferences, and other public relations activities. The Program offers energy-efficiency training to builders, architects, subcontractors and HERS raters. In addition, the Program will be offering training to real estate agents, building code officials, and other industry players.

With the number of 2008 housing permits issued at half (50%) their 2006 level, and unlikely to climb back to 2006 levels by 2012, Program Sponsors believe they can use their resources to reach a much higher proportion of the new housing market. The Program's goal is to reach out and somehow communicate with every permitted building. One of the first steps in this process is to establish relationships with local permitting departments and encourage them to hand out Program literature to all builders obtaining building permits. The Program has already established relationships with several of the local permitting offices across the Commonwealth; where relationships do not exist or are unable to be established, the Program will purchase permit information from outside services.

4.10 Transition to Market-Driven Model

In 2007, the Program subcontracted independent HERS raters to work with builders; the Program assigned a HERS rater to each project to conduct plans analysis, work with the builder to help them meet ENERGY STAR standards, conduct inspections and perform final verification testing. In 2008, the Program provided a list of accredited HERS raters and builders chose their rater. In 2009, builders can choose to work with any RESNET-certified rater for Massachusetts.

Currently the Program pays for the cost of basic HERS rater services provided to builders. The Program will continue to train and support raters in meeting Program objectives. The Program implementation contractor will continue to monitor, track and report Program activity to the Sponsors, and will also be required to conduct QA/QC of field activities and advise the Sponsors on necessary Program enhancements.

5 Market Barriers and What Can be Done About Them

There are two distinct categories of barriers the Program needs to address. In one category are barriers that are beyond the direct control of the Program but need to be taken into consideration in developing a Program theory and need to be factored into the design of an effective Program. In the other category are barriers that can be addressed directly through the Program.

5.1 Market Barriers Beyond the Program's Direct Control

The following market barriers are beyond the direct control of the Program. At the same time, they impact the ability of the Program to effect changes in the residential new construction market.

- Volatile energy prices
- Depressed housing market
- General apathy and lack of information about energy efficiency
- Lack of state tax credits for energy efficient building
- Poor building code compliance and enforcement
- New-home buyers are a very small and difficult to target consumer segment.

Volatile Energy Prices: Energy prices are totally outside the influence of the Program. However, homebuyer interest in energy efficiency is directly related to energy prices. During periods of high energy prices, homebuyers are more likely to ask their builders and/or real estate agents about energy efficiency and, if they are aware of ENERGY STAR homes, more likely to build or look for an ENERGY STAR home. However, as energy prices fall, homebuyer interest in energy efficiency wanes. Several ENERGY STAR builders interviewed in late 2008 and early 2009[57] reported that homebuyer interest in energy efficiency increased last summer when gas and oil prices reached new highs, but that by late fall, when energy prices were lower, homebuyer interest in energy efficiency had also declined.

Depressed Housing Market: The current depressed housing market offers both opportunities and challenges for the Program. On one hand, a more competitive housing market provides an opportunity for the Program to attract builders interested in finding ways to differentiate themselves and their homes. The message to these builders will be that by building ENERGY STAR-qualified homes they will be able to differentiate themselves in this tough market as builders who deliver a superior product, and that the Program provides marketing support to help them sell their ENERGY STAR homes. On the other hand, a depressed housing market makes it more difficult to attract builders who think the only way to be competitive is to keep their home prices low.

Apathy about Energy Efficiency: Public interest in energy efficiency, green building, protecting the environment and reducing our carbon footprint has clearly increased in recent years. Even so, based on builder interviews, many homebuyers are still not asking about energy efficiency when shopping for a new home and/or not willing to pay for energy-efficient options. Looking ahead, the combined impact of the recently passed Green Communities Act legislation, continued media coverage of energy and environmental issues, the Program increasing its marketing to both builders and homebuyers, ENERGY STAR builders more aggressively marketing the benefits of ENERGY STAR homes, and green building programs marketing energy efficiency as a key component of green building will likely increase consumer interest in energy efficiency over time. However, a lack of consumer interest in or awareness of the importance of making energy-efficient choices when buying or building a new home is likely to remain an issue that will need to be dealt with through 2012.

Tax Credits for Energy-Efficient Building: Tax credits or deductions for energy-efficient building increase the cost effectiveness of implementing energy efficiency upgrades. In addition, people are always looking for ways to reduce their taxes, so information on the availability of energy-efficient building tax credits on tax forms and in tax preparation software as well as in published tax preparation guides, magazine articles and newspapers could help increase the general public's awareness of energy-efficient building and the likelihood that consumers will

[57] Nexus Market Research, Inc. and Dorothy Conant. *2008 Massachusetts ENERGY STAR® Homes Builder Interview Report*. Submitted to the Joint Management Committee of the Massachusetts New Homes with ENERGY STAR® Program, June 2009.

ask about energy efficiency when shopping for a new home. The Program will endorse and support efforts to institute tax credits for energy-efficient homes.

Building Code Compliance and Enforcement: The quality of building inspections and level of code enforcement varies from inspector to inspector and town to town. The sense is that most, but not all, code officials are aware of the current energy code requirements, but are not necessarily enforcing them. Even those who are enforcing compliance with the code may not be aware of the benefits of ENERGY STAR-qualified homes. The focus for many builders and buyers is to build a home as quickly as possible and pass code inspections so the builder can be paid and the buyer can move into their new home.

Looking ahead, as Massachusetts building codes are revised and the Board of Building Regulations and Standards (BBRS) requires that certified energy inspectors enforce energy code requirements in all buildings, code compliance will improve. With BBRS using certified energy inspectors to enforce code, the demand for HERS rater services outside the Program may increase substantially. To ensure there are enough certified HERS raters available to meet both the Program and code enforcement needs, the Program's implementation contractor will be a HERS provider of last resort to help new raters become established as part of the open market structure.

The Program is also exploring mechanisms to support energy codes on many fronts (e.g. code official training, verification assistance, promoting more stringent codes) and claim savings for quantifiable efforts. The results of this research may result in more engaged code support by the Program.

New-home Buyers a Small Consumer Segment: Only a small portion of consumers are shopping for a home at any one time, and buyers shopping for newly constructed homes are a small portion of all homebuyers. Marketing efforts will include large scale multi-media advertising campaigns geared toward homebuilders, consumers and trade ally groups. The Program's multi-media campaign will include strategic television partnerships with local affiliate or cable programming providers, radio live reads and on-air interviews, print advertising in builder and trade publications, direct marketing via email/fax lists, and a very heavy online advertising presence.

5.2 Market Barriers the Program Can Address Directly

Sponsors believe that a well-designed Program will be able to make significant progress in overcoming market barriers of awareness and understanding among builders, subcontractors and homebuyers.

Builders and Subcontractors: There are still builders and subcontractors who are either unaware of energy-efficient equipment and installation practices or do not care enough to

address energy efficiency. Based on builder interviews conducted over the last several years[58], most builders who are not currently participating in the Program are aware of ENERGY STAR homes and have at least a basic understanding of what goes into building an ENERGY STAR home. However, many builders who are not participating in the Program, including some who already build very energy-efficient homes, will not be interested in building ENERGY STAR-qualified homes until buyers ask for them. Program messaging to these builders will emphasize documented increases in consumer interest in energy efficiency and awareness of ENERGY STAR homes and the advantages of building ENERGY STAR-qualified homes that will enable them to differentiate themselves in today's tight housing market as builders who deliver a superior product. Equally important to some builders will be the financial incentives, technical training and marketing support that the Program offers.

Over the years, interviewed builders say one of the biggest changes they make when they start building ENERGY STAR homes is that they supervise their subcontractors more closely to ensure their work meets ENERGY STAR standards. Builders also say that once their subcontractors know what is expected, they have no problem meeting ENERGY STAR standards. The Program has conducted on-site training and seminars for insulation and HVAC subcontractors working on ENERGY STAR homes. In 2006, when duct leakage standards were added to the requirements for ENERGY STAR qualification, many HVAC subcontractors needed training on how to meet the new standards. Follow-up interviews with subcontractors who participated in training revealed many of the subcontractors had adopted what they learned as their standard practice and in some cases they now market themselves as being able to meet ENERGY STAR standards.[59] The Program will continue to train subcontractors working on ENERGY STAR homes and also participate in training offered by trade allies.

Offering training will be particularly important in 2009 and 2010 to ensure builders and subcontractors are prepared to meet additional new EPA ENERGY STAR standards scheduled for implementation in January 2011. Part of the new standards will be an increased emphasis on Quality Installation and Verification (QIV) of HVAC systems, which will be an important aspect of saving more electricity in new homes. The Program is exploring ways to ensure that HVAC contractors will be able to meet these new higher efficiency standards, and will emphasize QIV starting in 2010.

Homebuyers: Many homebuyers do not know what energy-efficient building means when they enter the new housing market; and most builders tell homebuyers that all the homes they build are energy efficient. Homebuyers do not know what questions to ask, and many get so

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58 Builder interviews conducted by Nexus Market Research, Inc. and Dorothy Conant in 2002, 2003, 2004, 2006, 2007 and 2008.

59 Nexus Market Research, Inc. and Dorothy Conant. *Massachusetts ENERGY STAR® Homes: Duct Sealing Process Evaluation.* Submitted to the Joint Management Committee of the Massachusetts ENERGY STAR® Homes Program, March 2007.

overwhelmed with all the decisions they are asked to make when purchasing a new home that energy efficiency and operations and maintenance cost-benefit considerations may never get addressed. Program messaging to homebuyers will focus on the importance and benefits of making energy-efficient choices and that the only way to know for sure if a home is energy efficient is to have the home's energy efficiency verified by an independent third party, and this is what the Program does. If you buy an ENERGY STAR home you know it is energy efficient. Also, by encouraging builders to more aggressively market the ENERGY STAR status of their homes, explain to potential buyers what goes into building an ENERGY STAR home, and describe the energy and non-energy benefits of living in an ENERGY STAR home, many homebuyers will become educated about what to look for and will be likely to ask more energy related questions.

6 Theory Elements in More Detail

As previously stated, an effective Program theory needs to address the reality of the market it targets and be ready to capitalize on changes in market conditions that provide increased opportunities for getting market players to change their behavior and to produce sustainable changes in the market. It also needs to address the roles of all key players in the market. The theory elements presented here build on the previous sections' discussions of the history and achievements of the Program, the current residential new construction market and Program goals for 2010 – 2012.

6.1 Marketing to Consumers and Builders

Marketing will continue to aggressively focus on builder recruiting. Influencing builders has the biggest impact on Program participation and, therefore, the Program will focus on reaching as many builders as possible.

Messaging to both consumers and builders will include promoting the benefits of building homes that go beyond minimum ENERGY STAR standards to homes that approach net-zero energy use. Several builders currently participating in the Program are building homes approaching net-zero energy use. Program marketing will include case studies of the winners of the "***Zero Energy Challenge***" pilot program. The Program will provide both technical and marketing support to participating builders and higher incentives for homes at the highest energy saving tier. Marketing support will help builders market their ENERGY STAR-qualified homes by offering sales personnel training on the benefits of ENERGY STAR-qualified homes and helping them incorporate the ENERGY STAR logo and messaging in their advertising, web sites, and model homes. Sponsors believe getting builders to aggressively market the benefits of ENERGY STAR-qualified homes is a cost-effective way to target the consumer segment in the market to buy a new home.

6.2 Impact of Depressed Housing Market

The number of building permits issued in 2008 was half the number issued in 2006 and is not projected to show significant growth over the next few years. It will be harder to convince builders to spend more money to meet ENERGY STAR standards at the same time that housing prices are falling or stagnant.

In order to maintain Program participation levels and achieve savings goals, the Program will need to reach a larger percentage of active builders and expand Program offerings to include more types of residential housing construction. The Program will work with local permitting departments to get information to all builders filing for permits on how the Program can help them build more energy-efficient homes. The message to builders will be that by building ENERGY STAR-qualified homes they will be able to differentiate themselves in this tough market as builders who deliver a superior product.

The Program's Sponsors will also work to find ways to address residential housing construction not currently eligible for ENERGY STAR certification, including major home renovations and additions. The purpose of a pilot program, introduced in 2009, is to address the gap between the Residential Conservation Services Program and the Massachusetts New Homes with ENERGY STAR Program. For new addition or major renovation projects (without a gut rehabilitation), this pilot program provides a seamless option for customers to address both the existing part of the home and the new addition. The Program's Sponsors believe substantial energy savings could be achieved cost-effectively by offering these types of construction projects ineligible for ENERGY STAR qualification the same services and support available to builders of ENERGY STAR-qualified homes.

6.3 Legislation and Codes

Recent legislation (The Green Communities Act—July 2008) requires electric and gas utilities and energy efficiency service providers to invest in all energy efficiency and demand side resources that are cost-effective or cheaper than supply. This represents a sea change in philosophy with regard to energy efficiency program funding in the Commonwealth and an opportunity to reinvent the Program. Also, Massachusetts will be adopting the latest edition of the International Energy Conservation Code (IECC), and updating code within a year of any IECC revisions. Although the exact timing of implementing and enforcing new code standards is unknown, it seems reasonable to assume Massachusetts building codes will be changing during the 2010 through 2012 planning horizon, and that Program requirements for ENERGY STAR qualification in the state will need to be revised accordingly in order to assure continued energy savings. The implementation and enforcement of new code standards will be an opportunity to position HERS raters to deliver code compliance services, which will provide a unique opportunity to use them to up-sell builders to ENERGY STAR.

6.4 Regulatory Recognition

The Program will attempt to reach out to all active builders by giving them information on how to build more energy-efficient homes and how to access non- Program resources for help on how to incorporate practices, products and equipment that will produce more energy-efficient homes. Much of the Program's work in educating and training builders and subcontractors will most likely increase the energy efficiency of homes built not only by builders who choose to participate in the Program, but non-participating builders as well. The Program will explore options with regulators for getting credit for "spillover" energy efficiency improvements in homes outside the Program. In addition, the Program will explore securing credit for additional savings due to increased code support from the Sponsors.

6.5 Recruiting

With the number of housing permits issued continuing to fall, Program Sponsors believe they can use their resources to reach a much higher market share of the new housing market. The Program's goal is to reach out to every permitted building. One of the first steps in this process will be to establish a relationship with local permitting departments and encourage them to hand out Program literature to all builders obtaining building permits—the Program already has established relationships with several of the local permitting offices across the Commonwealth.

The literature distributed would explain how the Program can help builders and would include:

- Information that lets builders know that the Program supports all residential new construction builders, from those interested in learning how to incorporate a few energy-efficient practices cost-effectively to those interested in building zero energy homes and/or incorporating renewable energy options
- Information on energy-efficient building practices and training opportunities available to builders who want to build more energy-efficient homes
- Information on incentives and participation options for builders interested in achieving different levels of energy efficiency such as:
    - Builders interested in incorporating some energy-efficient practices (HVAC equipment, lighting, etc.), but not ready to commit to building to ENERGY STAR-qualified standards
    - Builders interested in building to ENERGY STAR-qualified standards
    - Builders interested in incorporating renewable energy options
    - Builders interested in building zero energy homes
- Information on how to access additional information resources on ENERGY STAR-qualified homes, building science, zero energy homes, green building, etc.
- Information on certified energy raters who can help with all of the above

6.6 Lighting

Promoting the use of energy-efficient lighting will continue to be a key Program component. When the efficiency requirements for lighting are increased through the Energy Independence and Security Act – 2007 (EISA 2007), the Program may no longer need to require builders to install CFL bulbs in their ENERGY STAR homes and offer free products and installation in all appropriate sockets. In the meantime the Program plans to continue its efforts to increase the use of reliable energy-efficient lighting in ENERGY STAR homes by offering free CFLs through at least 2011 and incorporating solid state lighting options. Currently the Program requires all participating homes to have CFLs installed in at least 50% of available hard-wired screw-based fixtures; this percentage is likely to increase to 80% in ENERGY STAR 2011 standards.

Solid State Lighting may become an option. Right now, there are only a few products on the ENERGY STAR qualified list from the Department of Energy (DOE). As well, the products on this list are appropriate in select locations. Within the 2010-2012 timeframe, the available products list will likely grow.

6.7 Affordable Housing

The Program will continue to target affordable housing. As mentioned previously, affordable housing is likely to be one sector of the new housing market that will continue to initiate new projects in a depressed housing market. The Program will consider offering additional incentives to developers of privately funded affordable housing projects to encourage them to build to ENERGY STAR standards, and promote building these projects to higher efficiency tiers. In addition, the Program will work with and encourage Habitat for Humanity and other non-profit builders to construct all of their homes to ENERGY STAR standards.

6.8 Multi-family Buildings over Three Stories

The Program will serve all multi-family buildings eligible for ENERGY STAR qualification. Until 2006, high-rise multi-family buildings were grandfathered for ENERGY STAR-qualification in Massachusetts, and many participated in the Program. Since then, units in multi-family buildings three stories or lower, and units in some four- and five-story buildings, have been eligible for ENERGY STAR qualification. EPA recently revised the eligibility requirements for over three-story buildings, making units in more four- and five-story buildings eligible for ENERGY STAR qualification. Under current EPA rules,

> "Units in four- and five-story multi-family buildings may qualify for ENERGY STAR if: 1) the *units* are permitted as residential structures by the local building department; and 2) each residential unit has its own heating, cooling, and hot water systems, separate from other units. The phrase, "permitted as residential structures", is intended to represent units that either fall within the scope of the residential building energy code or are permitted as having a residential use-group, even under conditions where the commercial building energy code applies.
>
> "Multi-family units that are located on top of commercial spaces (e.g., retail, restaurant, etc.) may be qualified as ENERGY STAR even if the structure is

permitted as commercial, as long as: 1) the entire structure is five stories or less; and 2) each residential unit has its own heating, cooling, and hot water systems, separate from other units."[60]

Over the years, Program Administrators of electric and gas energy-efficiency programs have offered services to the multi-family sector through a patchwork of residential and commercial and industrial programs. Many multi-family projects are neither clearly residential nor clearly commercial, which led to developers being confused about what energy-efficiency programs their buildings qualified for and, consequently, some projects fell through the cracks. To ensure the needs of all multi-family projects are met going forward, electric and gas Program Administrators are proposing a common statewide program targeting up to eight-story multi-family new construction projects that are too "large" to qualify for ENERGY STAR qualification. Multi-family projects over eight stories tend to include retail and office space and have mechanical systems similar to large commercial and industrial (C&I) buildings—these projects will be served through existing C&I programs. Going forward, there will be a seamless statewide multi-family program designed to serve the majority of multi-family buildings.

6.9 Zero Energy and Passive Homes

The Program will encourage builders to move toward building zero-energy and Passive House standards by offering more worthwhile tiered incentive levels as homes get closer to zero energy status or Passive House standards. The Program will provide information on existing zero-energy and Passive House models that work, and promote links to building science resources, zero energy home plans and other resources that can help interested builders develop and complete a zero energy or home.

DOE describes a zero energy home as follows:

> "A Zero Energy Home (ZEH) combines state-of-the-art, energy-efficient construction and appliances with commercially available renewable energy systems, such as solar water heating and solar electricity. The combination results in a home that produces its own energy—as much or more than it needs. Even though the home might be connected to a utility grid, it has net zero energy consumption from the utility provider."[61]

Passive House Institute US (PHIUS) describes a Passive House as follows:

> "A Passive House is a very well-insulated, virtually air-tight building that is primarily heated by passive solar gain and by internal gains from people, electrical equipment, etc. Energy losses are minimized. Any remaining heat demand is provided by an extremely small source. Avoidance of heat gain

[60] http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_multifamily_units (Accessed July 2009)

[61] http://apps1.eere.energy.gov/consumer/your_home/designing_remodeling/index.cfm/mytopic=10360

through shading and window orientation also helps to limit any cooling load, which is similarly minimized. An energy recovery ventilator provides a constant, balanced fresh air supply. The result is an impressive system that not only saves up to 90% of space heating costs, but also provides a uniquely terrific indoor air quality."[62]

Sponsors believe that encouraging builders to build ever more energy-efficient homes is a key role of ENERGY STAR residential new construction programs. Interest in the 2008 ***Zero Energy Challenge*** revealed that many builders are very interested in building super-efficient homes and incorporating renewable energy and/or passive solar options, and that several builders found reaching near zero energy status more achievable than they had anticipated. Sponsors believe that once builders see something that works, then they are more likely to consider incorporating it into their homes.

6.10 Builder Training and Education

A key role for ENERGY STAR residential new construction programs is providing the information builders and subcontractors need to be able to build homes that meet and exceed ENERGY STAR standards. Participating builders praise the training they have received through the Program, whether through group seminars or one-on-one on-site training. Going forward, both the implementation contractor staff and HERS raters will provide appropriate group trainings and seminars as well as on-site training to builders and their subcontractors as needed to ensure builders meet ENERGY STAR standards. Builders also have the option to contract directly with their HERS rater to get additional specific training on a pay-for-service basis. EPA offers training resources that the Program can tap into to leverage ongoing training efforts, and the Program will leverage training provided by other organizations (home builder associations, product manufacturers, lumber yards, etc.) by working with them to incorporate ENERGY STAR requirements into their training. A list of subcontractors—trained subcontractors who have proven that they understand the ENERGY STAR standards—will be developed and made available to builders. As mentioned earlier, offering training will be particularly important in 2009 and 2010 to ensure builders and subcontractors are prepared to meet additional new EPA ENERGY STAR standards scheduled for implementation in January 2011.

6.11 Incorporating New Technologies

As a trusted source of information on energy-efficient construction, the Program will conduct research and development (R&D) pilots to test the in-field performance of new technologies before promoting them to builders. The Program will also look for opportunities to demonstrate new approaches for lighting design, and incorporating passive solar options. R&D and demonstration projects will not produce Program savings and will be a very small portion of the Program budget. Therefore, the Program intends to look for opportunities to leverage R&D spending by pursuing DOE grants and keeping up to date on findings from other programs',

[62] http://www.passivehouse.us/passiveHouse/PassiveHouseInfo.html

states' and organizations' work with new technologies, such as EPA's heat pump water heater monitoring work.

6.12 HERS Raters

HERS raters play a critical role in the Program. HERS raters are the main contact with participating builders, providing support and on-site training as well as conducting inspections. In 2008, the Program introduced an open market process under which participating builders are able to choose their preferred HERS rater. All HERS raters working with participating builders will receive training on new technologies incorporated into the Program, thus ensuring raters are not only able to explain and promote these technologies, but also able to teach builders how to best incorporate them into their building process. The demand for HERS rater services outside the Program may increase substantially as Massachusetts building codes are revised, and BBRS requires that certified energy inspectors enforce energy code requirements in all buildings. To ensure there are enough certified HERS raters available to meet both the Program and any future code enforcement needs, the Program's implementation contractor will be a HERS provider of last resort to help new raters become established as part of the open market structure. Additionally, the Program will continue to play the important role of providing tight quality control over the HERS raters in an effort to ensure the highest standards and consistency of service across the state.