Massachusetts Program Administrators (PA) 2008 C&I Program Planning Manual

on behalf of

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

April 30 2008
(Final Version)

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Acknowledgements

The creation of this report would not be possible without the dedicated efforts and experience of the various C&I program administrators, program managers and Non-Utility Parties (NUP) Advisors involved in the Massachusetts collaborative planning process for 2008. In addition, many others helped to provide data and reporting for the individual programs of the Energy Efficiency Program Providers.

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(Note: Leads are in bold text.)

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Additional acknowledgements for preparation of the past performance tables are made to Jennifer Kallay (for CLC, Synapse Energy), Lynn Ross (National Grid), Suzanne Farrington (NSTAR) and Dave Weber (NSTAR). Other individuals who provided program information for National Grid are Robert O'Brien, Anita Hagspiel, Julie Wilcox, William Blake and Elizabeth Poulin; and Elizabeth Titus (NEEP) provided cost share data for regional programs.

Special thanks is given to Eric Noble (Eric Noble & Associates) for his efforts in creating the Massachusetts Energy Efficiency Program Provider map in Section 12, the culmination of program applications for each EEPP in the Appendix; and to Janet Edwards (National Grid) for creating the Final formatted version of this manual for publication.

Program description table format inspired by format used in publication "CEE Energy Efficiency Incentive Programs: Premium-Efficiency Motors & Adjustable Speed Drives in the U.S. and Canada" May 2007, which National Grid, NSTAR and Cape Light Compact participated in creating for the Motors & Adjustable Speed Drive descriptions used in CEE publication.

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PREFACE

This document was initiated by the C&I program administrator managers (PAs) and the Non-Utility Party (NUP) advisors to establish a single source of information about the energy efficiency programs offered by the PAs in the Commonwealth. There has been an on-going interest among the C&I Working Group to examine current and future possibilities for moving programs and underlying planning assumptions toward similar approaches across the state, while maintaining differences only where they were more appropriate and could be reasonably justified. This document is intentionally designed to be a living and evolving document, initially providing a baseline of information - the 2008 program information contained herein - and in future versions updated and modified as the parties collectively agree to alter program assumptions, program design, or other aspects of the programs ultimately delivered to customers over the coming years.

1 Commonwealth of Massachusetts' Approach to Procuring Energy Efficiency Resources

Energy Efficiency is the most cost-effective resource Massachusetts has to meet its energy needs. Efficiency is clean, reliable, low cost, and locally acquired, using a local workforce and producing a competitive advantage for local businesses.

Since The 1997 Electric Utility Restructuring Act, Massachusetts has used the technical and management of its electric (and, more recently, gas) utilities as program administrators to deliver energy efficiency products and services to the residential, commercial and industrial sectors, at a cost of one third of comparable supply resources. The utilities, acting as "Program Administrators" for the Commonwealth, have adopted a strategic approach to deliver energy efficiency to commercial and industrial customers. The combined efforts of these activities through 2005 demonstrate lifetime savings of more than 28,000 GWh of electricity and 5,200 megawatts of peak demand, thus avoiding the need to build more than 50 conventional, 100 MW power plants and reducing the equivalent of 17 million tons of CO2 emissions from the atmosphere.[1]

Going forward the program administrators will continue to play a prime role in achieving efficiency goals set by the state's policy makers, and will continue to manage and deploy their resources to acquire efficiency resources according to the requirements set forth in the Massachusetts Electric Utility Industry Restructuring Act. That act directed the Commonwealth's electric utilities, acting as program administrators, to design and administer programs that balance several policy goals, including:

"Ensur(ing) that energy efficiency funds are allocated equitably among customer classes"

Programs achieve this objective by offering robust retrofit programs to all existing commercial, industrial, public, and institutional customers, with specialized offerings tailored to the unique informational and financial needs of small business customers.

"Ensuring that there will be adequate support for "lost opportunity" efficiency programs in areas such as new construction, remodeling, and replacement of worn-out equipment" This sector ensures that public benefits funds are directed to new construction opportunities that provide the lowest, cost effective long term savings from efficiency programs.

New construction programs target all new construction and renovation projects in the Commonwealth with incentives and technical assistance focused on promoting sustainable and high performance building options. For larger and more complex projects this is achieved through a targeted comprehensive design approach, and for smaller buildings through application of Advanced Buildings, a simplified method for promoting high performance design criteria to be adopted by an owners design team. Programs also offer prescriptive options for smaller and less complex new construction and /renovation projects and projects. For unique customer opportunities, a "custom" option is available to capture savings that might otherwise be lost without a more rigorous technical assessment targeting specific industrial and commercial applications.

[1] Extrapolation of data is estimated for C&I sectors from data from the DOER summary for 2003 – 2005, including cumulative data back to 1997. The link to the DOER report is http:/www.mass.gov./eoca/docs/doer/pub_info/ee03-05.pdf. Estimate of 50 conventional, 100 MW power plants is based on recent ISO projections.

Programs also target failed or failing equipment, such as chillers, motors, etc., to ensure that customers confronting immediate purchase decisions will make the energy-efficient choice.

"Giv(ing) due emphasis to statewide market transformation programs in order to systematically eliminate market barriers to energy efficiency goods and services."
The Commonwealth's program administrators participate in joint state, regional, and national efforts to set standards for, and promote, emerging technologies where there are economies in collaboration and where the Commonwealth will receive demonstrable benefits. The Companies support both building science and technology research where it can lead to field implementation that improves on the design, construction and operational practices in commercial buildings as well as equipment specification. In addition, the program administrators within Massachusetts collaborate on program designs and delivery mechanisms, as appropriate, to ensure consistent standards, incentive levels, procedures and messages are promoted to customers, trade allies, design professionals and other market actors throughout the state.

Taken in total, the Commonwealth's programs are specifically designed to provide an integrated, seamless set of efficiency services and incentives to all non-residential customers in the state. These offerings interact with customers within their own market circumstances, be they building a new facility, renovating or expanding an existing one, replacing a failed piece of critical equipment, or simply choosing to improve the efficiency – and lowering the operating costs — of their existing place of business or production.

The program administrators recognize the importance of adapting to new market conditions and enhancing their products and services to meet the needs of these changing market sectors-residential, commercial and industrial. To that end, the annual joint review of all programs takes into account these changes and conditions and anticipates the value of reexamining the delivery of energy efficiency, the associated costs and savings achieved from the programs in the prior year and the enhancements necessary to ensure continued success. While new programs are not necessarily created each year, administrators are continually investigating enhancements that make the delivery of energy efficiency better. This program planning manual documents these activities and provides the body of information on which future reviews of these programs can be evaluated for a sustained track record of success in meeting the energy resource needs necessary for continued economic development in the Commonwealth.

2 Energy Efficiency Communications Plan

The experience of Program Administrators (PAs) and other stakeholders charged with designing and delivering energy efficiency services to commercial and industrial customers strongly suggests that a common approach to the market (but one that also allows individual PAs flexibility to market to the unique attributes of their service territories and customer mix) increases customer understanding and awareness of energy efficiency programs. Better understanding leads to more projects and savings. Massachusetts PAs currently offering marketing and sales support materials for use by their account management sales delivery force will continue to do so. However, it is envisioned that this could be enhanced by having as much as possible more common consistent, statewide messaging and increased visibility to all C&I customers**.**

The PAs anticipate that there will be increasing demands to increase the range and depth of energy efficiency investments, as efficiency is relied upon to address such issues as high energy costs, system reliability, and climate change. The scale of these challenges requires a strategic approach to communicating to commercial customers across the Commonwealth. Indeed, PAs will likely be faced with goals that are several times larger than they have been asked to meet in the past. These will require new financial, staffing and technical resources to address.

A combination of approaches will include cooperative activities bundled with individual utility communication approaches to gain more visibility and common messaging across the various PAs in the state. In addition to common theme messaging that will help customers more clearly understand the benefits and value of participating in the individual PA programs, there will be marketing approaches that target high value audiences to ensure that these audiences will be familiar with the programs.

With this in mind, the PAs and other stakeholders engaged in the delivery of energy efficiency services will investigate communication methods that reach out to key audiences with clear and consistent messaging on the importance of energy efficiency and demonstrates the role that incentives, technical assistance, customer building profiles and other tools play in the delivery of efficiency services. This messaging will target key business decision makers, public policy makers, media, homeowners and key environmental, business and energy related stakeholders. Moreover, it is expected that a portion of the plan will be devoted to localized visibility initiatives, such as building tours and technology applications, as well as useful information that account management staff can use in their marketing calls with customers. The combination of these activities will strengthen the ability for PAs to continue to design and deliver cost effective energy efficiency services that secure the maximum public support and energy savings, and address C&I customer needs.

3 Workforce Development and Recruitment

Background/Impetus:

The energy efficiency industry in New England[2] is finding it increasingly difficult to find experienced professionals to fill key managerial and technical positions. As the market for efficiency services expands, and the current cohort of managers and technical professionals approaches retirement age, this problem will become more acute. We need to begin to address this issue now by promoting the links between the energy efficiency industry and climate change action and other environmental concerns that resonate with the coming generation of workers. We also need to create intellectually challenging and financially rewarding opportunities to attract talented and socially conscious professionals at the early end of their careers.

Objective:

- To increase the number of energy efficiency professionals in the marketplace,
- To prepare the next generation of managers and technical professionals in the industry, and
- To sustain a knowledgeable and experienced workforce in the energy efficiency industry.

Approach:

Program administrators in Massachusetts and their counterparts in the other states in the region, private sector consultancies and engineering companies with energy efficiency practices, and non-profit advocacy and research organizations are all concerned with the current situation and all can have some influence on the future of the infrastructure. The program administrators will work collaboratively with the NE Clean Energy Council and others with this effort.

This effort will first identify what educational institutions offer programs or degrees in disciplines that are akin to energy efficiency (engineering programs with some energy focus, environmental studies/policy programs, etc.), then develop a strategic plan on how to influence these programs to expand their energy efficiency focus, with the ultimate objective of attracting their graduates into employment. Elements of this strategy would include development of intern and co-op programs at the utilities.

Action Item:

Develop a strategic plan that includes:

1. Collection of information about current related programs at regional colleges and technical schools
2. Examination of specific staffing needs that are likely to be required over the short-term, mid-term, and long-term;
3. Identification of specific actions that the utilities can undertake, individually, collectively, and with other entities, to support (a) alliances with receptive educational institutions to expand curricula relating to energy efficiency; (b) establishment of internships and o-op placements; and (c) graduate recruitment and growth of career development opportunities.

[2] While the focus of this effort is on the energy efficiency industry, we recognize that other aspects of the broader clean energy markets, including energy management, renewables, energy policy, sustainable design, climate change, etc. will need to be considered in the development of any approaches to the manpower issue.

4 New Technologies and Practices: Areas for Research and Possible Future Action

In addition to the specific program descriptions encompassed in this document, the Massachusetts Program Administrators and Non-Utility Parties (NUP) advisors to the Collaborative have an ongoing process for researching and assessing new opportunities for efficiency. In particular, this group focuses on newly emerged and emerging efficiency technologies and practices that have either recently become:

- cost-effective;
- available in the commercial market — ideally from multiple manufacturers (as opposed to prototypes);
- have not been aggressively pursued because of limited efficiency potential and/or lack of resources; or
- prototype products that should be monitored for potential future opportunities.

Note that all commercial and industrial sector programs offer custom incentives that can cover any cost-effective energy efficiency technology or practice that is not promoted through standardized (prescriptive) incentives. Therefore, any new technology can be pursued on a site specific basis if cost-effective. However, research and assessment efforts are intended to identify those opportunities where more standardized or aggressive promotion may be appropriate. This could include: prescriptive incentives; targeted marketing; upstream promotions with manufacturers, distributors and/or , and potentially whole new programs focused on a category of new opportunities.

A formal Collaborative committee has been established to monitor new opportunities, do preliminary assessments, and make referrals to other program and planning staff as appropriate. For example, after some research into LED lighting technologies, this may be handed off to the lighting worksheet committee with recommendations, for them to develop incentives and add to the lighting worksheet. The focus will be on identifying and assessing opportunities in terms of:

- what is on the market,
- estimating costs, savings and cost-effectiveness
- understanding the market for products and the important points of influence within each market channel
- identifying baseline technology efficiency
- coordinating with the Technical Resource Manual Committee to ensure that if and when technologies move into mainstream program offerings that adequate savings estimations procedures are developed and documented.

The committee is made up of technical planning, implementation and evaluation staff representing each PA as well as the NUPs. During 2008, this committee anticipates assessing a number of opportunities. These do not necessarily map to areas listed for future consideration in the program description sections of this manual, but are provided here for information purposes only. Opportunities that may be assessed include, but are not limited to:

- Commercial “plug load” products, for possible development of a new products program. These include such things as:
    - Reach-in refrigerators and freezers (both solid and glass door)
    - Ice makers

    - Beverage display cases
    - Vending machines
    - Washing machines
    - High efficiency food processing equipment *(e.g.,* high efficiency fryers, infrared ovens, pre-rinse spray valves, hot food holding cabinets, etc.)
    - Water coolers
    - Office equipment and power supplies
- Solid state LED lighting (SSL)
    - Numerous white LED applications and products are now reaching the market. Many of these are very costly and not yet cost-effective, although some are. In addition, numerous manufacturer's claims are overstated, and quality is an issue. However, DOE has an active and aggressive testing procedure now that supports assessment of the various products to better understand actual in service performance and energy savings. Further, the SSL lighting market is rapidly progressing — efficiencies get better and costs go down every year. As a result, aggressive promotion of at least certain LED applications by 2009 and beyond is a possibility.
- HVAC proper installation and maintenance
    - Numerous research indicates that much of the HVAC efficiency opportunities reside in improving the installation and maintenance of HVAC equipment and air distribution systems. This has been a very difficult area to influence. There have been a number of pilot efforts throughout the country, but more analysis and thought is needed to better identify the opportunities, barriers, and methods to promote this.
- Efficient data centers
    - Data centers are very energy intensive and an increasing share of electric loads. This is particularly true in regard to cooling data centers, which has a significant effect on summer system peaks. New technologies (both software and hardware) are available to dramatically improve data center efficiency. These opportunities will be assessed both from a technical standpoint, but also in terms of opportunities for leveraging other efforts *(e.g.,* many large computer firms such as Google are involved in "greening" data center efforts).
- Efficient elevator technologies.
    - Some products are on the market to improve the efficiency of elevators. This can include better motors, drives and controls, as well as software and energy management strategies that can shed some banks as appropriate during low usage times.
- Labs21 Program
    - In 2007, National Grid began a significant push forward to incorporate new design practices in extremely energy intensive science and lab buildings following the practices recommended by the National Labs 21 program. Examples of projects include the Smith College engineering building and the new science building at Stonehill College. This work also includes providing educational seminars on the topic to industry professionals.
    - In the beginning of 2008, NSTAR spearheaded the implementation of two Labs21 trainings to be hosted at NSTAR in April 2008. in collaboration with MAEEP, an introductory whole-day course, as well as an O&M half-day course, will be offered to customers with lab facilities, as well as to the trade allies. This is the first time that any Labs21 trainings will be offered in the Northeast.

- General next generation technologies
    - In addition to the things specifically mentioned, all the technology categories PAs already promote undergo innovation over time. These markets will be monitored to identify new products available and ramp up efficiency levels or add or delete promoted measures as appropriate. This could include a wide range of opportunities among lighting, cooling, ventilation, motors, refrigeration, compressed air, controls, and others.
- Design Solutions
    - In 2008, NSTAR will launch the Design Solutions program. This program is targeted at the design community (i.e. architects and engineers) with components for Design Assistance and continuing education credits through the new NSTAR online academy.

5 Technical Reference Manual (TRM)

Documentation of Methods and Data for Measure and Program Savings Estimates

In addition to the specific program descriptions encompassed in this document, the MA Program Administrators (PAs) and NUP advisors to the Collaborative are currently engaged in the development of a *Technical Reference Manual*, or "TRM." The TRM will be used by all PAs to document how program and measure impacts are calculated, to provide the sources of information used in these calculations, and to provide a reference source for PAs and other stakeholders to this information.

Over 2008 the PAs and NUP advisors will develop a single, statewide TRM. Within the TRM will reside documentation of savings values, including engineering formulas, default values for formula variables, baseline efficiencies, freeridership, spillover, and other information that will support the estimation of savings from prescriptive measures and perhaps some common custom measures. Where differences occur between PAs, they will be documented as to why.

The Program Planning Manual (PPM) provides documentation about the programs and services being offered by each PA. . Readers of the PPM can refer to the TRM, when available, for information on savings calculation methods, values and data sources by going directly to the end use or measure in question. The TRM may have some information that is also in the PPM, such as definition of baseline efficiencies, since baseline is relevant to both measure eligibility in program planning and measure savings.

While specific information in the TRM will vary by end use or measure, in general most entries will include, but not be limited to:

- Measure description
- Program to which the TRM entry applies *(e.g.,* a given measure may have different entries for lost opportunity and retrofit programs)
- Definition of the baseline assumption
- Effective date of adoption of the TRM entry *(e.g.,* if calculation values change, this will document when the change to savings claims was made to aid in savings verification activities)
- Engineering formulas (algorithms) which form the basis for the energy (kWh) and peak demand (kW) savings estimates (in some cases, savings may simply be expressed as a kWh per unit (hp, ton, etc) value if based on research studies or simulation modeling, in other cases it may be a more complex formula)
- Definitions and values for all variables in the algorithms (key variables may be constants, data collected from customers, or default values which can vary by a number of things such as customer type)
- Measure life
- Electric system peak coincidence factor, if applicable
- % of annual energy within each avoided cost rating period (may be from Energy savings load shape or other source)
- O&M savings and cost impacts, if any
- Fossil fuel impacts, if any
- Water impacts, if any
- Other non-electric benefits, if any

- Savings persistence factor
- Freeridership factor
- Spillover factor
- Sources for all data and assumptions

As prescriptive measures promoted by programs are modified over time, or as baseline efficiencies change or new information is obtained, the TRM will be modified as appropriate. A mechanism will be established to ensure that this is done both pro-actively *(e.g.,* there is a building code change and PAs determine that a change in baseline assumptions is warranted), or re-actively *(e.g.,* a PA desires to promote a new measure and a TRM entry is therefore needed for it).

In the future, the PA's and NUP Advisors will attempt to identify and quantify the climate impacts and emission reductions resulting from state-wide energy efficiency programs and services.

6 Commercial & Industrial Lost Opportunity Program Descriptions

Lost Opportunity program[3] descriptions are provided for each of the Massachusetts Energy Efficiency Program Providers (EEPPs) in a general template format for each Section, meant to capture commonalities in the program offerings, as well as to call-out the differences in eligible energy efficiency measures, incentives, program delivery and implementation. While PAs offer single comprehensive lost opportunity programs, for this manual program areas are described by major end-use. The following lost opportunity end-use services are described:

6.1 Compressed Air
6.2 Lighting & Controls
6.3 HVAC Systems
  6.3.1 Cool Choice - Unitary Packaged HVAC
  6.3.2 Chillers
6.4 Premium-Efficiency Motors
6.5 Variable Speed Drives
6.6 Massachusetts Custom Programs

Other end-uses, such as process measures and refrigeration, are not described in this planning manual at this point. Additional program results for Program Years 2004 – 2006 can be found in Section 14, which contains the past performance data tables for each EEPP for both retrofit and lost opportunity programs. Typically, projects that include end-uses that are not subscribed to as a prescriptive measure for a particular program, are processed as a custom application as a new construction/replacement project.

Listed below are the program names of each of the Lost Opportunity (also known as "New Construction and Major Renovations") programs by EEPP. Each program description repeats the names of the EEPP's lost opportunity program, if applicable, so that the descriptive overview becomes a stand-alone reference document for each prescriptive or custom program track. Evaluation studies that are applicable to multiple programs, both retrofit and lost opportunity, are also repeated throughout the program descriptions. Completed evaluation studies and market research for commercial and industrial programs "C&I", in general, are listed in Table 6.b and at the end of this section, as well as in Section 7 Large C&I Retrofit Programs & Initiatives, Table 7.b. A master list of evaluations studies is provided in Section 11.

- CLC: C&I Lost Opportunity
- National Grid: Design 2000*plus*
- NSTAR: Construction Solutions
- Unitil/FG&E: Large Business Services
- WMECo: Lost Opportunity and Major Renovations Energy Solutions

[3] Each EEPP has named umbrella programs for their Lost Opportunity and Retrofit programs. Each umbrella program has many "program" initiatives that serve the different end-user markets. The term "program" is used throughout this document as a way to reference C&I customer incentives and service offerings for a particular end-use (or energy efficiency measure (EEM), such as lighting, HVAC, motors, variable speed drives et al.

In the table below, Table 6.a provides performance data by the energy efficiency program administrator for the past three years (PY 2004 thru 2006), as a total for Large C&I Lost Opportunity programs. Estimated savings are calculated differently for each program administrator. (Refer to footnotes and Section 14.0 for reporting detail and disclaimers by each EEPP).

Table 6.a Lost Opportunity Large C&I Programs Past Performance

Lost Opportunity Massachusetts Large C&I Programs							
EEPP	**PY**	**Units #**	Incentives[1]	**Gross kWh Annual Savings**	**Net Summer kW Savings**	**Net Winter kW Savings**	**Program Spending[2]**
CLC[a]	2004	5	$ 115,273	156,015	---	28.7	$ 24,614
	2005	10	$ 57,030	165,520	---	43.4	$ 16,131
	2006	68	$ 141,154	486,450	---	135.8	$ 109,319
NGrid[b]	2004	---	$9,285,066	---	---	---	$ 2,551,554
	2005	---	$8,521,972	---	---	---	$ 2,195,761
	2006	---	$7,711,716	---	---	---	$ 2,271,692
NSTAR[c]	2004	---	$8,232,529	---	---	---	$ 2,759,058
	2005	---	$6,104,666	---	---	---	$ 3,482,133
	2006	---	$5,650,226	---	---	---	$ 3,847,672
Unitil/ FG&E[d]	2004	---	---	---	---	---	---
	2005	---	---	---	---	---	---
	2006	---	---	---	---	---	---
WMECo[e]	2004	---	---	---	---	---	$ 576,763
	2005	---	---	---	---	---	---
	2006	---	---	---	---	---	---

[1] Incentives refer to Customer Incentives.

[2] (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs. Program Spending is generally not available by measure.

[a] (CLC) Measure data used for Large C&I results shown for Gross kWh Savings and Max kW (Winter kW) Savings. The Annual Report was used to provide data for total units, rebates and program spending.

[b] (NGrid) National Grid tracks non rebate spending by Program.

[c] (NSTAR) Tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates

[d] (Unitil/FG&E) Total Retrofit Large C&I Program results were not reported for the purpose of this planning manual.

[e] (WMECO) Program Spending data is not explicitly available for lost opportunity projects. It is included for 2004, **only**, as part of Massachusetts Custom Programs (total for both Lighting and Non-Lighting) for WMECo's New Construction Program. Program spending results for program years 2005 and 2006 have yet to be verified and reported.

Table 6.b Commercial & Industrial Completed Evaluation Studies

1. The Fleming Group, HEC, “Persistence of Commercial/Industrial Non-Lighting Measures”, June 1994
2. PA Consulting Group, “National Grid 2001 Commercial and Industrial Free-ridership and Spillover Study”, July 2002
3. PA Government Services, Inc., “National Grid 2002 Commercial and Industrial Free-ridership and Spillover Study”, May 2003
4. Megdal & Associates with Opinion Dynamics Corp., “2004 Commercial and Industrial Programs Free-Ridership and Spillover Study Executive Summary of National Grid Results - Final Report”, October 2005
5. Energy & Resource Solutions, Inc., “Measure Life Study Prepared for the Massachusetts Joint Utilities”, November 17, 2005
6. PA Consulting Group, “2005 Commercial and Industrial Programs Free-ridership and Spillover Study- Revised”, August 11, 2006
7. PA Consulting Group, “National Accounts Study: Customer Energy Efficiency Equipment Decision Making Process and Standard Practice – Final”, September, 8, 2006
8. RLW Analytics, “NSTAR Construction and Business Solutions Report on 2004 Measures”, March 9, 2006
9. RLW Analytics, “NSTAR Construction and Business Solutions Report on 2005 Measures”, July 21, 2006

6.1 Lost Opportunity - Compressed Air

Program	**Compressed Air**	
Program Type	Lost Opportunity	
Program Names	**CLC**	C&I New Construction
	National Grid	Design 2000*plus*
	NSTAR	Construction Solutions
	Unitil/FG&E	Large Business Services
	WMECo	Custom Services
Program Details		
Goals	To facilitate the selection and purchasing of air compressors with controls that will optimize the compressed air system efficiency.	
Description	Standard efficiency compressors are supplied with modulating controls which regulates the airflow of the compressors, but does so in an inefficient manner. Control options (Load/unload, variable displacement and variable frequency drive) are available which regulate the compressor's air flow in an efficient manner to meet the needs of the compressed air system and its end uses. Prescriptive incentives are available for 15-75 HP compressors purchased with the more efficient control options. Unitil/FG&E's incentives are site-specific based on project cost-effectiveness. CLC uses its Custom application and will assist contractors through TA.	
Target Audience	Industrial customers and air compressor dealers.	
Program Implementation & Contractor Support	**CLC**	Compressed air projects are reviewed under the custom application process and CLC will assist contractors through TA.
	National Grid	Prescriptive applications and supporting documentation are available to customers, vendors, etc. Program information meetings are typically held annually to educate vendors and consultants on Program incentives, eligibility and documentation requirements.
	NSTAR	Compressed air projects are reviewed under the custom application process.
	Unitil/FG&E	Incentives are site-specific based on project cost-effectiveness.

	WMECo	Compressed air projects are reviewed under the custom application process.
Incentive Structure	Incentives are available to reduce the incremental costs associated with more efficient control options (see table 6.1.a for more detail).	
	CLC	Compressed air is handled through the Custom application. CLC incentives are designed to cover up to 50% of the incremental cost of the efficiency measure or to buy down the cost of the equipment to a one and a half year payback period, whichever is less. Assistance in preparing and submitting the Custom form is available through CLC TA. The financial incentives will be limited to a maximum of $75,000 per project.
	National Grid	The incentives are designed to cover approximately 60% of the estimated incremental costs.
	NSTAR	The incentives are designed to cover up to 75% of the estimated incremental costs**,** depending upon the specific costs and savings associated with the measure.
	Unitil/FG&E	Custom Incentives only.
	WMECo	Incentive offered at 75% of incremental cost difference between baseline new equipment and qualifying more efficient alternate.
Baseline/Specifications	The baseline is standard efficiency compressors that are supplied with modulating controls to regulate the airflow of the compressors to meet the needs of the compressed air system. Air compressors specifications from the various compressors available in the market place were evaluated to determine the average % power versus % load for the various size air compressors in our Program (15-75 HP)	
Eligibility Criteria	Prescriptive incentives are available for new air compressors (with load/unload, variable displacement, or variable frequency drives) and refrigerated dryers on compressed air systems which are served by a single air compressor. Systems which have back-up air compressors which run only when the primary compressor is temporarily off-line for maintenance or service are also eligible, but only for the primary compressor. Multiple compressor systems are handled through our Custom Project process. Similar calculations are used in calculating the refrigerated dryer savings	
Training & Education	Education on optimizing the efficiency of compressed air systems is available through 2 workshops which are marketed and hosted by the utilities each year. The workshops are “Fundamentals of Compressed Air Systems” and “Advanced Compressed Air System Management”. These workshops were developed by the Compressed Air Challenge organization. (see website at www.compressedairchallenge.org)	

Marketing and Outreach Strategy	This Program is marketed to customers through Utility business service representatives, compressed air and compressed air system consultants. Training and Program materials are made available to each year.
Other Program Integration / Coordination	Multiple compressor systems are handled through custom process. National Grid and NSTAR have a Compressed Air System O&M Program which targets system operational improvements such as air leak surveys and repairs, control system improvements, distribution system improvements, etc.
Program Past Performance	See Table 6.1.b for performance by program year.
Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program measures provided for each EEPP, as part of the Technical Resource Manual.
Future Consideration	Continue to offer EEPP specific program in 2008, re-assessing and readjusting incentive amounts annually as needed.

Other Program Information

Program Contacts	**CLC**	John Burns (508) 375-6829
	National Grid	Kevin Keena (508) 421-7279
	NSTAR	Hugh Gaash (781) 441-8706
	Unitil/FG&E	Ed Mailloux (603) 773-6541
	WMECo	Bob Dvorchik (413) 499-9004
Coordination Among Program Administrators	National Grid and NSTAR run similar programs and regularly share technical data, program delivery experiences, etc when reviewing programs for annual enhancements and changes.	
Program History	National Grid started prescriptive rebate program in 2002 for compressed air.	
Specification Reference	Not Applicable.	
Evaluation Reports Available	1. Aspen Systems Corp., “Final Report: The Compressed Air Systems Market Assessment and Baseline Study for New England”, January 07, 2000 2. Demand Management Institute, “Impact Evaluation of 2004 Compressed Air Prescriptive Rebates”, May15, 2006 3. RLW Analytics, “Sample Design and Impact Evaluation Analysis for Prescriptive Compressed Air Measures in the Energy Initiative and Design 2000 Programs”, May 31, 2006	

Other Programs Funded / Sponsored	Compressed Air Challenge locally sponsored by National Grid, NSTAR and CEE.

Incentive levels

Table 6.1.a Qualifying /Equipment and Incentives for Air Compressors

National Grid - Prescriptive High Efficiency Air Compressor Incentives

Horsepower	Incentive per Hp		
	Load/No Load	Variable Speed	Variable Displacement
≥15 to <25	$50	$90	N/A
≥25 to <50	$40	$110	N/A
≥50 to <75	$40	$100	$90

National Grid - High Efficiency Dryer Incentives

CFM Range	Incentive per CFM Cycling & VSD Dryers
Less than 100 CFM	$7.00
100 to 199 CFM	$6.75
200 to 299 CFM	$5.75
300 to 399 CFM	$5.25
400 and greater CFM	$5.00

NSTAR – Prescriptive Compressed Air Incentives

Compressors	Incentive $/ hp
LOAD/NO LOAD 15 HP TO 24 HP	$45.00
LOAD/NO LOAD 25 HP TO 49 HP	$45.00
LOAD/NO LOAD 50 HP TO 75 HP	$45.00
VARIABLE DISP 50 HP TO 75 HP	$125.00
VSD 15 HP TO 24 HP	$90.00
VSD 25 HP TO 49 HP	$90.00
VSD 50 HP TO 75 HP	$125.00

Refrigerated Dryers	Incentive $/ cfm
CYCLING & VSD W/ < 100 CFM	$7.00
CYCLING & VSD W/ 100 TO 199 CFM	$6.75
CYCLING & VSD W/ 200 TO 299 CFM	$5.75
CYCLING & VSD W/ 300 TO 399 CFM	$5.25
CYCLING & VSD > 400 CFM	$5.00

Storage	$2.75/gal

Program Past Performance

Below is a table that provides program performance data by EEPP for the past three years (PY 2004 thru 2006). Estimated savings are calculated differently for each EEPP (Refer to footnotes and Section 14 for reporting detail and disclaimers by EEPP).

Table 6.1.b Lost Opportunity Air Compressors Past Performance

EEPP	PY	Units#[1,2]	Incentives[3]	Gross kWh Annual Savings	Net[4] Summer kW Savings	Net[4] Winter kW Savings	Program Spending[7,8,9]
CLC[a,b]	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	2	$ 12,696	31,806	6	8.3	$ 2,496
	2006	1	$ 7,879	32,014	23	23	$ 6,077
NGrid	2004	108	$ 296,786	1,481,373	287	287	*see footnote 5*
	2005	95	$ 252,654	1,090,227	175	119	*see footnote 5*
	2006	107	$ 255,698	821,840	153	107	*see footnote 5*
NSTAR	2004	---	$0	---	---	---	*see footnote 6*
	2005	16	$ 37,111	213,286	63	61	*see footnote 6*
	2006	35	$ 88,208	609,008	102	53	*see footnote 6*
Unitil/ FG&E	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	2	$ 2,985	23,664	4.08	3.34	$ 12,837
	2006	---	$0	---	---	---	$0
WMECo[c]	2004 2005 2006	***Data are not explicitly available, dollars and saving are included in Massachusetts Custom Programs - Non-Lighting Measures in Table 6.6.***					

[1] (NSTAR) Unit # not applicable of custom projects.

[2] (Unitil) Reflects number of projects completed. (CLC) Reflects number of measures as reported within their measure database.

[3] Incentives refer to Customer Incentives.

[4] (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.

[5] National Grid tracks non rebate spending by Program→

	Large C&I-LostOpp		
Rebates	2004: $9,285,066	***Program Spending***	2004: $2,551,554
	2005: $8,521,972		2005: $2,195,761
	2006: $7,711,716		2006: $2,271,692

[6] NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates→

	Large C&I-LostOpp		
Rebates	2004: $8,232,529	***Program Spending***	2004: $2,759,058
	2005: $6,104,666		2005: $3,482,133
	2006: $5,650,226		2006: $3,847,672

[7] (Unitil) Program Spending = PP&A+MKTING+STAT+EVAL

[8] (Unitil) General program expenditures are not reported by end-use. Costs have been allocated based on kWh savings.

[9] (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs. Program Spending is generally not available by measure. However, Program Spending estimates were provided by allocating overall Program Spending by program to measure groupings using the proportion of annual kWh savings that each measure grouping represented.

[a] (CLC) "No Activity" indicates that there were no measures implemented within the measure grouping for that year.

[b] (CLC) Custom and prescriptive measures cannot be separated within the current data structure. As a result, all non-lighting measures are listed under Massachusetts Custom Programs – Non-Lighting Measures (Table 6.6). This category includes both custom and prescriptive measures.

[c] WMECo does not have a separate program for retrofit or lost opportunity compressed air. Performance numbers are reported in aggregate as Custom Programs.

Program Differences by EEPP

CLC

Compressed air is handled through the Custom application. CLC incentives are the incremental cost between baseline and efficient equipment. Incentives are designed to cover up to 50% of the cost of the efficiency measure or to buy down the cost of the equipment to a one and a half year payback period, whichever is less. Assistance in preparing and submitting the Custom form is available through CLC TA .

The financial incentives will be limited to a maximum of $75,000 per project.

National Grid

Incentives are designed to cover approximately 60% of the estimated incremental costs between baseline and efficient equipment.

NSTAR

Incentives are designed to cover up to 75% of the estimated incremental costs between baseline and efficient equipment, depending upon the specific costs and savings associated with the measure.

Unitil/ FG&E

Application processing and program delivery are implemented by Unitil/FG&E field support representatives.

WMECO

Incentive offered at 75% of incremental cost difference between baseline new equipment and qualifying more efficient alternate

Compressors, dryers, controls, and other system efficiency improvement evaluated on a case by case basis. Prescriptive incentives are not offered.

6.2 Lost Opportunity – Energy Efficient Commercial & Industrial Lighting and Lighting Controls

Program	**Massachusetts C&I Efficient lighting programs (various names)**	
Program Type	Lost Opportunity	
Program Names	**CLC**	New Construction
	National Grid	Design 2000plus
	NSTAR	Construction Solutions
	Unitl/FG&E	Large Business Services
	WMECo	New Construction and Major Renovations Energy Solutions
Program Details		
Goals	To promote energy efficient, high quality lighting design Where possible, to promote new technologies and design practices to the marketplace	
Description	Programs promote efficient lighting technologies and design practices that are either more efficient than standard practice and/or the requirements of the Massachusetts Building Code (780CMR13). Technologies promoted by this program are energy efficient lighting fixtures and lighting controls considered more efficient than code or standard practice in most commercial, industrial, institutional and municipal facilities.	
Target Audience	Large C&I and government customers, lighting equipment distributors and manufacturers, architects, building design engineers and lighting installers are targeted by these programs. No specific customer sectors are targeted per se, although most of the program administrators target special efforts to new public schools.	
Program Implementation & Contractor Support	This varies by program administrator, although, for the most part, the program administrator will market and provide the necessary outreach to reach the target audience. This outreach may take different forms such as, customer and/or contractor seminars or technical assistance provided to manufacturers, electric lighting distributors, building design engineers and architects	
Incentives	Design incentives are available to maximize efficiency opportunities while minimizing “free riders”. All C&I lost opportunity efficient lighting programs offer an incentive that pays a portion of the incremental equipment cost to go from a standard lighting system to a more energy efficient lighting system. All of the program administrators except Unitil/FG&E offer prescriptive incentive programs with predetermined incentives for specific lighting	

	technologies. Prescriptive incentives are determined annually by researching current market prices deltas between standard and efficient lighting products and by analyzing data collected through the program implementation. Incentives for prescriptive pay 75% of the incremental costs on average across all of the territories served by the EEPPs. All of the program administrators also offer "custom" programs for lighting systems where a prescriptive incentive might not fit a technology covered under the prescriptive programs (or in the case of Unitil/FG&E, where all lighting is handled through the "custom" program). Typically, incentives for custom are based on actual and/or estimated incremental costs for a specific project. Again, incentives vary slightly but pay, on average, 75% of the incremental cost. Another variation offered by NSTAR, National Grid, WMECo and CLC is called "performance lighting", where the incentive paid is based on the watts per square foot saved by the lighting system in a new building as compared to the watts per square foot allowed by the state building code. CLC has moved its program to the "performance lighting" approach entirely and offers only prescriptive incentives for lighting controls.
Training & Education	Each program administrator may offer different training and education to the market. Frequently this involves seminars and organized meetings tailored to the various market actors. Training is typically done to familiarize the market actors with the incentive programs. Program administrators will coordinate these trainings if a firm, distributor, or trade organization serves more than one service territory.
Marketing and Outreach Strategy	Each program administrator is responsible for the marketing and outreach for its own programs although, as described in "training & education" above, this may be coordinated.
Other Program Integration / Coordination	The program administrators participate in the Northeast Energy Efficiency Partnerships' Commercial Lighting Design working group. Though this group, program administrators from across New England, New York and New Jersey can exchange information on efficient lighting programs. In past years, this group collaborated to develop the DesignLights™ Consortium *knowhow*™ series, which were design guides that helped lighting designers and other market actors understand the elements and benefits of efficient lighting design. This group is supports a joint effort to promote and increase the availability of more efficient lamps and ballasts factory installed in new fixtures. This effort targets local lighting equipment distributors and regional fixture manufacturer representatives. It promotes lamps and ballasts that meet the Consortium for Energy Efficiency's "High Performance T8" standard, which is a national standard.
Program Past Performance	See Table 6.2 for performance by program year, by program administrator.
Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program measures provided for each EEPP, as part of the Technical Resource Manual.
Future Consideration	Solid State ("LED") lighting technology for use in buildings is advancing rapidly and is likely to have a significant in energy savings in some niche lighting applications in the near future.

	A major challenge to the program administrators is helping the marketplace deal with an impending new building code that will have significantly more stringent efficiency requirements for lighting. Once the new code is in place, the next challenge for program administrators will be finding the next tier of efficient lighting design and technologies.	
Other Program Information		
Program Contacts	**CLC**	John Burns (508) 375-6829
	National Grid	Tom Coughlin (508) 421-7239
	NSTAR	Guival Mercedat (781) 441-8075 Kevin Morley (781) 441-8076
	Unitil/FG&E	Ed Mailloux (603) 773-6541
	WMECo	Ron Johnston (413) 787-9272
Coordination Among Program Administrators	The program administrators have been meeting annually (usually in the summer and fall) each year since 2005 to coordinate programs and harmonize technical requirements and incentives for the following year. The program administrators have been coordinating some of their efforts since at least 1998.	
Program History	Each territory served by the program administrators has been offered a lost opportunity efficient lighting program since at least the early 1990's. As lighting technologies have advanced, so have the design of the programs.	
Specification Reference	Baseline Lighting defined as the Mass. Building Code (780CMR13) or standard practice.	
Evaluation Reports Available	1. RLW Analytics, Inc., "Design 2000plus Lighting Hours of Use and Load Shape Measurement Executive Summary", May 30, 2003 2. RLW Analytics, Inc., "National Grid USA Custom Lighting Impact Study Executive Summary 2004 Energy Initiative and Design 2000plus Program", August 25, 2005 3. Energy & Resource Solutions, "Assessment of Massachusetts Lighting Compliance Documents", August 2005 4. Energy & Resource Solutions, "Market Research Report of High Performance T8 Commercial Lighting Technology", June 2006 *(prepared for NEEP's Commercial Lighting Initiative)* 5. "CT & MA Utilities 2004-2005 Lighting Hours of Use for School Buildings Baseline Study", September 2006 6. RLW Analytics, Inc., "National Grid Lighting Controls Impact Evaluation, Final Report, 2005 Energy Initiative, Design 2000plus and Small Business Services Programs", June 04, 2007	
Other Programs Funded / Sponsored	NEEP Commercial Lighting Design effort with HP T8 stocking practices (described above).	

Incentive levels

As discussed above, incentives cover, on average, 75% of the incremental cost to go from standard lighting equipment to energy efficient lighting equipment.

Program Past Performance

On the following page is a table that provides program performance data by energy efficiency program administrator for the past three years (PY 2004 thru 2006). Estimated savings are calculated differently for each program administrator. Refer to Section 5.0 for reference to detailed impact analysis by company. Refer to footnotes and Section 14 for reporting detail and disclaimers by EEPP.

Table 6.2 Lost Opportunity C&I Lighting and Controls Past Performance

EEPP	PY	Units #[1,2]	Incentives[3]	Gross kWh Annual Savings	Net[4] Summer kW Savings	Net[4] Winter kW Savings	Program Spending[7,8,9]
CLC[a,b]	2004	646	$ 23,212	123,480	23.4	14.4	$ 13,848
	2005	1,097	$ 31,185	143,777	Not Available	Not Available	$ 11,285
	2006	1,763	$ 46,486	416,605	Inc/Data	Inc/Data	$ 79,081
NGrid	2004	20,731	$ 943,808	3,244,184	455	336	*see footnote 5*
	2005	24,670	$ 955,115	5,551,730	748	557	*see footnote 5*
	2006	18,614	$ 662,690	5,278,036	778	518	*see footnote 5*
NSTAR	2004	28,237	$2,000,865	15,976,781	2,251	1,580	*see footnote 6*
	2005	27,420	$2,261,831	13,029,857	2,616	1,599	*see footnote 6*
	2006	14,970	$ 895,394	5,553,266	774	295	*see footnote 6*
Unitil/ FG&E	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	1	$ 11,450	130,979	34.83	28.56	$ 71,053
	2006	0	$0	0	0.00	0.00	$0
WMECo	2004 2005 2006	***Data are not explicitly available, dollars and saving are included in Massachusetts Custom Programs- Lighting Measures Table 6.6 and Retrofit Lighting and Controls in Table 7.2.***					

[1] (NSTAR) Unit # not applicable of custom projects.
[2] (Unitil) Reflects number of projects completed. (CLC) Reflects number of measures as reported within their measure database.
[3] Incentives refer to Customer Incentives.
[4] (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.
[5] National Grid tracks non rebate spending by Program→

	Large C&I-LostOpp		
Rebates	2004: $9,285,066	***Program***	2004: $2,551,554
	2005: $8,521,972	***Spending***	2005: $2,195,761
	2006: $7,711,716		2006: $2,271,692

[6] NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates→

	Large C&I-LostOpp		
Rebates	2004: $8,232,529	***Program***	2004: $2,759,058
	2005: $6,104,666	***Spending***	2005: $3,482,133
	2006: $5,650,226		2006: $3,847,672

[7] (Unitil) Program Spending = PP&A+MKTING+STAT+EVAL
[8] (Unitil) General program expenditures are not reported by end-use. Costs have been allocated based on kWh savings.
[9] (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs. Program Spending is generally not available by measure. However, Program Spending estimates were provided by allocating overall Program Spending by program to measure groupings using the proportion of annual kWh savings that each measure grouping represented.
[a] (CLC) "No Activity" indicates that there were no measures implemented within the measure grouping for that year. Incomplete Data " Inc/Data " indicates that more than 75% of the data is not available. "Not Available" indicates that no data appeared in the database. Not Available is not the same as zero; zeros are shown as reported.
[b] (CLC) Custom and prescriptive measures cannot be separated within the current data structure. As a result, all lighting & control measures are listed under Lighting and Controls, rather than under Massachusetts Custom Programs – Lighting Measures (Table 6.6).

Program Differences by EEPP

CLC

Cape light program offers a performance lighting (watts per square foot) program, similar to NSTARs and National Grid's for new construction. Prescriptive incentives are offered only for lighting controls and those incentives are the same as NSTAR and National Grid. Like all of the other programs, CLC may offer a custom incentive for unique technologies that are "lost opportunities" but may not be defined as purely new construction. Like Western Massachusetts Electric, CLC only offers a performance lighting (watts per square foot) option for lighting fixtures under new construction

National Grid

National Grid offers prescriptive incentives for energy efficient lighting fixtures and controls. The prescriptive incentives for fixtures and controls are the same that are offered by NSTAR as are the eligibility criteria. CLC uses the same prescriptive criteria but for lighting controls only. Like the other program administrators, a custom incentive (rebate) is offered for unique technologies not included in the prescriptive program. Incentives pay 75% of the incremental cost for custom and 75% of the average incremental cost for prescriptive. National Grid also offers a performance lighting option (watts per square foot) that is exactly the same as CLC's and NSTAR's.

NSTAR

NSTAR offers prescriptive incentives for energy efficient lighting fixtures and controls. The prescriptive incentives for fixtures and controls are the same that are offered by National Grid as are the eligibility criteria. CLC uses the same prescriptive criteria but for lighting controls only. Like the other program administrators, a custom incentive (rebate) is offered for unique technologies not included in the prescriptive program. Incentives pay up to 75% of the incremental cost for custom and 75% of the average incremental cost for prescriptive. NSTAR also offers a performance lighting option (watts per square foot) that is exactly the same as CLC's and National Grid's.

Unitil/ FG&E

UNITIL offers a custom incentive program. Incentives cover 75% of the incremental cost of equipment.

WMECO

WMECo offers a performance lighting approach for new construction. The incentive structure is slightly different than CLC, National Grid and NSTAR. A custom option may be offered in a relatively few cases when a lighting project is time dependant (lost opportunity) but may not fit performance lighting.

6.3 Lost Opportunity HVAC Systems

6.3.1 Lost Opportunity Unitary Packaged HVAC

Program	**Massachusetts Cool Choice**	
Program Type	Lost Opportunity	
Program Names Cool Choice	**CLC**	C&I New Construction
	National Grid	Design 2000*plus*
	NSTAR	Construction Solutions
	Unitil/FG&E	Large Business Services
	WMECo	New Construction and Major Renovations Energy Solutions
Program Details		
Goals	1. For the marketplace to specify the more efficient equipment that is available in the market, when installed with controls, to optimize energy savings. 2. Installation of high efficiency HVAC equipment for failed equipment or planned replacements.	
Description	*Massachusetts Cool Choice*: A market transformation initiative that helps to educate end-users about how to save money by installing premium-efficiency HVAC equipment and by offering financial incentives for the purchase of qualifying new equipment and controls for new construction or major renovation projects. Each EEPP provides internal or hired circuit rider services to provide outreach to HVAC Contractors, trade allies, manufacturer representatives and distributors; in addition to technical assistance and application processing.	
Target Audience	Large C&I customers and HVAC Contractors, Distributors and Manufacturers Representatives, No specific industry sectors are targeted at this time.	
Program Implementation & Contractor Support	The sponsors of *Massachusetts Cool Choice* in 2007 hired a circuit rider, Alan Mulak, P.E., to provide technical support and marketing services to both HVAC contractors, distributors, manufacturer reps and customers, as assigned by each EEPP. For 2008, this circuit rider function is handled individually by each EEPP. Refer to section below on "Program Differences by EEPP" for more detail.	
Incentive Structure	Equipment efficiencies and financial incentives available through *Massachusetts Cool Choice* include: • $200 for demand control ventilation (DCV) units • $150 for ECM Motors • $250 for dual enthalpy controls.	

	• Incentives are available for Unitary AC and Split Systems, Air-to-Air Heat Pump Systems and Water Source Heat Pumps that meet minimum efficiency levels. Incentives range from $50/Ton to $125/Ton • Custom rebates are available for technologies not covered by prescriptive. Refer to Table 6.3.1.a "Massachusetts Cool Choice Minimum Efficiency Levels and Incentives" provided below.
Baseline/Specifications	The baseline used for Unitary HVAC equipment is the Massachusetts Building Code, based on ASHRAE Standards 90.1-1999/2001. However, the current version of the Massachusetts Building Code deviates from the ASHRAE standards (90.1-2004) for single package and split system air conditioners less than 65,000 Btu/h cooling capacity. The seventh edition requires a higher minimum performance of 13.0 SEER for this range air conditioning equipment manufactured after January 23, 2006 pursuant to EPACT 2005.
Eligibility Criteria	Incentives are available to industrial, commercial, institutional and agricultural electric service customers in service territories of participating EEPPs. Eligible systems are: electric heat pumps, single packaged units, split systems (split systems must meet ARI specifications), dual enthalpy economizer controls, ECM fan motors and demand control ventilation when installed with new, qualifying equipment. Eligibility criteria generally are consistent with CEE Tier II efficiency levels (updated January 22, 2007). Table 6.3.1.a provides specific eligibility requirements for the current year.
Training & Education	HVAC Contractors, Distributors and Manufacturer Representatives are invited to attend information /vendor training sessions on the program, as well as attend local HVAC manufacturer training sessions. EEPP field support representatives (or circuit rider) are trained on the program at the beginning of each new program year, and meet periodically with vendors, distributors and contractors.
Marketing and Outreach Strategy	Marketing through collaborative support of the *Massachusetts Cool Choice* sponsors; direct contact with large C&I customers by EEPP field representatives (or circuit rider), general marketing letters, website.
Other Program Integration / Coordination	No other program integration for Commercial HVAC is planned for 2008. The Masschusetts EEPPs will continue to assess the opportunity to participate in NEEP's Commercial HVAC Upstream Initiative in 2009, depending on the success of other pilot programs being initiated in 2008 by Efficiency Maine, Efficiency Vermont, Long Island Power Authority and NYSERDA.
Program Past Performance	See Table 6.3.1.c for performance by program year, as reported by each EEPP; and Table 6.3.1.d for Cool Choice Year-End program results, as reported by MaGrann Associates, the Cool Choice implementation contractor for 2004 – 2006.
Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program measures provided for each EEPP, as part of the Technical Resource Manual.

Future Consideration	Continue to offer Massachusetts Cool Choice as a statewide program in 2008, reassessing and readjusting incentive amounts as needed; incorporate pilot program for HVAC Early Replacement as a standard offer in future program years for interested EEPPs.	
Other Program Information		
Program Contacts	**CLC**	John Burns (508) 375-6829
	National Grid	Sarah Dagher (978) 974-9475
	NSTAR	Cherie Miles (781) 441-8037
	Unitil/FG&E	Ed Mailloux (603) 773-6541
	WMECo	Jack Burke (413) 787-9470
Coordination Among Program Administrators	The *Cool Choice* program was a regional program from 1998 – 2006. For 2007 and in 2008, *Cool Choice* will be coordinated statewide in Massachusetts.	
Program History	*Massachusetts Cool Choice* established in 2007; Regional *Cool Choice* participants since 1998 thru 2006; prior to 1998 rebates were available through the individual New Construction programs.	
Specification Reference	Minimum efficiency levels for HVAC equipment are based on current CEE Tier II (updated January 22, 2007). Refer to www.cee1.org/com/hecac/hecac-tiers.pdf	
Evaluation Reports Available	1. Science Applications International Corp.,"1998 Impact Evaluation of the Design 2000 Unitary HVAC Program", April 1998 2. RLW Analytics, "Massachusetts Commercial HVAC Study", December 1999 3. Nexus Market Research, Inc. Dorothy Conant, Shel Feldman Management Consulting, "Scoping Study on Market Penetration Tracking of Energy-Efficient Motors and Packaged HVAC Systems in New England and New York", August 08, 2003 4. RLW Analytics, "Impact Evaluation of a Unitary HVAC Tune-Up Program Final Report – Executive Summary", June 14, 2004 5. New Buildings Institute, "Phase I: Commercial Rooftop HVAC Unit Retrofit Programs", March 28, 2006 6. KEMA, "Packaged Commercial HVAC Equipment Market Characterization - Final Report [Phase 2]", June 30, 2006 7. New Buildings Institute, Inc., "Phase 3: Strategic Recommendations for Commercial HVAC Programs", June 30, 2006 8. PA Consulting Group, "National Accounts Study: HVAC Customer Energy Efficiency Equipment Decision Making Process and Standard Practice – Final", July 5, 2007	

Other Programs Funded / Sponsored	CEE Commercial HVAC & Heat Pump Committee (National Grid and NSTAR annually funded through 2009)

Incentive levels

Incentives cover between 50% and 100%, depending on the size of the unit and the total project cost. See Table 6.3.1.a below for customer incentive levels by equipment type and controls.

Incentive levels and qualifying equipment for the Pilot HVAC Early Replacement Program are listed in Table 6.3.2.b on the following page.

Table 6.3.1.a MinimumEfficiencies/Equipment and Incentives for HVAC

MINIMUM EFFICIENCY LEVELS/INCENTIVE LEVELS				
HVAC UNIT SIZE			**SPECIFICATIONS AND INCENTIVES FOR 2008**	
Tons	Btuh		Minimum SEER/EER for Incentive	Incentive $/Ton
Unitary AC and Split Systems				
< 5.4	< 65,000		14.0 SEER	$125
≥ 5.4 to < 11.25	≥ 65,000 to < 135,000		11.5 EER	$80
≥ 11.25 to < 20	≥ 135,000 to < 240,000		11.5 EER	$80
≥ 20 to < 63	≥ 240,000 to < 760,000		10.5 EER	$50
≥ 63	≥ 760,000		9.7 EER	$50
Air-to-Air Heat Pump Systems				
< 5.4	< 65,000	Split	14.0 SEER & 8.5 HSPF	$125
< 5.4	< 65,000	Packaged	14.0 SEER & 8.0 HSPF	$125
≥ 5.4 to < 11.25	≥ 65,000 to < 135,000		11.5 EER	$80
≥ 11.25 to < 20	≥ 135,000 to < 240,000		11.5 EER	$80
≥ 20	≥ 240,000		10.5 EER	$50
Water Source Heat Pumps				
< 11.25	< 135,000		14.0 EER	$80
ENERGY SAVING CONTROL AND FAN MOTOR OPTIONS (when installed with new qualifying equipment)				
Dual Enthalpy Economizer				
Outside sir economizer utilizing 2 enthalpy sensors (1 for outdoor and 1 for return air)				$250/Unit
Demand Control Ventilation				
Outside air intake controlled based on CO2 sensor				$200/Unit
ECM Fan Motors				
ECM motors installed on fan powered terminal boxes, fan coils or HVAC supply fans on small unitary equipment				$150/Motor

Table 6.3.1.b Minimum Efficiency Levels/Rebates for Pilot HVAC Early Replacement

MINIMUM EFFICIENCY LEVELS / REBATES					
HVAC Unit Size		2006 Efficiency Levels		2007 Efficiency Levels	
Tons	BTUH	Minimum SEER / EER	Rebate $/Ton	Minimum SEER / EER	Rebate $/Ton
Unitary AC and Split					
< 5.4	< 65,000	NA	NA	14.0 SEER	$156
≥ 5.4 to < 11.25	≥ 65,000 to < 135,000	11.0 EER	$73	11.5 EER	$100
≥ 11.25 to < 20	≥ 135,000 to < 240,000	10.8 EER	$73	11.5 EER	$100
≥ 20 to < 63	≥ 240,000 to < 760,000	NA	NA	10.0 EER	$62
≥ 63	≥ 760,000	NA	NA	9.7 EER	$62
Air to Air Heat Pump Systems					
< 5.4 Split	< 65,000	NA	NA	14.0 SEER / 8.5 HSPF	$156
< 5.4 Packaged	< 65,000	NA	NA	14.0 SEER / 8.0 HSPF	$156
≥ 5.4 to < 11.25	≥ 65,000 to < 135,000	11.0 EER	$73	11.5 EER	$100
≥ 11.25 to < 20	≥ 135,000 to < 240,000	10.8 EER	$73	11.5 EER	$100
≥ 20	≥ 240,000	NA	NA	10.0 EER	$62
Water Source Heat Pumps					
< 11.25	< 135,000	NA	NA	14.0 EER	$100
Energy Saving Control Options (when installed with new 2006 or 2007 qualifying equipment)					
Dual Enthalpy Economizer		Outside air economizer utilizing 2 enthalpy sensors *(1 for outdoor and 1 for return air)*			$250 / unit
Demand Control Ventilation		Outside air intake controlled based on CO2 sensor in space or return air			$200 / unit
ECM Fan Motors		ECM Motors installed on fan-powered terminal boxes, fan coils or HVAC supply fans on small unitary equipment			$150/ motor

Program Past Performance

Below is a table that provides program performance data by EEPP for the past three years (PY 2004 thru 2006) that reflects participation in the regional Cool Choice program. Estimated savings are calculated differently for each EEPP. Refer to Section 5.0 for specific reference to more detailed impact analysis by company provided in their Technical Resource Manual (Refer to footnotes and Section 14 for reporting detail and disclaimers by EEPP).

Table 6.3.1.c Lost Opportunity Unitary HVAC Past Performance

EEPP	PY	Units #[1,2]	Incentives[3]	Gross kWh Annual Savings	Net[4] Summer kW Savings	Net[4] Winter kW Savings	Program Spending[7,8,9]
CLC[a,b]	2004	38	$ 26,870	46,668	Inc/Data	Inc/Data	$ 5,234
	2005	39	$ 26,679	25,940	31.2	8.8	$ 2,036
	2006	102	$ 38,587	80,753	123.3	--	$ 15,329
NGrid[5]	2004	458	$ 431,880	927,490	474	-	*see footnote 5*
	2005	546	$ 516,870	1,230,652	612	-	*see footnote 5*
	2006	543	$ 451,826	1,015,716	505	-	*see footnote 5*
NSTAR Cool Choice	2004	214	$ 145,243	576,604	402	25	*see footnote 6*
	2005	32	$ 20,071	69,444	67	4	*see footnote 6*
	2006	9	$ 6,843	21,966	15	0	*see footnote 6*
NSTAR[c] Prescriptive	2004	1,061	$1,868,388	10,838,796	2,042	136	*see footnote 6*
	2005	523	$ 815,731	5,728,838	2,343	190	*see footnote 6*
	2006	546	$ 611,333	4,722,122	838	36	*see footnote 6*
Unitil/ FG&E	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	1	$ 1,748	6,349	2.44	2.00	$ 3,444
	2006	1	$ 1,266	627	0.79	0.65	$0
WMECo	2004	19	$ 47,692	210,212	175	0.00	*see footnote 10*
	2005	9	$ 36,796	171,892	105	0.00	*see footnote 10*
	2006	30	$ 43,217	174,135	78	0.00	*see footnote 10*

1 (NSTAR) Unit # not applicable of custom projects.

2 (Unitil) Reflects number of projects completed. (CLC) Reflects number of measures as reported within their measure database. (NGrid) Reflects the # of HVAC units and dual enthalpy controls installed (i.e. "paid"), as reported from the National Grid's internal database tracking system "In-Demand".

3 Incentives refer to Customer Incentives.

4 (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.

5 National Grid tracks non rebate spending by Program→

	Large C&I-LostOpp		
Rebates	2004: $9,285,066	***Program Spending***	2004: $2,551,554
	2005: $8,521,972		2005: $2,195,761
	2006: $7,711,716		2006: $2,271,692

6 NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates→

	Large C&I-LostOpp		
Rebates	2004: $8,232,529	***Program Spending***	2004: $2,759,058
	2005: $6,104,666		2005: $3,482,133
	2006: $5,650,226		2006: $3,847,672

[7] (Unitil) Program Spending = PP&A+MKTING+STAT+EVAL
[8] (Unitil) General program expenditures are not reported by end-use. Costs have been allocated based on kWh savings.
[9] (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs. Program Spending is generally not available by measure. However, Program Spending estimates were provided by allocating overall Program Spending by program to measure groupings using the proportion of annual kWh savings that each measure grouping represented.
[10] (WMECO) Program Spending data is not explicitly available for lost opportunity projects. It is included for 2004, only, as part of Massachusetts Custom Programs – Non-Lighting Measures provided in Table 6.6 for WMECo's New Construction Program.
[a] (CLC) Incomplete Data " Inc/Data " indicates that more than 75% of the data is not available.
[b] (CLC) Custom and prescriptive measures cannot be separated within the current data structure. As a result, all non-lighting measures are listed under Massachusetts Custom Programs – Non-Lighting Measures (Table 6.6). This category includes both custom and prescriptive measures.
[c] (NSTAR) HVAC prescriptive end-use measure units for Construction Solutions include non-Cool Choice HVAC systems and controls (i.e. DCV, ECM and Dual Enthalpy) and prescriptive HVAC Chillers. This data will also be provided in Lost Opportunity Chillers Table 6.3.1.

Table 6.3.1.d Cool Choice Year End Progress Report*

EEPP	PY	HVAC Units	DE Controls	Incentives	Program Spending**
CLC	2004	40	21	$ 28,061	$ 12,696
	2005	47	18	$ 34,969	$ 7,148
	2006	34	25	$ 23,385	$ 4,682
NGrid	2004	488	183	$ 448,875	$ 119,357
	2005	540	312	$ 498,790	$ 60,449
	2006	530	264	$ 443,257	$ 55,581
NSTAR	2004	234	79	$ 161,552	$ 97,238
	2005	---	---	---	---
	2006	80	30	$ 75,963	$ 45,978
Unitil	2004	6	5	$ 8,180	$ 10,060
	2005	11	6	$ 10,250	$ 5,942
	2006	3	0	$ 1,266	$ 3,738
WMECo	2004	75	40	$ 75,057	$ 34,665
	2005	51	17	$ 52,340	$ 11,708
	2006	108	60	$117,983	$ 8,252

Note*: Cool Choice Year-End reporting by MaGrann Associates. Results do not necessarily correlate with EEPP internal database tracking listed above in Table 6.3c, as applications processed for approval may not have been completed until the following program year, resulting in carry-over for spending and results. In addition, reporting by some of the EEPPs does not allow for disaggregating of prescriptive or custom projects when reporting results.

Note**: Program spending corresponds to collaborative efforts for administration and marketing of *Cool Choice* (regionally or state-wide). Costs related to individual company implementation budgets and staff time are not included. In 2004, higher spending includes additional costs for contracted field support/ circuit rider efforts. Reference for program spending was provided by program year budgets prepared by J. Linn, of NEEP.

Program Differences by EEPP

Massachusetts Cool Choice is a collaborative effort by the EEPPs. This approach provides the same application form, rebates, central toll-free number and clearing house for processing of applications; and shared core "circuit rider" services, administrative and marketing costs. Actual payment and tracking of customer and/or vendor rebates is provided separately for each EEPP. Differences mainly pertain to program delivery and how applications are processed, as described below for each EEPP.

CLC

In addition to the core "circuit rider" services, application processing and program delivery are also handled by the circuit rider for CLC customer projects.

National Grid

In addition to the core "circuit rider" services, application processing and program delivery are also handled by the circuit rider, or hired contractor, for National Grid customer projects.

NSTAR

In addition to the core "circuit rider" services, application processing and program delivery are implemented by NSTAR's Energy Efficiency's C&I Program Managers and Customer Account Executives. Customers must seek NSTAR pre-approval before submitting an application for qualifying equipment.

NSTAR provides training for their business partners, which includes, motor dealers, HVAC Contractors, Refrigeration and Compressed Air contractors as well as commercial and Industrial customers throughout the year. NSTAR also actively participates in many conferences and trade shows by sponsoring booths, training sessions and educational materials.

Unitil/ FG&E

Application processing and program delivery are implemented by Unitil/FG&E field support representatives.

WMECo

Application processing and program delivery are implemented by WMECo Account Executives and field support representatives with assistance from the "circuit rider".

6.3.2 Lost Opportunity Chilled Water Systems

Program	**Massachusetts Chilled Water Systems**	
Program Type	Lost Opportunity	
Program Names	**CLC**	C&I New Construction
	National Grid	Design 2000plus
	NSTAR	Construction Solutions
	Unitil/FG&E	Large Business Services
	WMECo	New Construction and Major Renovations Energy Solutions
Program Details		
Goals	The selection and purchase of high efficiency chillers. Encourage customers to replace chillers using CFC based refrigerants with high efficiency chillers.	
Description	Applies to new construction or time dependent equipment replacement of chillers. Incentives are available using a prescriptive formula on $/ton for chillers that meet the minimum criteria and then an incremental $/ton incentive on performance basis for chillers that exceed the minimum criteria. Typically applies to a single chiller only. When multiple chillers are involved the application is evaluated using the custom formula. The exception is for Unitil/FG&E where incentives are calculated on a custom basis.	
Target Audience	C&I customers. No specific industry sectors are targeted at this time.	
Program Implementation & Contractor Support	**CLC**	Program deliver through in-house program support staff, including circuit rider, and prescriptive process.
	National Grid	Through National Grid's field support staff and tech reps and the efforts for their various agents, customers are made aware of the availability of prescriptive chiller incentives.
	NSTAR	Program delivery through program and field support staff with prescriptive application process.
	Unitil/FG&E	Custom application process
	WMECo	Program delivery through outside contractors to QA chiller submittals from customers (or vendors).
Incentive Structure	**CLC**	$/Ton based on type of unit. + $5/ton incremental based on 0.10 EER increment.

	National Grid	Incentives for Air and water cooled chillers from 150 to 1000 tons. Incentives are paid on $/ton if certain EER or kW/ton thresholds are met or exceed and varies depending on type and size of chiller. Systems with more than one chiller apply for incentives through the Custom program.
	NSTAR	Air-cooled + Water-cooled chillers up to 1000 Tons $/ton depending on equipment type and size. Incentive is performance based. Multi-Chiller Plant and Process Chillers reviewed under CUSTOM application.
	Unitil/FG&E	Site-specific up to 75% of incremental cost based on project cost-effectiveness.
	WMECo	Basically it is $/ton depending on equipment type and size. Incentive is performance based on Market conditions of sampling of actual Incremental. Chiller rebates are not published. All projects are case-specific.
Baseline/Specifications	New chiller must meet a minimum threshold to qualify for incentive. The minimum criteria are published on the application forms and are dependent on the chiller technology type. New chiller in a new construction must comply with the minimum requirement the Massachusetts 780 CMR Energy Code, Section 1305.3.3.	
Eligibility Criteria	Incentives are available to industrial, commercial, institutional and agricultural electric service customers. Efficiency criteria are based on ARI Standards 550/590-98, as appropriate	
	National Grid	Chillers must operate a minimum of 300 hours per year. Chillers for process applications or chillers with VFDs may apply for incentives under the custom approach
	NSTAR	Chiller must be electrically operated for comfort cooling use and operating at least 800 EFLH annually or 1500 annual run hours. Chiller greater than 1000 tons and chiller for process cooling can be considered for the Custom Application program. ***Chiller replacement***: the new chiller must be a one-to-one replacement in kind for the tonnage and condenser type. The new chiller must be the lead chiller in a multiple chillers system configuration. In all cases the new water-cooled chiller must be equipped with condenser water reset strategy.

	WMECo	Chiller must be cost-effective which is determined by analyzing data (operating profile) provided by customer. PA provides customer with data collection questionnaire.
Training & Education	Training and Education through collaborative support and partnership of MAEEP such as the Chilled Water System Analysis Tool (CWSAT) and Chiller Optimization. Presentations at professional society meetings such as local chapters of ASHRAE and AEE	
Marketing and Outreach Strategy	Direct contact with large C&I customers by EEPP field representatives (or circuit rider), general marketing letters, website.	
	National Grid	Company website, along with direct contact with customers and vendors.
	NSTAR	Biannually ' Open House to make the equipment aware of incentives are available to the mutual customers of NSTAR and those equipment .
Other Program Integration / Coordination	Not Applicable	
Program Past Performance	See Table 6.3.2 below	
Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program measures provided for each EEPP, as part of the Technical Resource Manual.	
Future Consideration	This is a stable program and no major changes are anticipated at this time.	

Other Program Information

Program Contacts	**CLC**	John Burns: 508-375-6829 jburns@capelightcompact.org
	National Grid	Fran Boucher 508-421-7299 francis.boucher@us.ngrid.com
	NSTAR	Tumin Chan 781-441-8880 tumin.chan@nstar.com
	Unitil/FG&E	Ed Mailloux 603-773-6541 mailloux@unitil.com
	WMECo	Ron Johnston 413-787-9272 johnsyx@nu.com
Coordination Among Program Administrators	A committee exists to research costs and technologies and coordinate program design decisions on an annual basis.	
Program History	Massachusetts has promoted high efficiency chilled water systems since the outset of the programs.	
Specification Reference	Not Applicable	

Evaluation Reports Available	Energy & Resource Solutions, “Lost Opportunity Chiller Baseline Evaluation”, October 2005
Other Programs Funded / Sponsored	Not Applicable

Program Past Performance

Below is a table that provides program performance data by EEPP for the past three years (PY 2004 thru 2006 where available). Estimated savings are calculated differently for each EEPP. Refer to Section 5.0 for specific reference to more detailed impact analysis by company provided in their Technical Resource Manual (Refer to footnotes and Section 14 for reporting detail and disclaimers by EEPP).

Table 6.3.2 Lost Opportunity Chillers Program Past Performance

EEPP	PY	Units #[1,2]	Incentives[3]	Gross kWh Annual Savings	Net[4] Summer kW Savings	Net[4] Winter kW Savings	Program Spending[7,8,9]
CLC[a,b]	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	3	$ 1,445	1,359	2.0	---	$ 107
	2006	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
NGrid[5]	2004	5	$ 129,970	344,781	126	-	*see footnote 5*
	2005	5	$ 145,035	391,553	154	-	*see footnote 5*
	2006	4	$ 21,420	26,489	27	-	*see footnote 5*
NSTAR[c] HVAC Prescriptive	2004	1,061	$1,868,388	10,838,796	2,042	136	*see footnote 6*
	2005	523	$ 815,731	5,728,838	2,343	190	*see footnote 6*
	2006	546	$ 611,333	4,722,122	838	36	*see footnote 6*
Unitil/ FG&E	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	0	$0	0	0.00	0.00	$0
	2006	0	$0	0	0.00	0.00	$0
WMECo[10]	2004 2005 2006	***Data are not explicitly available, dollars and saving are included in Massachusetts Custom Programs - Non-Lighting Measures in Table 6.6.***					

1 (NSTAR) Unit # not applicable of custom projects.

2 (Unitil) Reflects number of projects completed. (CLC) Reflects number of measures as reported within their measure database. (NGrid) Reflects the # of HVAC units and dual enthalpy controls installed (i.e. "paid"), as reported from the National Grid's internal database tracking system "In-Demand".

3 Incentives refer to Customer Incentives.

4 (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.

5 National Grid tracks non rebate spending by Program→

	Large C&I-LostOpp		
Rebates	2004: $9,285,066	***Program Spending***	2004: $2,551,554
	2005: $8,521,972		2005: $2,195,761
	2006: $7,711,716		2006: $2,271,692

6 NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates→

	Large C&I-LostOpp		
Rebates	2004: $8,232,529	***Program Spending***	2004: $2,759,058
	2005: $6,104,666		2005: $3,482,133
	2006: $5,650,226		2006: $3,847,672

7 (Unitil) Program Spending = PP&A+MKTING+STAT+EVAL

8 (Unitil) General program expenditures are not reported by end-use. Costs have been allocated based on kWh savings.

9 (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs. Program Spending is generally not available by measure. However, Program Spending estimates were provided by allocating overall Program Spending by program to measure groupings using the proportion of annual kWh savings that each measure grouping represented.

[10] (WMECO) Program Spending data is not explicitly available for lost opportunity projects. It is included for 2004, only, as part of Massachusetts Custom Programs – Non-Lighting Measures provided in Table 6.6 for WMECo's New Construction Program.

[a] (CLC) "No Activity" indicates that there were no measures implemented within the measure grouping for that year. "Not Available" indicates that no data appeared in the database. Not Available is not the same as zero; zeros are shown as reported.

[b] (CLC) Custom and prescriptive measures cannot be separated within the current data structure. As a result, all non-lighting measures are listed under Massachusetts Custom Programs – Non-Lighting Measures (Table 6.6). This category includes both custom and prescriptive measures.

[c] (NSTAR) HVAC prescriptive end-use measure units for Construction Solutions include non-Cool Choice HVAC systems and controls (i.e. DCV, ECM and Dual Enthalpy) and prescriptive HVAC Chillers.

Program Differences by EEPP

CLC

Assistance is provided by CLC staff and the Cool Choice/MotorUp circuit rider, a P.E. who is under a separate contract to CLC for technical assistance services.

National Grid

Application processing and program delivery are implemented by National Grid's Key Account Managers and Business Service Representatives.

NSTAR

Application processing and program delivery are implemented by NSTAR's Energy Efficiency's C&I Program Managers and Customer Account Executives.

NSTAR provides training for their business partners, who include, motor dealers, HVAC Contractors, Refrigeration and Compressed Air contractors as well as commercial and Industrial customers throughout the year. NSTAR also actively participates in many conferences and trade shows by sponsoring booths, training sessions and educational materials.

Unitil/ FG&E

Application processing and program delivery are implemented by Unitil/FG&E field support representatives.

WMECo

Application processing and program delivery are implemented by WMECo field support representatives.

6.4 Lost Opportunity Premium-Efficiency Motors

Program	**Massachusetts MotorUp**	
Program Type	Lost Opportunity	
Program Names MotorUp	**CLC**	C&I New Construction
	National Grid	Design 2000plus
	NSTAR	Construction Solutions
	Unitil/FG&E	Large Business Services
	WMECo	New Construction and Major Renovations Energy Solutions
Program Details		
Goals	1. Promote sound motor management practices. 2. The selection and purchase of premium efficiency motors	
Description	*Massachusetts MotorUp*: A market transformation initiative that promotes motor management of high efficiency motors and quality repair of motors to maintain high efficiency. Program features offered include consistent equipment efficiency requirements for qualifying "NEMA Premium" motors, rebates and application form. Each EEPP provides internal or hired circuit rider services to provide outreach to motor dealers, trade allies, and distributors; in addition to technical assistance and application processing. . Since 2003, the regional initiative has provided instant rebates at motor dealer sites through participation in MotorUp (Prior to 2007 as a regional effort; and currently, as a state-based effort).	
Target Audience	Large C&I customers and motor dealers, No specific industry sectors are targeted at this time.	
Program Implementation & Contractor Support	The sponsors of *Massachusetts MotorUp* in 2007 hired a circuit rider, Alan Mulak, P.E., to provide technical support and marketing services to both motor dealers and customers, as assigned by each EEPP. For 2008, this circuit rider function is handled individually by each EEPP. Refer to section below on "Program Differences by EEPP" for more detail.	

Incentive Structure	Design incentives are available to maximize efficiency opportunities. Incentives are designed to cover up to 75% of the incremental cost of the equipment. • Prescriptive rebates for new, installed or stocked NEMA Premium™ motors (ODP or TEFC) follow Massachusetts MotorUp schedule, $45 to $700 on motors from 1 to 200 hp. • Custom rebates are available for technologies not covered by prescriptive. Refer to Table 6.4.a "NEMA Premium Qualifying Efficiencies and Incentives" provided below.
Baseline/Specifications	EPAct Standard, equivalent to NEMA MG1-1998 (Rev 3 2002) Table 12-11, went into effect in October 1997. New motors manufactured and imported for the U.S. market must meet or exceed these full load nominal efficiencies. The specification level required to receive an incentive through MotorUp is equivalent to NEMA MG1-1998 (Rev 3 2002) Table 12-12, Full-Load Nominal Efficiency for NEMA Premium™ Electric Motors. Refer to CEE Web page: www.cee1.org/ind/motrs-main.php3
Eligibility Criteria	Incentives are available to industrial, commercial, institutional and agricultural electric service customers. Motors must be installed or stocked in service territories of participating EEPPs. Motors covered by the program must be new, three phase, induction motors, NEMA Design A & B, 1-200 HP, Open Drip Proof (ODP) or Totally Enclosed Fan Cooled (TEFC), 1200, 1800, or 3600 RPM. Other motors may be eligible for rebate under other EEPPs efficiency programs. To qualify for an incentive, the motor(s) must operate a minimum of 2,000 hours per year.
Training & Education	Training for approximately four (4) motor dealers/ annually, or upon special request. EEPP field support representatives (or circuit rider) are trained on the program at the beginning of each new program year.
Marketing and Outreach Strategy	Marketing through collaborative support of the *Massachusetts MotorUp* sponsors; also contract for additional services such as seminars on motor management; direct contact with large C&I customers by EEPP field representatives (or circuit rider), general marketing letters, website.
Other Program Integration / Coordination	MDM Planning Kit and training on MDM 1-2-3, as well as Motor Master+, for motor dealers and their customers. A pilot program for motor systems and motor management was initiated in 2006 (National Grid only), to be expanded in 2007, and continued in 2008, to test acceptance of a program that integrates motor management practices with motor systems that use NEMA Premium Efficiency Motors, VFDs and other process-related controls.
Program Past Performance	See Table 6.4.b for performance by program year.
Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program measures provided for each EEPP, as part of the Technical Resource Manual.

Future Consideration	Continue to offer *Massachusetts MotorUp* as a statewide program in 2008, reassessing and readjusting incentive amounts as needed; incorporate pilot program for motor systems and motor management as a standard offer in future program years for interested EEPPs.	
Other Program Information		
Program Contacts	**CLC**	John Burns (508) 375-6829
	National Grid	Sarah Dagher (978) 974-9475
	NSTAR	Cherie Miles (781) 441-8037
	Unitil/FG&E	Ed Mailloux (603) 773-6541
	WMECo	Jack Burke (413) 787-9470
Coordination Among Program Administrators	The *MotorUp* program was a regional program from 1998 – 2006. For 2007, *MotorUp* is coordinated statewide for Massachusetts, Rhode Island and parts of New Hampshire.	
Program History	*Massachusetts MotorUp* established in 2007; Regional *MotorUp* participants since 1998 thru 2006; prior to 1998 rebates were available through the individual New Construction programs.	
Specification Reference	NEMA Premium Efficiency Motor specifications, which mirror CEE's Premium Motor specifications. NEMA Premium™ efficiency levels are contained in NEMA Standards Publication MG 1-2003, in Tables 12-12 and 12-13, respectively. This publication can be downloaded from www.nema.org/stds.	
Evaluation Reports Available	No recent evaluation is available. NEEP, the regional coordinator of *MotorUp* (Program Years 1998 – 2006), is in the process of drafting a transition report in 2007. 1. Easton Consultants, "New England Motor Baseline Study", June 30, 1992 2. Science Applications International Corp., "Motor Run-Time and Persistence Study", June 29, 1995 3. Northeast Premium Efficiency Motors Market Transformation Initiative Economic Analysis, April 1998 4. Easton Consultants, Inc., and Xenergy, Inc., "Northeast Premium Motor Initiative Market Baseline and Transformation Assessment - Final Report", August 17, 1999 5. Nexus Market Research, Inc. Dorothy Conant, Shel Feldman Management Consulting, "Scoping Study on Market Penetration Tracking of Energy-Efficient Motors and Packaged HVAC Systems in New England and New York", August 08, 2003	
Other Programs Funded / Sponsored	CEE MDM Campaign Sponsor; CEE Motor Management and Motor Systems (National Grid and NSTAR annually funded through 2009)	

Incentive levels

Incentive levels were originally intended to cover up to 75% of incremental cost. A recent NEEP study indicated that the incentive covers between 50% and 100% depending on size. See Table 6.4.a below for customer incentive levels by horsepower and enclosure type.

Table 6.4.a Qualifying Efficiencies/Equipment and Incentives for Motors

Premium Efficiency Motor Incentives OPEN DRIP PROOF (ODP)				
SIZE HP	SPEED (RPM)			Customer Incentive ($/Motor)
	1200	1800	3600	
	NEMA Nominal Efficiency			
1	82.5%	85.5%	77.0%	$45
1.5	86.5%	86.5%	84.0%	$45
2	87.5%	86.5%	85.5%	$54
3	88.5%	89.5%	85.5%	$54
5	89.5%	89.5%	86.5%	$54
7.5	90.2%	91.0%	88.5%	$81
10	91.7%	91.7%	89.5%	$90
15	91.7%	93.0%	90.2%	$104
20	92.4%	93.0%	91.0%	$113
25	93.0%	93.6%	91.7%	$117
30	93.6%	94.1%	91.7%	$135
40	94.1%	94.1%	92.4%	$162
50	94.1%	94.5%	93.0%	$198
60	94.5%	95.0%	93.6%	$234
75	94.5%	95.0%	93.6%	$270
100	95.0%	95.4%	93.6%	$360
125	95.0%	95.4%	94.1%	$540
150	95.4%	95.8%	94.1%	$630
200	95.4%	95.8%	95.0%	$630

Premium Efficiency Motor Incentives TOTALLY CLOSED FAN COOLED (TEFC)				
SIZE HP	SPEED (RPM)			Customer Incentive ($/Motor)
	1200	1800	3600	
	NEMA Nominal Efficiency			
1	82.5%	85.5%	77.0%	$50
1.5	87.5%	86.5%	84.0%	$50
2	88.5%	86.5%	85.5%	$60
3	89.5%	89.5%	86.5%	$60
5	89.5%	89.5%	88.5%	$60
7.5	91.0%	91.7%	89.5%	$90
10	91.0%	91.7%	90.2%	$100
15	91.7%	92.4%	91.0%	$115
20	91.7%	93.0%	91.0%	$125
25	93.0%	93.6%	91.7%	$130
30	93.0%	93.6%	91.7%	$150
40	94.1%	94.1%	92.4%	$180
50	94.1%	94.5%	93.0%	$220
60	94.5%	95.0%	93.6%	$260
75	94.5%	95.4%	93.6%	$300
100	95.0%	95.4%	94.1%	$400
125	95.0%	95.4%	95.0%	$600
150	95.8%	95.8%	95.0%	$700
200	95.8%	96.2%	95.4%	$700

Program Past Performance

Motors that are eligible under the *MotorUp* program are three phase ODP & TEFC motors less than or equal to 200 HP meeting a minimum qualifying efficiency. The baseline efficiency is that defined by EPACT and the June 13, 2001 CEE specifications for NEMA Premium™ Efficiency motors.

On the following page is a table that provides program performance data by EEPP for the past three years (PY 2004 thru 2006). Estimated savings are calculated differently for each EEPP. Refer to Section 5.0 for specific reference to more detailed impact analysis by company provided in their Technical Resource Manual (Refer to footnotes and Section 14 for reporting detail and disclaimers by EEPP).

Table 6.4.b Lost Opportunity Premium Efficiency Motors (***MotorUp)*** Past Performance

EEPP	PY	Units #[1,2]	Incentives[3]	Gross kWh Annual Savings	Net[4] Summer kW Savings	Net[4] Winter kW Savings	Program Spending[7]
CLC[a,b]	2004	No Activity	No Activity	No Activity	No Activity	No Activity	$ 7,914
	2005	2	$ 189	2,636	0.5	0.5	$ 2,711
	2006	6	$ 606	6,672	1.0	1.0	$ 2,036
NGrid	2004	386	$ 44,360	166,106	31	24	$ 49,783
	2005	237	$ 26,475	120,204	17	14	$ 18,763
	2006	174	$ 26,023	109,873	18	15	$ 16,155
NSTAR	2004	208	$ 22,318	198,226	29	30	$ 38,855
	2005	94	$ 11,306	88,095	14	15	$ 14,645
	2006	97	$ 11,574	95,752	9	6	$ 1,938
Unitil/ FG&E	2004	n/a	n/a	n/a	n/a	n/a	$ 7,466
	2005	0	$0	0	0.00	0.00	$ 2,814
	2006	0	$0	0	0.00	0.00	$ 2,404
WMECo	2004	14	$ 6,999	59,134	2	14	$ 11,545
	2005	24	$ 15,557	128,460	8.6	24	$ 4,351
	2006	11	$795	5,484	0.81	11	$ 3,730

[1] (NSTAR) Unit # not applicable of custom projects.

[2] (Unitil) Reflects number of projects completed. (CLC) Reflects number of measures as reported within their measure database.

[3] Incentives refer to Customer Incentives.

[4] (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.

[5] National Grid tracks non rebate spending by Program→

	Large C&I-LostOpp		
Rebates	2004: $9,285,066	***Program Spending***	2004: $2,551,554
	2005: $8,521,972		2005: $2,195,761
	2006: $7,711,716		2006: $2,271,692

[6] NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates→

	Large C&I-LostOpp		
Rebates	2004: $8,232,529	***Program Spending***	2004: $2,759,058
	2005: $6,104,666		2005: $3,482,133
	2006: $5,650,226		2006: $3,847,672

[7] Program spending corresponds to collaborative efforts for administration and marketing of *MotorUp* (regionally or state-wide). Costs related to individual company implementation budgets and staff time are not included. The estimates for program spending by EEPP are based on a percentage of the total regional budget for core services provided by APT: PY04 - $334,380; PY05 - $126,028; and PY06 - $107,228. In 2004, higher spending includes additional costs for contracted field support/ circuit rider efforts. These figures are based on APT budget proposals and sponsor allocation spreadsheets provided by J. Linn (NEEP) for each program year, and are not provided as part of the EEPP internal data sources.

[a] (CLC) "No Activity" indicates that there were no measures implemented within the measure grouping for that year.

[b] (CLC) Custom and prescriptive measures cannot be separated within the current data structure. As a result, all non-lighting measures are listed under Massachusetts Custom Programs – Non-Lighting Measures (Table 6.6). This category includes both custom and prescriptive measures.

Program Differences by EEPP

Massachusetts MotorUp is a collaborative effort by the EEPPs. This approach provides the same application form, rebates, central toll-free number and clearing house for processing of applications; and shared core "circuit rider" services, administrative and marketing costs. Actual payment and tracking of customer and/or vendor rebates is provided separately for each EEPP. Differences mainly pertain to program delivery and how applications are processed, as described below for each EEPP.

CLC

In addition to the core "circuit rider" services, application processing and program delivery are also handled by the circuit rider for CLC customer projects.

National Grid

In addition to the core "circuit rider" services, application processing and program delivery are also handled by the circuit rider, or hired contractor, for National Grid customer projects.

Additional training seminars for motor dealers/ located in National Grid's service territory may be contracted to include training on MDM, Motor Master+ and National Grid's Motor Management Pilot.

NSTAR

In addition to core "circuit rider" services, application processing and program delivery are implemented by NSTAR's Energy Efficiency's C&I Program Managers and Customer Account Executives. Customers must seek NSTAR pre-approval before submitting an application for qualifying equipment.

NSTAR provides training for their business partners, which includes, motor dealers, HVAC Contractors, Refrigeration and Compressed Air contractors as well as commercial and Industrial customers throughout the year. NSTAR also actively participates in many conferences and trade shows by sponsoring booths, training sessions and educational materials.

Unitil/ FG&E

Application processing and program delivery are implemented by Unitil/FG&E field support representatives.

WMECo

Application processing and program delivery are implemented by WMECo Account Executives, and field support representatives with assistance from the "circuit rider".

6.5 Lost Opportunity Variable Speed Drives (VSDs)

Program	**Lost Opportunity Variable Speed Drives**	
Program Type	Lost Opportunity	
Program Names	**CLC**	C&I New Construction
	National Grid	Design 2000*plus*
	NSTAR	Construction Solutions
	Unitil/FG&E	Large Business Services
	WMECo	New Construction and Major Renovations Energy Solutions
Program Details		
Goals	1. Expand the use of variable speed drives on motor systems that have varying centrifugal load operations such as variable flow or pressure regulation. 2. Integration of NEMA Premium™ efficiency motors and variable speed drives, where applicable.	
Description	Large C&I program to offer financial incentives for new VSD applications which can significantly reduce the energy consumed by fans, centrifugal pumps, and other motor-driven machinery operated under varying loads. This program addresses most popular VSD applications. For other VSD applications, use the Custom Approach. • Systems must have varying load operations such as variable flow or pressure regulation. Fan and pump operations that would otherwise be regulated by on/off cycling are not eligible for VSD incentives. Note: Variable speed drive (*VSD*) systems [*also called adjustable speed drives (ASD) or variable frequency drives (VFDs*)]	
Target Audience	Large C&I customers with new construction projects and motor dealers & distributors who also promote and sell drive technology. No specific industry sectors are targeted at this time.	
Program Implementation & Contractor Support	Each EEPP has their field support representatives to provide customer assistance for a proposed project. Processing of applications are handled in-house by each EEPP.	
Incentive Structure	Design incentives are available to maximize efficiency opportunities. Incentives are designed to cover 40 to 50 percent of the total cost of equipment (labor and materials). VSD incentive amounts vary and are based on cumulative motor HP controlled by each VSD for an installation.	

	CLC	VSD for 5 hp – 20 hp ($1,700 - $2,600) for specific installations VSD for all other applications use the Custom form. In general, rebates are designed to cover up to 50% of the cost of the efficiency measure or to buy down the cost of the equipment to a one and a half year payback period, whichever is less.
	National Grid	VSD for 5 hp – 20 hp ($900 - $1,800 incentive) for specific installations.
	NSTAR	VSD for 5 hp – 50 hp ($1,700 - $4,500 incentive) for specified applications.
	Unitil/FG&E	Custom only – incentive based on 90% of incremental cost.
	WMECo	VSD for 5 hp – 100 hp ($920 - $9,290) for specific HVAC fan and pump installations.
	Custom incentives may be calculated for motors and drives that do not fit into prescriptive categories.	
Baseline/Specifications	The baseline is a composite fan or pump curve comprised of various, less-efficient control types specific to the selected installation type. Hours of operation vary based upon the facility type load shape.	
Eligibility Criteria	Incentives are available to industrial, commercial, institutional and agricultural electric service customers. Systems must have varying load operations such as variable flow or pressure regulation. Fan and pump operations that would otherwise be regulated by on/off cycling are not eligible for VSD incentives. Systems with constant speed and variable load operations (such as conveyors) are not eligible for VSD incentives • Code required VSD installations are NOT eligible for an incentive.	
	CLC	VSD incentives offered on 8 prescriptive HVAC installation types from 5 hp – 20 hp.
	National Grid	VSD incentives offered on 9 prescriptive HVAC installation types from 5 hp – 50 hp.
	NSTAR	VSD incentives offered on 9 prescriptive HVAC installation types from 5 hp – 50 hp.
	Unitil/FG&E	No prescriptive VSD installations. Custom only.
	WMECo	VSD prescriptive incentives offered on HVAC applications from 5 hp – 100 hp.

	VSDs installed in process applications, waster water or municipal water supply applications may alternately use the Custom Application process, which requires detailed energy savings calculations. • To qualify for an incentive, the motor(s) being controlled by a VSD must operate a minimum of 2,000 hours per year. • VSDs must be equipped with a minimum of 3% impedance series reactor in its AC power input connection. • VSDs must comply with Massachusetts Harmonics requirements.
Training & Education	Training to motor dealers/ as part of *Massachusetts MotorUp* outreach efforts, or upon special request to address comprehensive motor systems, including applications suitable for VSDs. EEPP field support representatives (or circuit rider) are trained on the program at the beginning of each new program year.
Marketing and Outreach Strategy	Outreach is provided through a collaborative effort that supports the marketing of *Massachusetts MotorUp*, promoting the benefits of a motor management plan and integration of VSDs. Other outreach includes direct contact with large C&I customers by EEPP field representatives (or circuit rider), general marketing letters, website. No marketing campaign to promote drive technology/products is planned for 2007, or for 2008.
Other Program Integration / Coordination	A pilot program for motor systems and motor management was initiated in 2006 (National Grid only), to be expanded in 2007, and continued in 2008, to test acceptance of a program that integrates motor management practices with motor systems that use NEMA Premium Efficiency Motors, VSDs and other process-related controls.
Program Past Performance	See Table 6.5 for performance by program year.
Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program measures provided for each EEPP, as part of the Technical Resource Manual.
Future Consideration	Continue to promote awareness about the additional energy saving benefits of VSDs, and integrate VSDs into program messaging and motor-related services offered by each EEPP. Continue to support CEE's efforts for integration of VSDs (referred to as ASDs by CEE) into their MDM campaign messaging and tools.

Other Program Information		
Program Contacts	**CLC**	John Burns (508) 375-6829
	National Grid	Kevin Keena (508) 421-7279
	NSTAR	Cherie Miles (781) 441-8037
	Unitil/FG&E	Ed Mailloux (603) 773-6541

	WMECo	Jack Burke (413) 787-9470
Coordination Among Program Administrators	Efforts have been made to integrate messaging through *Massachusetts MotorUp* to create awareness about VSDs.	
Program History	As early as 1987, rebates were available through the individual EEPPs' lost opportunity programs	
Specification Reference	NEMA Premium Efficiency Motor specifications, which mirror CEE's Premium Motor specifications. NEMA Premium™ efficiency levels are contained in NEMA Standards Publication MG 1-2003, in Tables 12-12 and 12-13, respectively. This publication can be downloaded from www.nema.org/stds.	
Evaluation Reports Available	1. Demand Management Institute, "Prescriptive Variable Frequency Drive Worksheet Development", June 9, 2006	
Other Programs Funded / Sponsored	CEE MDM Campaign Sponsor; CEE Motor Management and Motor Systems (National Grid and NSTAR annually funded through 2009). These programs will continue in 2008 integration of VSDs (CEE refers to them as ASDs) into campaign messaging and tools.	

Incentive levels

Incentive levels were original intended to cover up to 75% total installed cost. Incentives range from $900 to $4,500 for cumulative motor horsepower of 5 hp – 50 hp controlled by each VSD (refer to table above for detail by EEPP).

Program Past Performance

On the following page is a table that provides program performance data by EEPP for the past three years (PY 2004 thru 2006). Estimated savings are calculated differently for each EEPP. Refer to Section 5.0 for specific reference to more detailed impact analysis by company provided in their Technical Resource Manual (Refer to footnotes and Section 14 for reporting detail and disclaimers by EEPP).

Table 6.5 Lost Opportunity VSDs Past Performance

EEPP	PY	Units #[1,2]	Incentives[3]	Gross kWh Annual Savings	Net[4] Summer kW Savings	Net[4] Winter kW Savings	Program Spending[7,8,9]
CLC[a,b]	2004	1	$ 8,915	49,328	8.5	8.5	$ 5,532
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	4	$ 13,000	15,556	Not Available	Not Available	$ 2,953
NGrid	2004	19	$ 38,600	146,185	12	26	*see footnote 5*
	2005	5	$ 7,900	57,148	6	14	*see footnote 5*
	2006	15	$ 19,700	135,783	7	35	*see footnote 5*
NSTAR	2004	7	$ 10,974	92,852	16	16	*see footnote 6*
	2005	412	$ 51,291	372,567	64	67	*see footnote 6*
	2006	355	$ 39,737	486,454	37	24	*see footnote 6*
Unitil/ FG&E	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	0	$0	0	0.00	0.00	$0
	2006	0	$0	0	0.00	0.00	$0
WMECo[c]	2004 2005 2006	***Data are not explicitly available, dollars and saving are included in Massachusetts Custom Programs - Non-Lighting Measures in Table 6.6.***					

[1] (NSTAR) Unit # not applicable of custom projects.

[2] (Unitil) Reflects number of projects completed. (CLC) Reflects number of measures as reported within their measure database.

[3] Incentives refer to Customer Incentives.

[4] (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.

[5] National Grid tracks non rebate spending by Program→

	Large C&I-LostOpp		
Rebates	2004: $9,285,066	***Program Spending***	2004: $2,551,554
	2005: $8,521,972		2005: $2,195,761
	2006: $7,711,716		2006: $2,271,692

[6] NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates→

	Large C&I-LostOpp		
Rebates	2004: $8,232,529	***Program Spending***	2004: $2,759,058
	2005: $6,104,666		2005: $3,482,133
	2006: $5,650,226		2006: $3,847,672

[7] (Unitil) Program Spending = PP&A+MKTING+STAT+EVAL

[8] (Unitil) General program expenditures are not reported by end-use. Costs have been allocated based on kWh savings.

[9] (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs. Program Spending is generally not available by measure. However, Program Spending estimates were provided by allocating overall Program Spending by program to measure groupings using the proportion of annual kWh savings that each measure grouping represented.

[10] (WMECO) Program Spending data is not explicitly available for retrofit projects. It is included for 2004, only, as part of Massachusetts Custom Programs – Non-Lighting Measures provided in Table 6.6 for WMECo's New Construction Program.

[a] (CLC) "No Activity" indicates that there were no measures implemented within the measure grouping for that year. "Not Available" indicates that no data appeared in the database. Not Available is not the same as zero; zeros are shown as reported.

[b] (CLC) Custom and prescriptive measures cannot be separated within the current data structure. As a result, all non-lighting measures are listed under Massachusetts Custom Programs – Non-Lighting Measures (Table 6.6). This category includes both custom and prescriptive measures.

[c] WMECo does not have a separate program for retrofit or lost opportunity variable speed drives. Performance numbers are reported in aggregate as Custom Programs.

Program Differences by EEPP

Application processing, payments and tracking of customer and/or vendor rebates is provided separately for each EEPP. Differences in the types of VSD applications that are allowed for an incentive are listed below for each EEPP.

CLC

Application Types

BEF Building Exhaust Fan
CWP Chilled / Condensing Water Pump
FWP Boiler Feed Water Pump
HWP Hot Water Circulator Pump
MAF Make-up Air Fan
RFA HVAC Return Air Fan
SFA HVAC Supply Air Fan
WHP Water Source Heat Pump Circulator Fan

National Grid

Application Types

BDF Boiler draft fan
CWP Chilled water distribution pump
FWP Boiler feed water pump
HPP WSHP circulation pump
HWP Heating hot water pump
PCP Process cooling pump
PE Process exhaust and make-up air fan
REF Return fan on return air handler or on VAV packaged HVAC unit
SF Supply fan on supply air handler or on VAV packaged HVAC unit

NSTAR

Application processing and program delivery are implemented by NSTAR's Energy Efficiency's C&I Program Managers and Customer Account Executives. Customers must seek NSTAR pre-approval before submitting an application for qualifying equipment.

NSTAR provides training for their business partners, which includes, motor dealers, HVAC Contractors, Refrigeration and Compressed Air contractors as well as commercial and Industrial customers throughout the year. NSTAR also actively participates in many conferences and trade shows by sponsoring booths, training sessions and educational materials.

Application Types

BEF Building Exhaust Fan
CTF Cooling Tower Fan
CWP Chilled / Condensing Water Pump

FWP Boiler Feed Water Pump
HWP Hot Water Circulator Pump
MAF Make-up Air Fan
RFA HVAC Return Air Fan
SFA HVAC Supply Air Fan
WHP Water Source Heat Pump Circulator Loop

Unitil/ FG&E

Application processing and programdelivery are implemented by Unitil/FG&E field support representatives.

WMECo

Application processing and program delivery are implemented by WMECo Account Executives, C&LM staff or circuit rider.

Application Types

CTF Cooling Tower Fan
CWP Chilled / Condensing Water Pump
MAF Make-up Air Fan
RFA HVAC Return Air Fan
SFA HVAC Supply Air Fan
WHP Water Source Heat Pump Circulator Loop

6.6 Lost Opportunity Custom - Comprehensive Design Approach / Advanced Buildings

Program	**Massachusetts Custom**	
Program Type	Lost Opportunity: Comprehensive subcategory	
Program Names Custom	**CLC**	New Construction
	National Grid	Design 2000*plus*
	NSTAR	Construction Solutions
	Unitl/FG&E	*NOT PARTICIPATING IN THIS PROGRAM*
	WMECo	New Construction and Major Renovations Energy Solutions
Program Details		
Goals	Encourage customers doing new construction and major renovation projects to reach deep and include a full range of technically sound electric and fossil fuel efficiency practices that go well beyond code requirements.	
Description	The CDA / Advance building program gives preferential treatment to premier projects that take a Comprehensive approach to efficiency. It applies to a **set** of energy efficiency measures that are completed collectively and meet the requirements of the program Benefit Cost tests. The principle behind CDA is to ensure that an integrated engineering and architectural process is conducted to maximize customer savings and ensure the integrity of the building design and construction process benefits from a whole building assessment. This permits building design iterations and alternative best practices to be examined for cost, benefits and operational impacts. This may include measures that if completed individually would qualify for incentives at the lower rates provided under the prescriptive or custom program. The incentive is specific to the parameters of the individual project for each specific customer. Determination of eligibility requires a budget be developed for both the base or standard less efficient approach and the "Proposed" more efficient approach. Likewise, engineering calculations must be carried out to project savings achieved by the proposed case verses the base case.	
Target Audience	C&I customers with new construction projects greater than 75,000 sqft. Exceptions: For National Grid, Industrial refrigeration plants are not eligible.	

Program Implementation & Contractor Support	**CLC**	Program implementation is delivered through TA. Oversight and technical analysis is accomplished through a Vendor Management contract with Honeywell, Inc. CLC Primary TA include: • DMI • Alan Mulak, P.E., LLC
	National Grid	All program implementation is in house but uses TA vendors to do supporting detailed tech analysis. In general the cost of these outside services are split 50-50 with the customer. Occasionally, the technical analysis and savings calculations used to support the incentive are calculated in house by the utility when time and resources allow. All work done by outside TA vendors is reviewed by in house technical staff. Peer Review: The Technical studies for all projects that save in excess of 250,000 kWh annually require separate review by a second National Grid's in house energy efficiency expert. In addition, assistance complying with the US Green Buildings Council's LEED standard is provided for customers.
	NSTAR	All program implementation in house but use TA vendors to do supporting detailed tech analysis. In general the cost of these outside services are split 50-50 with the customer. Occasionally, the technical analysis and savings calculations used to support the incentive are calculated in house by the utility when time and resources allow. All work done by outside TA vendors is reviewed by in house technical staff.
	Unitil/FG&E	Not Participating
	WMECo	Performs in house evaluation, with technical support primarily by the following consulting engineering firms: W.H. Fuller LLC, The Nicholas Group, Advanced Energy Management, Compressed Air Technologies. A DOE 2 Simulation is offered where appropriate.
Incentive Structure	**CLC**	Incentive Caps/Limits: Project incentives are capped at $75,000 per year. Government projects are capped at $75,000 per year per community served by the facility. For example a regional school serving three towns could receive $225,000 for a project ($75,000 x 3).

	National Grid	Design incentives are available to maximize customer's participation in efficiency opportunities. Incentives are designed to cover up to 90% percent of the incremental cost over the cost of a base case system (labor and materials). Incentive Caps/Limits: Incentive limits based on simple payback. Incentives are limited such that the owner's simple payback on the cost of the measure is not less than 1.0 years. Payment for any single building project limited to $400,000. Further, on projects receiving an incentive of more than $100,000, the incentive is capped so the customer does not receive more than $30 per "unit" (or Net Lifetime kW-year and Net Lifetime MWh) saved .
	NSTAR	Design incentives are available to maximize customer's participation in efficiency opportunities. Incentives are designed to cover up to 90% percent of the incremental cost over the cost of a base case system (labor and materials). Incentive Caps/Limits: No lower limit on the simple payback of the project. There is an upper limit of $500,000 incentive per customer per year.
	Unitil/FG&E	Not Participating
	WMECo	Incentives are either the incremental cost between base line and efficient equipment or prescriptive. Design incentives may be offered. Incentive Caps/Limits: Currently, no incentive caps.
Baseline/Specifications	Chapter 34 of 780 CMR, Commonwealth of Massachusetts Energy Code, where applicable. For process and other equipment not covered by code, utility representatives use best judgment to determine standard practices. National Grid maintains a document to clarify the Baseline titled the "Baseline Document 2007, National Grid".	

<table>
<tr><td rowspan="6">Eligibility Criteria</td><td colspan="2">Incentives are available to industrial, commercial, institutional and agricultural electric service customers. Categories include HVAC, Process, Lighting, Controls, Building Envelope and other energy saving technologies.
Note: Energy modeling using approved software is required for CDA.
<u>Other Criteria for either CDA or Advanced Buildings approach:</u>
▪ Building Size: Advanced Buildings: 20,000 SF to 100,000 SF; and CDA 100,000 SF minimum.
▪ Buildings must have central air conditioning.
▪ A comprehensive set of measures is required.
▪ Advanced Buildings projects follow the requirements of NBI's Advanced Buildings Core Performance Guide.
▪ CDA install a set of measures that includes efficient lighting, efficient building shell and efficient HVAC. Project must be designed and built with efficiency features that will reduce the annual energy use for the facility to at least 20% less than minimally code compliant design.
▪ The projects are part of a new construction project, or major renovation of existing facilities.
▪ Measures that are intended principally to reduce Demand are not eligible.
▪ Measures that result in fuel switching are not eligible with the exception of Cape Light Compact where this is allowed.
▪ Improvements or enhancements that are mandated by any government entity are not eligible.
▪ Some technologies, such as equipment where engineering calculations can not predict savings, or where vendors fail to provide sufficient technical data to demonstrate performance claims, are not eligible. Plug in devices are also not eligible.</td></tr>
<tr><td>CLC</td><td>Measures that result in fuel switching are eligible for an incentive.</td></tr>
<tr><td>National Grid</td><td>The set of ECMs must include at least one in each category of HVAC, Lighting and Building Envelope. Lighting power densities must be no greater than allowed by ASHRAE 90.1 2004. To qualify, the project must result in a building that will use 20% less energy than a building that minimally meets the Massachusetts Energy Code.</td></tr>
<tr><td>NSTAR</td><td>The set of ECMs must comprise a combination of at least five ECMs that affect the building shell, lighting power density and controls, the HVAC equipment and control, as well as motors and drives. The combined interactive effect of the set of measures must reduce the HVAC loads by at least 15% and at least 20% of electric energy savings.
Industrial processes and pieces of equipment are excluded from the "set" of ECMs.</td></tr>
<tr><td>Unitil/FG&E</td><td>Not Participating</td></tr>
<tr><td>WMECo</td><td>No additional criteria to provide.</td></tr>
</table>

Training & Education	• Public Seminars • Advanced Buildings 90 minute and 4 hour trainings (2 to 4 times a year) • Advanced Buildings Lunch and Learns • Energy Fairs and trade shows such as: - Building Energy 2007 - Build Boston 2007
Marketing and Outreach Strategy	Direct contact with large C&I customers by EEPP field representatives, general marketing letters, seminars, lunch-n-learn trainings, outreach through local professional society presentations (ASHRAE, Association of Energy Engineers) and newsletters, along with EEPP websites.
Other Program Integration / Coordination	Not Applicable
Program Past Performance	See Table 6.6 for performance by program year.
Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program measures provided for each EEPP, as part of the Technical Resource Manual.
Future Consideration	CLC, National Grid and NSTAR are considering switching to a two tier level of Comprehensive Incentives for 2008. A building that uses at least 20% less energy than code will receive an incentive for up to 80% of the incremental cost while buildings that use at least 25% less energy code will receive an incentive of up to 90% of the incremental cost of qualifying electric efficiency measures. Advanced Buildings would remain up to 90% incentive level. There is a bill in the State Legislature related to adopting the IECC as the State Energy Code. If approved this will prompt a substantial change in the base cases we use.

Other Program Information

Program Contacts	**CLC**	John Burns (508) 375-6829
	National Grid	Fran Boucher 508-421-7299
	NSTAR	Tumin Chan 781-441-8880 Hugh Gaasch 781-441-8706
	Unitil/FG&E	Not Participating
	WMECo	Robert Dvorchik 413-499-9004
Coordination Among Program Administrators	A team gathers annually to discuss changes for subsequent years, including introducing new design techniques and new building technologies.	

Program History	The Massachusetts Comprehensive programs have been available for approximately 15 years. The Advanced Buildings program was established in September 2005, and the second generation of this national standard is being adopted in the second half of 2007.
Specification Reference	The specification reference for the custom approach using the Advanced Buildings program track only is "New Buildings Institute Advanced Buildings Core Performance Guide", published July 2007, www.newbuildings.org.
Evaluation Reports Available	Each EEPP has a group that is responsible for evaluation of the many custom applications. See a partial list of completed and active studies below. 1. "New England Power Service Company Custom Persistence Study", *date unknown* 2. Michael Ketcham, David Wortman, PE, Wortman Engineering, "Impact Evaluation Study of 1998 Custom Comprehensive Installations", February 24, 2000 3. Michael Ketcham, David Wortman, PE, Wortman Engineering, "Impact Evaluation Study of 1999 Custom O&M Installations", June 7, 2000 4. HEC, Inc., "Impact Evaluation Study of 1999 Custom HVAC Installations", December 8, 2000 5. Demand Management Institute, "Final Report: National Grid USA Service Company Evaluation of 2000 Custom Process Installations - Part II", June 26, 2002 6. Science Application International Corp., "National Grid USA Service Company Impact Evaluation of 2002 Custom Comprehensive Projects - Final Report", June 8, 2004 7. Select Energy Services, Inc., "Final Report for National Grid USA Service Company Evaluation of 2003 Custom Process Installations - Part I", August 24, 2005 8. Select Energy Services, Inc., "Final Report for National Grid USA Service Company Evaluation of 2003 Custom HVAC Installations - Part II", September 27, 2005 9. Demand Management Institute, "Evaluation of 2003 Custom HVAC Installations - Part I", October 12, 2005 10. "(WMECo) Custom Services Impact Evaluation 2004 Measure Installations", March 2006 11. TecMarket Works and Summit Blue Consulting, "Final Approach for Estimating and Tracking the Value of Custom Program Non-Electric Benefits: Strategies for Quantifying Non-Electric Benefits in Custom Program Applications", May 23, 2006 12. Demand Management Institute, "Impact Evaluation of 2004 Custom Process Installations - Part I", June 1, 2006 13. Select Energy Services, Inc., "Evaluation of 2004 Custom Process Installations - Part II", June 19, 2006 14. RLW Analytics, Sample Design and Impact Evaluation Analysis of the 2005 Custom Program, July 18, 2006

	15. Science Applications International Corp., “Impact Evaluation of 2004 Custom Process Installations - Part III”, July 3, 2006 16. Demand Management Institute, “Impact Evaluation of 2005 Custom Process Installations - Part I”, June 5, 2007 17. UTS Energy Engineering, LLC, “Impact Evaluation of 2005 Custom Process Installations - Part II”, June 19, 2007 18. GDS Associates, Inc., “Impact Evaluation of 2005 Custom Process Installations - Part III”, July 20, 2007 19. RLW Analytics, Inc., “Impact Evaluation of 2006 Custom Lighting Installations”, July 5, 2007 20. RLW Analytics, Inc., “Sample Design and Impact Evaluation of 2006 Custom Programs”, July 20, 2007
Other Programs Funded / Sponsored	Not Applicable

Program Past Performance

On the following page is a table that provides program performance data by energy efficiency program administrator for the past three years (PY 2004 thru 2006). Estimated savings are calculated differently for each program administrator. Refer to Section 5.0 for reference to detailed impact analysis by company (Refer to footnotes and Section 14 for reporting detail and disclaimers by EEPP).

Table 6.6 Lost Opportunity – Custom Comprehensive Past Performance

Lost Opportunity Massachusetts Custom Programs – Lighting Measures							
EEPP	**PY**	**Units #[1,2]**	Incentives[3]	**Gross kWh Annual Savings**	**Net[4] Summer kW Savings**	**Net[4] Winter kW Savings**	**Program Spending[7,8,9]**
CLC[a,b]	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
NGrid	2004	4	$ 262,555	660,610	118	54	*see footnote 5*
	2005	6	$ 147,037	433,243	136	49	*see footnote 5*
	2006	7	$ 97,642	335,872	116	125	*see footnote 5*
NSTAR	2004	---	$ 43,505	197,775	66	3	*see footnote 6*
	2005	---	$ 125,845	570,961	76	66	*see footnote 6*
	2006	---	$ 192,187	1,244,815	142	66	*see footnote 6*
Unitil/ FG&E	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	n/a	n/a	n/a	n/a	n/a	n/a
	2006	n/a	n/a	n/a	n/a	n/a	n/a
WMECo[c]	2004	19	$ 118,888	1,346,234	80	69.50	$ 143,115
	2005	11	$ 70,992	2,228,972	413	358.81	*see footnote 10*
	2006	10	$ 64,227	1,430,394	285	254.39	*see footnote 10*
Lost Opportunity Massachusetts Custom Programs – Non-Lighting Measures							
EEPP	**PY**	**Units #[1,2]**	Incentives[3]	**Gross kWh Annual Savings**	**Net[4] Summer kW Savings**	**Net[4] Winter kW Savings**	**Program Spending[7,8,9]**
CLC[a,b]	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	7	$ 33,596	24,300	Not Available	Not Available	$ 4,613
NGrid	2004	80	$3,083,092	9,622,004	1,611	1,021	*see footnote 5*
	2005	74	$3,292,875	8,250,074	1,275	987	*see footnote 5*
	2006	40	$1,942,523	6,515,927	1,081	662	*see footnote 5*
NSTAR[d]	2004	---	$4,122,795	19,585,521	3,299	2,228	*see footnote 6*
	2005	---	$2,781,481	11,458,368	2,155	1,467	*see footnote 6*
	2006	---	$3,804,951	20,792,072	3,081	1,197	*see footnote 6*
Unitil/ FG&E	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	n/a	n/a	n/a	n/a	n/a	n/a
	2006	n/a	n/a	n/a	n/a	n/a	n/a
WMECo[c]	2004	13	$ 360,237	905,091	50	50.20	$ 433,648
	2005	8	$ 158,658	314,121	41	16.76	*see footnote 10*
	2006	10	$ 522,501	903,889	217	27.74	*see footnote 10*

[1] (NSTAR) Unit # not applicable of custom projects.
[2] (CLC) Reflects number of measures as reported within their measure database.
[3] Incentives refer to Customer Incentives.
[4] (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.
[5] National Grid tracks non rebate spending by Program→ **Large C&I-LostOpp**

Rebates	2004: $9,285,066	***Program Spending***	2004: $2,551,554
	2005: $8,521,972		2005: $2,195,761
	2006: $7,711,716		2006: $2,271,692

[6] NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates→ **Large C&I-LostOpp**

Rebates	2004: $8,232,529	***Program Spending***	2004: $2,759,058
	2005: $6,104,666		2005: $3,482,133
	2006: $5,650,226		2006: $3,847,672

[7] (Unitil) Program Spending = PP&A+MKTING+STAT+EVAL
[8] (Unitil) General program expenditures are not reported by end-use. Costs have been allocated based on kWh savings.
[9] (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs. Program Spending is generally not available by measure. However, Program Spending estimates were provided by allocating overall Program Spending by program to measure groupings using the proportion of annual kWh savings that each measure grouping represented.
[10] (WMECO) Program Spending data is not explicitly available for retrofit projects. It is included for 2004, only, as part of Massachusetts Custom Programs for WMECo's New Construction Program.
[a] (CLC) "No Activity" indicates that there were no measures implemented within the measure grouping for that year. Incomplete Data " Inc/Data " indicates that more than 75% of the data is not available. "Not Available" indicates that no data appeared in the database. Not Available is not the same as zero; zeros are shown as reported.
[b] (CLC) Custom and prescriptive measures cannot be separated within the current data structure. As a result, all lighting & control measures are listed under Lighting and Controls, rather than under Massachusetts Custom Programs – Lighting Measures. All remaining non-lighting results are listed under Massachusetts Custom Programs – Non-Lighting Measures. This category includes both custom and prescriptive measures.
[c] (WMECo) Custom projects listed include WMECO Custom and RFP Municipal Program totals.
[d] (NSTAR) Custom – Non-Lighting includes Compressed Air, HVAC, Process and Refrigeration.

Past Performance – Advanced Buildings

CLC

No Advanced Buildings projects completed to date.

National Grid

The first new building projects occupied in 2007, that successfully followed the Advanced Buildings process, include the Fidelity Bank Corporate Center in Leominster, MA (50,000 SF, 31% savings) and the UMASS Memorial Health Center in Barre, MA (20,000 SF, 20% savings). Also, design work has been completed following the Advanced Buildings process for the Science Building at Brooks School in Andover, MA and Nobis Engineering in Lowell, MA (20,000 SF).

No program history exists prior to 2007.

NSTAR

NSTAR has completed and Advanced Buildings project for Jungleplex in Plymouth, MA. In addition, several Advanced Buildings projects are in progress for 2008.

Unitil/FG&E

Not participating in program.

WMECo

No Advanced Buildings projects completed to date.

Past Performance – Comprehensive Design Approach, CDA

		Number of Projects	Authorized Incentive	Gross kWh Annual Savings	Net Summer kW Savings	Net Winter kW Savings
NSTAR 2006 Construction Solutions[1]		6	$2,158,501	11,490.439	1,962	1,069
National Grid[2] **Comprehensive Design (CDA)**	2004	1	$112,006	192,041	138	46
	2005	4	$1,001,626	2,415,024	687	187
	2006	4	$796,128	1,636,225	536	155
	2007	4	$980,200	2,633,419	885	161

[1] Data source for NSTAR's internal energy efficiency tracking system is the metric tracking data on eTRAC.

[2] Data source for Comprehensive Design past performance results is "DSM Eval (002a) LCI Custom Template_2004-2007_AR" as of July 2007 (Estimated evaluation for 2007).

Program Differences by EEPP

CLC

Program implementation is delivered through TA. Oversight and technical analysis is accomplished through a management contract with Honeywell, Inc.

National Grid

Application processing and program delivery are implemented by National Grid's Key Account Managers and Business Service Representatives.

Technical review and energy modeling/analysis is provided by in-house efficiency engineer experts or uses TA to do supporting detailed technical analysis.

NSTAR

Application processing and program delivery are implemented by NSTAR's Energy Efficiency's C&I Program Managers and Customer Account Executives.

NSTAR does all program implementation in house but uses TA to do supporting detailed technical analysis.

Unitil/ FG&E

Application processing and program delivery are implemented by Unitil/FG&E field support representatives. FG&E does not offer a Custom program for retrofit projects.

WMECo

Application processing and program delivery are implemented by WMECo field support representatives. WMECO performs in house evaluation, with technical support provided by TA .

7 Commercial & Industrial C&I Retrofit Program Descriptions

Retrofit program[4] descriptions are provided for each of the Massachusetts Energy Efficiency Program Providers (EEPPs) in a general template format for each Section, meant to capture commonalities in the program offerings, as well as to call-out the differences in eligible energy efficiency measures, incentives, program delivery and implementation. The following retrofit end use services are described:

7.1 Compressed Air
7.2 Lighting & Controls
7.3 HVAC Systems
  7.3.1 Cool Choice – Unitary Packaged HVAC
  7.3.2 EMS
7.4 Premium-Efficiency Motors (Section 7.4)
7.5 Variable Speed Drives
7.6 Massachusetts Custom Programs
  7.6.1 Custom Programs
  7.6.2 Retro-Commissioning – O&M

Other end uses, such as process measures and refrigeration, are not described in this planning manual at this point. Additional program results for Program Years 2004 – 2006 can be found in Section 14, which contains the past performance data for each EEPP for both retrofit and lost opportunity programs. Typically, projects that include end-uses that are not subscribed to as a prescriptive measure for a particular program, are processed as a custom application, either as retrofit or, in many cases, as a new construction/replacement project.

Listed below are the program names of each of the Retrofit programs by EEPP. Each program description repeats the names of the EEPP's retrofit program, if applicable, so that the descriptive overview becomes a stand-alone reference document for each prescriptive or custom end-use program track. Evaluation studies that are applicable to multiple programs, both retrofit and lost opportunity, are also repeated throughout the program descriptions. Completed evaluation studies and market research for commercial and industrial programs "C&I", in general, are listed in Table 7.b and at the end of this section, as well as in Section 6 Commercial & Industrial Lost Opportunity Program Descriptions, Table 6.b. A master list of the evaluation studies is provided in Section 11.

- CLC: Medium & Large C&I Retrofit (> 100 kW)
- National Grid: Energy Initiative (> 200 kW)
- NSTAR: Business Solutions (> 200 kW)
- Unitil/FG&E: Large Business Solutions (> 100 kW)
- WMECo: Express Service

[4] Each EEPP has named umbrella programs for their Lost Opportunity and Retrofit programs. Each umbrella program has many "program" initiatives that serve the different end-user markets. The term "program" is used throughout this document as a way to reference C&I customer incentives and service offerings for a particular end-use (or energy efficiency measure (EEM), such as lighting, HVAC, motors, variable speed drives et al.

In the table below, Table 7.a provides performance data by the energy efficiency program administrator for the past three years (PY 2004 thru 2006), as a total for Large C&I Retrofit programs. Estimated savings are calculated differently for each program administrator. (Refer to footnotes and Section 14.0 for reporting detail and disclaimers by each EEPP).

Table 7.a Large C&I Retrofit Programs Past Performance

Retrofit Massachusetts Large C&I Programs							
EEPP	**PY**	**Units #**	Incentives[1]	**Gross kWh Annual Savings**	**Net Summer kW Savings**	**Net Winter kW Savings**	**Program Spending[2]**
CLC[a]	2004	6	$ 177,894	687,032	---	107.7	$ 120,890
	2005	61	$ 370,172	3,309,770	---	655.5	$ 152,229
	2006	19	$ 680,811	6,661,710	---	1,927.5	$ 279,906
NGrid[b]	2004	---	$10,049,110	---	---	---	$ 2,708,962
	2005	---	$9,512,105	---	---	---	$ 2,438,623
	2006	---	$13,604,712	---	---	---	$ 3,224,298
NSTAR[c]	2004	---	$9,753,354	---	---	---	$ 3,547,621
	2005	---	$7,906,038	---	---	---	$ 3,587,143
	2006	---	$8,772,635	---	---	---	$ 5,209,284
Unitil/ FG&E[d]	2004	---	---	---	---	---	---
	2005	---	---	---	---	---	---
	2006	---	---	---	---	---	---
WMECo[e]	2004	---	---	---	---	---	---
	2005	---	---	---	---	---	---
	2006	---	---	---	---	---	---

[1] Incentives refer to Customer Incentives.

[2] (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs. Program Spending is generally not available by measure.

[a] (CLC) Measure data used for Large C&I results shown for Gross kWh Savings and Max kW (Winter kW) Savings. The Annual Report was used to provide data for total units, rebates and program spending.

[b] (NGrid) National Grid tracks non rebate spending by Program.

[c] (NSTAR) Tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates

[d] (Unitil/FG&E) Total Retrofit Large C&I Program results were not reported for the purpose of this planning manual.

[e] (WMECO) Program Spending data is not explicitly available for retrofit projects. It is included for 2004, **only**, as part of Massachusetts Custom Programs for WMECo's New Construction Program. Program spending results for program years 2005 and 2006 have yet to be verified and reported.

Table 7.b Commercial & Industrial Completed "Active" Evaluation Studies

10. The Fleming Group, HEC, "Persistence of Commercial/Industrial Non-Lighting Measures", June 1994
11. PA Consulting Group, "National Grid 2001 Commercial and Industrial Free-ridership and Spillover Study", July 2002
12. PA Government Services, Inc., "National Grid 2002 Commercial and Industrial Free-ridership and Spillover Study", May 2003
13. Megdal & Associates with Opinion Dynamics Corp., "2004 Commercial and Industrial Programs Free-Ridership and Spillover Study Executive Summary of National Grid Results - Final Report", October 2005
14. Energy & Resource Solutions, Inc., "Measure Life Study Prepared for the Massachusetts Joint Utilities", November 17, 2005
15. PA Consulting Group, "2005 Commercial and Industrial Programs Free-ridership and Spillover Study- Revised", August 11, 2006
16. PA Consulting Group, "National Accounts Study: Customer Energy Efficiency Equipment Decision Making Process and Standard Practice – Final", September, 8, 2006
17. RLW Analytics, "NSTAR Construction and Business Solutions Report on 2004 Measures", March 9, 2006
18. RLW Analytics, "NSTAR Construction and Business Solutions Report on 2005 Measures", July 21, 2006

7.1 Retrofit - Compressed Air

Program	**Compressed Air**	
Program Type	Retrofit	
Program Names	**CLC**	C & I Retrofit
	National Grid	Energy Initiative
	NSTAR	Business Solutions
	Unitil/FG&E	Large Business Services
	WMECo	C & I Customers under Custom
Program Details		
Goals	To facilitate the replacement or upgrade of air compressors with improved controls that will optimize part load operational efficiency.	
Description	Standard efficiency compressors are supplied with modulating controls which regulates the airflow through the compressors, but does so in an inefficient manner. Control options (Load/unload, variable displacement and variable frequency drive) are available which regulate the compressor's air flow in an efficient manner to meet the needs of the compressed air system and its end uses.	
Target Audience	Industrial customers and air compressor dealers.	
Program Implementation & Contractor Support	**CLC**	Retrofit compressed air projects are reviewed under the custom application process and CLC will assist contractors through TA.
	National Grid	Prescriptive applications and supporting documentation are available to customers, vendors, etc. Program information meetings are typically held annually to educate vendors and consultants on Program incentives, eligibility and documentation requirements.
	NSTAR	Retrofit compressed air projects are reviewed under the custom application process.
	Unitil/FG&E	Incentives are site-specific based on project cost-effectiveness.
	WMECo	Retrofit compressed air projects are reviewed under the custom application process.

Incentive Structure	Prescriptive incentives are available for 15-75 HP compressors when replacing existing compressors with new compressors with more efficient control options.	
	CLC	Compressed air is handled through the Custom application. CLC incentives are designed to cover up to 50% of the incremental cost of the efficiency measure or to buy down the cost of the equipment to a one and a half year payback period, whichever is less. Assistance in preparing and submitting the Custom form is available through CLC TA. The financial incentives will be limited to a maximum of $75,000 per project. The financial incentives will be limited to a maximum of $75,000 per project.
	National Grid	The incentives are designed to cover approximately 45% of the estimated material and labor costs to replace existing compressors of like size and capacities (see table 7.1.a for more detail).
	NSTAR	Retrofit compressed air projects are reviewed under the custom application process. Rebates are designed to cover up to 50% of the cost, depending upon the specific costs and savings associated with the efficiency measure.
	Unitil/FG&E	Incentives are designed to cover up to 50% of installed costs, depending on project b/c.
	WMECo	Incentive offered at 75% of incremental cost difference between baseline new equipment and qualifying more efficient alternate.
	No other EEPPs have prescriptive programs for retrofit compressed air at this time.	
Baseline/Specifications	The baseline is standard efficiency compressors that are supplied with modulating controls to regulate the airflow of the compressors to meet the needs of the compressed air system. Air compressors specifications from the various compressors available in the market place were evaluated to determine the average full load and part-load efficiencies for the various size air compressors in our Program (15-75 HP)	
Eligibility Criteria	Prescriptive incentives are available for new air compressors (with load/unload, variable displacement, or variable frequency drives) and refrigerated dryers on compressed air systems which are served by a single air compressor. Systems which have back-up air compressors which run only when the primary compressor is temporarily off-line for maintenance or service are also eligible, but only for the primary compressor. Multiple compressor systems are handled through our Custom Project process. Similar calculations are used in calculating the refrigerated dryer savings.	

Training & Education	Education on optimizing the efficiency of compressed air systems is available through 2 workshops which are marketed and hosted by the utilities each year. The workshops are "Fundamentals of Compressed Air Systems" and "Advanced Compressed Air System Management". These workshops were developed by the Compressed Air Challenge organization. (see website at www.compressedairchallenge.org)
Marketing and Outreach Strategy	This Program is marketed to customers through EEPP business service representatives, compressed air and compressed air system consultants. Training and Program materials are made available to each year.
Other Program Integration / Coordination	Multiple compressor systems are handled through custom process. National Grid has a Compressed Air System O&M Program which targets system operational improvements such as air leak surveys and repairs, control system improvements, distribution system improvements, etc.
Program Past Performance	See Table 7.1.b for performance by program year.
Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program measures provided for each EEPP, as part of the Technical Resource Manual.
Future Consideration	Continue to offer EEPP specific program in 2008, re-assessing and readjusting incentive amounts annually as needed.

Other Program Information

Program Contacts	**CLC**	John Burns (508) 375-6829
	National Grid	Kevin Keena (508) 421-7279
	NSTAR	Hugh Gaash (781) 441-8706
	Unitil/FG&E	Ed Mailloux (603) 773-6541
	WMECo	Bob Dvorchik (413) 499-9004
Coordination Among Program Administrators	National Grid and NSTAR run similar programs and regularly share technical data, program delivery experiences, etc when reviewing programs for annual enhancements and changes.	
Program History	National Grid started prescriptive rebate program in 2004 for compressed air. No other EEPP has a prescriptive incentive program for retrofit compressed air at this time.	
Specification Reference	Not Applicable.	

Evaluation Reports Available	1. Aspen Systems Corp., "Final Report: The Compressed Air Systems Market Assessment and Baseline Study for New England", January 07, 2000 2. Demand Management Institute, "Impact Evaluation of 2004 Compressed Air Prescriptive Rebates", May15, 2006 3. RLW Analytics, "Sample Design and Impact Evaluation Analysis for Prescriptive Compressed Air Measures in the Energy Initiative and Design 2000 Programs", May 31, 2006
Other Programs Funded / Sponsored	Compressed Air Challenge sponsored locally by National Grid, NSTAR and CEE.

Incentive levels

Table 7.1.a Qualifying /Equipment and Incentives for Air Compressors

National Grid -Prescriptive High Efficiency Air Compressor Incentives

Horsepower	Incentive per Hp Load/No Load	Incentive per Hp Variable Speed	Incentive per Hp Variable Displacement
≥15 to <25	$205	$275	N/A
≥25 to <50	$180	$280	N/A
≥50 to <75	$180	$210	$215

NSTAR: Retrofit compressed air projects are reviewed under the custom application process. Rebates are designed to cover up to 50% of the cost, depending upon the specific costs and savings associated with the efficiency measure

WMECO: Compressors, dryers, controls, and other system efficiency improvement evaluated on a case by case basis. Prescriptive incentives are not offered.

Program Past Performance

Below is a table that provides program performance data by EEPP for the past three years (PY 2004 thru 2006). Estimated savings are calculated differently for each EEPP (Refer to footnotes and Section 14 for reporting detail by EEPP).

Table 7.1.b Retrofit Compressed Air Past Performance

EEPP	PY	Units #[1,2]	Incentives[3]	Gross kWh Annual Savings	Net[4] Summer kW Savings	Net[4] Winter kW Savings	Program Spending[6,7,8]
CLC[a,b]	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
NGrid	2004	24	$339,933	886,482	170	170	*see footnote 5*
	2005	23	$297,140	602,618	110	74	*see footnote 5*
	2006	27	$313,278	767,387	110	77	*see footnote 5*
NSTAR[c]	2004	---	$0	---	---	---	*see footnote 6*
	2005	---	$0	---	---	---	*see footnote 6*
	2006	---	$0	---	---	---	*see footnote 6*
Unitil/ FG&E	2004	4	$47,005	172,692	28.92	23.72	$15,734
	2005	3	$52,800	212,560	32.41	26.58	$24,497
	2006	1	$20,000	103,136	14.04	11.51	$7,486
WMECo[d]	2004 2005 2006	***Data are not explicitly available, dollars and saving are included in Massachusetts Custom Programs - Non-Lighting Measures in Table 7.6.1.[10]***					

[1] (NSTAR) Unit # not applicable of custom projects.
[2] (Unitil) Reflects number of projects completed. (CLC) Reflects number of measures as reported within their measure database.
[3] Incentives refer to Customer Incentives.
[4] (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.
[5] National Grid tracks non rebate spending by Program→

	Large C&I-Retrofit		
Rebates	2004: $10,049,110	*Program Spending*	2004: $2,708,962
	2005: $9,512,105		2005: $2,438,623
	2006: $13,604,712		2006: $3,224,298

[6] NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates→

	Large C&I-Retrofit		
Rebates	2004: $9,753,354	*Program Spending*	2004: $3,547,621
	2005: $7,906,038		2005: $3,587,143
	2006: $8,772,635		2006: $5,209 284

[7] (Unitil) Program Spending = PP&A+MKTING+STAT+EVAL
[8] (Unitil) General program expenditures are not reported by end-use. Costs have been allocated based on kWh savings.
[9] (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs. Program Spending is generally not available by measure. However, Program Spending estimates were provided by allocating overall Program Spending by program to measure groupings using the proportion of annual kWh savings that each measure grouping represented.
[10] (WMECO) Program Spending data is not explicitly available for retrofit projects. It is included for 2004, only, as part of Massachusetts Custom Programs – Non- Lighting Measures provided in Table 6.6 for WMECo's New Construction Program.

[a] (CLC) "No Activity" indicates that there were no measures implemented within the measure grouping for that year.
[b] (CLC) Custom and prescriptive measures cannot be separated within the current data structure. As a result, all non-lighting measures are listed under Massachusetts Custom Programs – Non-Lighting Measures (Table 7.6.1). This category includes both custom and prescriptive measures.
[c] NSTAR does not currently offer or has not offered prescriptive programs in the past related to retrofit compressed air systems. As a result, the retrofit compressed air projects are processed under the custom application and included in Massachusetts Custom Programs – Non-Lighting Measures Table 7.6.1.
[d] WMECo does not have a separate program for retrofit or lost opportunity compressed air. Performance numbers are reported in aggregate as Custom Programs.

Program Differences by EEPP

CLC

CLC incentives are the incremental cost between base line and efficient equipment. Rebates are designed to cover up to 50% of the cost of the efficiency measure or to buy down the cost of the equipment to a one and a half year payback period, whichever is less. Assistance in preparing and submitting the Custom form is available through CLC TA .

The financial incentives will be limited to a maximum of $75,000 per project

National Grid

The incentives are designed to cover approximately 45% of the estimated material and labor costs to replace existing compressors of like size and capacities.

NSTAR

NSTAR does not currently offer or has not offered prescriptive programs in the past related to retrofit compressed air systems. Almost all of the compressed air applications received can be classified as new construction/equipment replacement. As a result, the number of retrofit applications are very limited and are processed under the custom application.

Unitil/ FG&E

Application processing and program delivery are implemented by Unitil/FG&E field support representatives.

WMECO

Incentive offered at 75% of incremental cost difference between baseline new equipment and qualifying more efficient alternate

Compressors, dryers, controls, and other system efficiency improvement evaluated on a case by case basis. Prescriptive incentives are not offered.

7.2 Large C&I Retrofit – Energy Efficient Commercial & Industrial Lighting and Lighting Controls

Program	**Massachusetts C&I Efficient Lighting Programs (various names)**	
Program Type	Retrofit	
Program Names	**CLC**	Large C&I Retrofit
	National Grid	Energy Initiative
	NSTAR	Business Solutions
	Unitil/FG&E	Large Business Solutions
	WMECo	Express Service
Program Details		
Goals	1. To promote energy efficient, high quality lighting design 2. Where possible, to promote new technologies and design practices to the marketplace	
Description	Programs promote efficient lighting technologies that are cost effective. Technologies promoted by this program are energy efficient lighting fixtures and lighting controls applicable to most commercial, industrial, institutional and municipal facilities.	
Target Audience	Large C&I and government customers, lighting equipment distributors and manufacturers, building design engineers and lighting installers are targeted by these programs. No specific customer sectors are targeted per se, although most of the program administrators target special efforts to existing public schools.	
Program Implementation & Contractor Support	This varies by program administrator, although, for the most part, the program administrator will market and provide the necessary outreach to reach the target audience. This outreach may take different forms such as, customer and/or contractor seminars or technical assistance provided to manufacturers, electric lighting distributors, building design engineers and architects.	
Incentives	Design incentives may be available to maximize efficiency opportunities while minimizing “free riders”. All C&I retrofit efficient lighting programs offer an incentive that pays a portion of the installation cost for new or upgraded lighting equipment. All of the program administrators, except Unitil/FG&E offer prescriptive incentive programs with predetermined incentives for specific lighting technologies. Prescriptive incentives are determined annually by researching current market	

	prices of energy efficient lighting products and by analyzing data collected through the program implementation. Incentives for prescriptive pay 40% to 50% of the cost of installation (labor and materials) on average across all of the territories served by the program administrators. All of the program administrators also offer "custom" programs for lighting systems where a prescriptive incentive might not fit a technology covered under the prescriptive programs (or in the case of Uniti/FG&E, where all lighting is handled through the "custom" program). Typically, incentives for custom are based on actual labor and material costs. Again, incentives vary slightly but pay, on average, 40% to 50% of the total installation cost for a lighting system. Another variation offered by CLC is "performance lighting", where the incentive paid is based on the watts per square foot saved by the lighting system as compared to the watts per square foot allowed by the state building code for new buildings (i.e. a retrofitted building is treated as though it is new construction). CLC has moved its program to the "performance lighting" approach entirely and offers only prescriptive incentives for lighting controls.
Training & Education	Each program administrator may offer different training and education to the market. Frequently this involves seminars and organized meetings tailored to the various market actors. Training is typically done to familiarize the market actors with the incentive programs. Program administrators will coordinate these trainings if a firm, distributor, or trade organization serves more than one service territory.
Marketing and Outreach Strategy	Each program administrator is responsible for the marketing and outreach for its own programs although, as described in "training & education" above, this may be coordinated.
Other Program Integration / Coordination	The program administrators participate in the Northeast Energy Efficiency Partnerships' Commercial Lighting Design working group. Though this group, program administrators from across New England, New York and New Jersey can exchange information on efficient lighting programs. In past years, this group collaborated to develop the DesignLights™ Consortium *knowhow*™ series, which were design guides that helped lighting designers and other market actors understand the elements and benefits of efficient lighting design. This group supports a joint effort to promote and increase the availability of more efficient lamps and ballasts factory installed in new fixtures. This effort targets local lighting equipment distributors and regional fixture manufacturer representatives. It promotes lamps and ballasts that meet the Consortium for Energy Efficiency's "High Performance T8" standard, which is a national standard.
Program Past Performance	See Table 7.2.1 for performance by program year, by program administrator.
Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program measures provided for each EEPP, as part of the Technical Resource Manual.
Future Consideration	Solid State ("LED") lighting technology for use in buildings is advancing rapidly and is likely to have a significant in energy savings in some niche lighting applications in the near future.

Other Program Information		
Program Contacts	**CLC**	John Burns (508) 375-6829
	National Grid	Tom Coughlin (508) 421-7239
	NSTAR	Guival Mercedat (781) 441-8075 Kevin Morley (781) 441-8076
	Unitil/FG&E	Ed Mailloux (603) 773-6541
	WMECo	Ron Johnston (413) 787-9272
Coordination Among Program Administrators	The program administrators have been meeting annually (usually in the summer and fall) each year since 2005 to coordinate programs and harmonize technical requirements and incentives for the following year. The program administrators have been coordinating some of their efforts since at least 1998.	
Program History	Each territory served by the program administrators has been offered a retrofit efficient lighting program since at least the early 1990's. As lighting technologies have advanced, so have the design of the programs.	
Specification Reference	Not Applicable	
Evaluation Reports Available	1. RLW Analytics, "Energy Initiative and Small C&I Programs Indoor Prescriptive Lighting Impact Study", June 19, 2000 2. RER, "1999 Energy Initiative Lighting Program Impact Evaluation", June 20, 2000 3. Quantec, "Impact Evaluation: Energy Initiative Prescriptive Lighting, 2000-2001", June 25, 2002 4. RLW Analytics, Inc., "National Grid 2003 Energy Initiative "EI" Program Lighting Impact Evaluation - Final Report", June 2004 5. Summit Blue Consulting, "Impact Analysis of the 2004 Energy Initiative Program Final Report", July 26, 2005 6. RLW Analytics, Inc., "National Grid USA Custom Lighting Impact Study Executive Summary 2004 Energy Initiative and Design 2000*plus* Program", August 25, 2005 7. Energy & Resource Solutions, "Assessment of Massachusetts Lighting Compliance Documents", August 2005 8. Energy & Resource Solutions, "Market Research Report of High Performance T8 Commercial Lighting Technology", June 2006 *(prepared for NEEP's Commercial Lighting Initiative)* 9. "CT & MA Utilities 2004-2005 Lighting Hours of Use for School Buildings Baseline Study", September 2006 10. RLW Analytics, Inc., "National Grid Lighting Controls Impact Evaluation, Final Report, 2005 Energy Initiative, Design 2000*plus* and Small Business Services Programs", June 04, 2007	

Other Programs Funded / Sponsored	NEEP Commercial Lighting Design effort with HP T8 stocking practices (described above).

Incentive levels

As discussed above, incentives cover on average, 40 to 50%% of the incremental cost to go from standard lighting equipment to energy efficient lighting equipment.

Program Past Performance

Below is a table that provides program performance data by energy efficiency program administrator for the past three years (PY 2004 thru 2006). Estimated savings are calculated differently for each program administrator. Refer to Section 5.0 for reference to detailed impact analysis by company (Refer to footnotes and Section 14 for reporting detail and disclaimers by EEPP).

Table 7.2.1 Large C&I Retrofit Lighting Past Performance

EEPP	PY	Units #[1,2]	Incentives[3]	Gross kWh Annual Savings	Net[4] Summer kW Savings	Net[4] Winter kW Savings	Program Spending[7,8,9]
CLC[a,b]	2004	1,727	$ 104,274	505,127	37.9	19.5	$ 89,113
	2005	2,271	$ 120,330	774,431	74.3	37.8	$ 140,586
	2006	9,294	$ 348,154	5,836,761	Inc/Data	Inc/Data	$ 241,278
NGrid	2004	73,180	$3,278,822	23,362,817	3,960	2,806	*see footnote 5*
	2005	66,385	$3,617,844	28,458,473	3,998	2,922	*see footnote 5*
	2006	118,940	$6,464,800	47,290,904	7,449	4,914	*see footnote 5*
NSTAR	2004	52,181	$2,406,269	16,665,521	2,301	1,557	*see footnote 6*
	2005	81,262	$3,455,525	28,204,631	5,138	4,061	*see footnote 6*
	2006	115,754	$4,279,156	36,484,006	6,722	5,835	*see footnote 6*
Unitil/ FG&E	2004	2	$ 5,544	36,595	9.37	7.68	$ 3,334
	2005	3	$ 94,886	1,015,940	134.65	110.41	$ 117,083
	2006	7	$ 136,768	863,843	133.62	109.57	$ 62,700
WMECo	2004	25	$ 34,648	3,420,516	609.55	n/a	*see footnote 10*
	2005	29	$ 23,373	445,855	121.37	n/a	*see footnote 10*
	2006	22	$ 58,245	1,581,607	245	245	*see footnote 10*

[1] (NSTAR) Unit # not applicable of custom projects.
[2] (Unitil) Reflects number of projects completed. (CLC) Reflects number of measures as reported within their measure database.
[3] Incentives refer to Customer Incentives.
[4] (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.
[5] National Grid tracks non rebate spending by Program→ **Large C&I-Retrofit**

Rebates	2004: $10,049,110	***Program***	2004: $2,708,962
	2005: $9,512,105	***Spending***	2005: $2,438,623
	2006: $13,604,712		2006: $3,224,298

[6] NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates→ **Large C&I-Retrofit**

Rebates	2004: $9,753,354	***Program***	2004: $3,547,621
	2005: $7,906,038	***Spending***	2005: $3,587,143
	2006: $8,772,635		2006: $5,209 284

[7] (Unitil) Program Spending = PP&A+MKTING+STAT+EVAL

[8] (Unitil) General program expenditures are not reported by end-use. Costs have been allocated based on kWh savings.
[9] (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs. Program Spending is generally not available by measure. However, Program Spending estimates were provided by allocating overall Program Spending by program to measure groupings using the proportion of annual kWh savings that each measure grouping represented.
[10] (WMECO) Program Spending data is not explicitly available for retrofit projects. It is included for 2004, only, as part of Massachusetts Custom Programs - Lighting Measures provided in Table 6.6 for WMECo's New Construction Program.
[a] (CLC) "No Activity" indicates that there were no measures implemented within the measure grouping for that year. Incomplete Data " Inc/Data " indicates that more than 75% of the data is not available. "Not Available" indicates that no data appeared in the database. Not Available is not the same as zero; zeros are shown as reported.
[b] (CLC) Custom and prescriptive measures cannot be separated within the current data structure. As a result, all lighting & control measures are listed under Lighting and Controls, rather than under Massachusetts Custom Programs – Lighting Measures (Table 6.6).

Program Differences by EEPP

CLC

Cape Light program offers a performance lighting (watts per square foot) program, the same as the program also offered for new construction. Prescriptive incentives are offered only for lighting controls and those incentives are the same as NSTAR and National Grid. Like all of the other programs, CLC may offer a custom incentive for unique technologies that are unique but may not lend themselves to a performance lighting approach.

National Grid

National Grid offers prescriptive incentives for energy efficient lighting fixtures and controls. The prescriptive incentives for fixtures and controls are the same that are offered by NSTAR as are the eligibility criteria. CLC uses the same prescriptive criteria but for lighting controls only. Like the other program administrators, a custom incentive (rebate) is offered for unique technologies not included in the prescriptive program. Incentives pay up to 40% of the incremental cost for custom and up to 40% of the average installed cost for specific fixture and control types under prescriptive.

NSTAR

NSTAR offers prescriptive incentives for energy efficient lighting fixtures and controls. The prescriptive incentives for fixtures and controls are the same that are offered by National Grid as are the eligibility criteria. CLC uses the same prescriptive criteria but for lighting controls only. Like the other program administrators, a custom incentive (rebate) is offered for unique technologies not included in the prescriptive program. Incentives pay up to 50% of the total cost for custom and up to 50% of the average installed cost for specific fixture and control types under prescriptive.

Unitil/ FG&E

UNITIL offers a custom incentive program. Incentives cover 50% of the total cost of a lighting fixture (i.e., labor and materials).

WMECo

WMECo offers a prescriptive program which offers some of the same incentives as NSTAR and National Grid (e.g. LED exit signs and some lighting controls) but there are also many differences as

well. Whereas National Grid and NSTAR offer incentives for fixtures that meet certain luminare efficiencies (e.g. a prismatic lensed 2x4 recessed fluorescent fixture of at least 83% fixture efficiency. WMECo offers incentives based on number of lamps for a fixture. Both types of programs require that watts must be reduced in order to be eligible. A custom option may be offered in a relatively few cases when a lighting technology is unique and there is no prescriptive option.

7.3 Retrofit HVAC Systems

7.3.1 Retrofit Unitary Packaged HVAC

Program	**Retrofit Unitary Packaged HVAC 1-30Tons**	
Program Type	Retrofit; Custom	
Program Names	**CLC**	Medium & Large C&I Retrofit
	National Grid	Energy Initiative
	NSTAR	No Program under Business Solutions for Retrofit HVAC
	Unitil/FG&E	Large Business Solutions
	WMECo	Express Service
Program Details		
Goals	1. For the marketplace to specify the more efficient equipment that is available in the market, when installed with controls, to optimize energy savings. 2. Installation of high efficiency HVAC equipment for equipment that is considered at the end of useful life (equipment replacement).	
Description	EEPP retrofit programs serve mostly large C&I customers (> 100 kW) and covers replacement of existing motors, VSDs, lighting, compressed air, HVAC (EMS) and custom projects.	
Target Audience	Large C&I customers and HVAC Contractors, Distributors and Manufacturers Representatives, No specific industry sectors are targeted at this time.	
Program Implementation & Contractor Support	The sponsors of *Massachusetts Cool Choice* in 2007 hired a circuit rider, Alan Mulak, P.E., to provide technical support and marketing services to both HVAC contractors, distributors, manufacturer reps and customers, as assigned by each EEPP. For 2008, this circuit rider function is handled individually by each EEPP. Retrofit and Custom projects with HVAC type installations may require circuit rider support. Each EEPP has their field support representatives to provide customer assistance for a proposed project. Processing of applications are handled in-house by each EEPP. Refer to section below on "Program Differences by EEPP" for more detail.	
Incentive Structure	Equipment efficiencies and financial incentives are available through the Pilot HVAC Early Replacement Program for projects installed Sep'07 – Apr '08. Refer to Table 7.3.1.a "Minimum Efficiency Levels and Rebates" provided below. • Other non-prescriptive HVAC type installations may be eligible for an incentive through each individual EEPP's custom application.	

	CLC	Custom – all other applications use the Custom form. In general, rebates are designed to cover up to 50% of the cost of the efficiency measure or to buy down the cost of the equipment to a one and a half year payback period, whichever is less.
	National Grid	Custom – incentives based on up to 45% of installed cost.
	NSTAR	Program not available for 2007 or 2008 under Business Solutions.
	Unitil/FGE&	Custom – incentives based on up to 40% of installed cost.
	WMECo	Custom – incentives based on up to 50% of installed cost.
Baseline/Specifications	The baseline used for determining savings for replacement HVAC equipment and controls is based on the 1989 version of ASHRAE Standards 90.1. Since most replacement systems are processed through Custom applications, savings are determined through engineering analysis; and per unit savings for controls are based on the savings per ton of HVAC capacity controlled. EMS savings are determined from site specific analyses using deemed savings for different types of control points. New Unitary HVAC equipment should meet minimum efficiency standards specified in the Massachusetts Building Code, based on ASHRAE Standards 90.1-1999/2001. However, the current version of the Massachusetts Building Code deviates from the ASHRAE standards (90.1-2004) for single package and split system air conditioners less than 65,000 Btu/h cooling capacity. The seventh edition requires a higher minimum performance of 13.0 SEER for this range air conditioning equipment manufactured after January 23, 2006 pursuant to EPACT 2005.	
Eligibility Criteria	Incentives are available to industrial, commercial, institutional and agricultural electric service customers in service territories of participating EEPPs. Eligible systems are: electric heat pumps, single packaged units, split systems (split systems must meet ARI specifications), dual enthalpy economizer controls, ECM fan motors and demand control ventilation when installed with new, qualifying equipment. Efficiency levels eligible generally are consistent with CEE Tier II.	
Training & Education	HVAC Contractors, Distributors and Manufacturer Representatives are invited to attend information /vendor training sessions on the program, as well as attend local HVAC manufacturer training sessions. EEPP field support representatives (or circuit rider) are trained on the program at the beginning of each new program year, and meet periodically with vendors, distributors and contractors	
Marketing and Outreach Strategy	Direct contact with large C&I customers by EEPP field representatives (or circuit rider), general marketing letters, website.	

Other Program Integration / Coordination	NSTAR initiated a HVAC High Performance Pilot program in 2006. This program was designed to take advantage of the relationships NSTAR's HVAC Contractor Community had with their customers with maintenance contracts. This pilot included having the HVAC Contractors test their customers' existing equipment to make sure it was operating as designed. NSTAR supported this initiative by providing training on diagnostic hardware and software tools employed and providing financial support. Contractors were provided with Palm Pilots, test equipment and incentives for performing both the diagnostic testing, as well as certain maintenance activities designed to restore/increase efficiency in the operation of the HVAC unit(s) tested. This Program also was to identify those units, which should be replaced due to poor performance. This program was discontinued in 2007, due to the limited participation by the HVAC Contractor Community.
Program Past Performance	See Table 7.3.1.b for performance by program year.
Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program measures provided for each EEPP, as part of the Technical Resource Manual.
Future Consideration	Incorporate pilot program for HVAC Early Replacement as a standard offer in future program years for interested EEPPs, to address equipment that has reached the end of useful life.

Other Program Information

Program Contacts	**CLC**	John Burns (508) 375-6829
	National Grid	Sarah Dagher (978) 974-9475
	NSTAR	Cherie Miles (781) 441-8037
	Unitil/FG&E	Ed Mailloux (603) 773-6541
	WMECo	Jack Burke (413) 787-9470
Coordination Among Program Administrators	For 2007 and in 2008, *Cool Choice* will be coordinated statewide in Massachusetts. The Pilot Early Replacement Program offered for 2007 may continue to be supported and coordinated for 2008.	
Program History	In the early 1990's, prescriptive rebates were available through some of the individual EEPPs' Retrofit programs for replacement HVAC (In some cases, as an EMS measure.)	
Specification Reference	Minimum efficiency levels for HVAC equipment are based on current CEE Tier II (updated January 22, 2007) Refer to www.cee1.org/com/hecac/hecac-tiers.pdf	
Evaluation Reports Available	1. RLW Analytics, "Massachusetts Commercial HVAC Study", December 1999	

	2. Nexus Market Research, Inc. Dorothy Conant, Shel Feldman Management Consulting, "Scoping Study on Market Penetration Tracking of Energy-Efficient Motors and Packaged HVAC Systems in New England and New York", August 08, 2003 3. RLW Analytics, "Impact Evaluation of a Unitary HVAC Tune-Up Program Final Report – Executive Summary", June 14, 2004 4. New Buildings Institute, "Phase I: Commercial Rooftop HVAC Unit Retrofit Programs", March 28, 2006 5. KEMA, Packaged Commercial HVAC Equipment Market Characterization - Final Report [Phase 2], June 30, 2006 6. New Buildings Institute, Inc., Phase 3: Strategic Recommendations for Commercial HVAC Programs, June 30, 2006
Other Programs Funded / Sponsored	CEE Commercial HVAC & Heat Pump Committee (National Grid and NSTAR annually funded through 2009).

Incentive levels

Incentive levels were originally intended to cover 100% of total project costs for equipment replacement, but as equipment has reached new levels of efficiency, the costs of these units have risen considerably, thereby resulting in a reduced cost effectiveness of a HVAC replacement project. Thus, replacement HVAC projects (except those applied for under the pilot program) must be considered on a project-by-project basis under the custom approach for each EEPP.

Incentive levels and qualifying equipment for the Pilot HVAC Early Replacement Program are listed in Table 7.3.1.a on the following page.

Table 7.3.1.a Minimum Efficiency Levels/Rebates for Pilot HVAC Early Replacement

MINIMUM EFFICIENCY LEVELS / REBATES					
HVAC Unit Size		2006 Efficiency Levels		2007 Efficiency Levels	
Tons	BTUH	Minimum SEER / EER	Rebate $/Ton	Minimum SEER / EER	Rebate $/Ton
Unitary AC and Split					
< 5.4	< 65,000	NA	NA	14.0 SEER	$156
≥ 5.4 to < 11.25	≥ 65,000 to < 135,000	11.0 EER	$73	11.5 EER	$100
≥ 11.25 to < 20	≥ 135,000 to < 240,000	10.8 EER	$73	11.5 EER	$100
≥ 20 to < 63	≥ 240,000 to < 760,000	NA	NA	10.0 EER	$62
≥ 63	≥ 760,000	NA	NA	9.7 EER	$62
Air to Air Heat Pump Systems					
< 5.4 Split	< 65,000	NA	NA	14.0 SEER / 8.5 HSPF	$156
< 5.4 Packaged	< 65,000	NA	NA	14.0 SEER / 8.0 HSPF	$156
≥ 5.4 to < 11.25	≥ 65,000 to < 135,000	11.0 EER	$73	11.5 EER	$100
≥ 11.25 to < 20	≥ 135,000 to < 240,000	10.8 EER	$73	11.5 EER	$100
≥ 20	≥ 240,000	NA	NA	10.0 EER	$62
Water Source Heat Pumps					
< 11.25	< 135,000	NA	NA	14.0 EER	$100
Energy Saving Control Options (when installed with new 2006 or 2007 qualifying equipment)					
Dual Enthalpy Economizer		Outside air economizer utilizing 2 enthalpy sensors *(1 for outdoor and 1 for return air)*			$250 / unit
Demand Control Ventilation		Outside air intake controlled based on CO2 sensor in space or return air			$200 / unit
ECM Fan Motors		ECM Motors installed on fan-powered terminal boxes, fan coils			$150 / motor

Program Past Performance

Below is a table that provides program performance data by EEPP for the past three years (PY 2004 thru 2006) that reflects participation in individual retrofit; custom programs for HVAC installations. Estimated savings are calculated differently for each EEPP. Refer to Section 5.0 for specific reference to more detailed impact analysis by company provided in their Technical Resource Manual (Refer to footnotes and Section 14 for reporting detail and disclaimers by EEPP).

Table 7.3.1.b Retrofit Unitary HVAC Past Performance

EEPP	PY	Units #[1,2]	Incentives[3]	Gross kWh Annual Savings	Net[4] Summer kW Savings	Net[4] Winter kW Savings	Program Spending[7,8,9]
CLC[a,b]	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	16	$ 4,094	5,853	4.0	4.0	$ 1,063
	2006	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
NGrid	2004 2005 2006	***Data for replacement HVAC systems and controls are integrated into Massachusetts Custom Programs - Non-Lighting Measures in Table 7.6.1.[5]***					
NSTAR[c]	2004	167	$ 678,571	8,142,482	444	390	*see footnote 6*
	2005	190	$ 768,968	8,671,220	386	114	*see footnote 6*
	2006	322	$1,096,800	11,718,687	577	69	*see footnote 6*
Unitil/ FG&E	2004	0	$0	0	0.00	0.00	$0
	2005	0	$0	0	0.00	0.00	$0
	2006	1	$ 5,990	43,798	21.90	17.96	$ 3,179
WMECo	2004	8	$ 11,365	52,193	38.32	---	*see footnote 10*
	2005	11	$ 81,914	25,542	27.00	---	*see footnote 10*
	2006	23	$ 124,492	138,711	58.08	0.00	*see footnote 10*

1 (NSTAR) Unit # not applicable of custom projects.
2 (Unitil) Reflects number of projects completed. (CLC) Reflects number of measures as reported within their measure database.
3 Incentives refer to Customer Incentives.
4 (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.
5 National Group tracks non rebate spending by Program→ **Large C&I-Retrofit**

Rebates	2004: $10,049,110	***Program***	2004: $2,708,962
	2005: $9,512,105	***Spending***	2005: $2,438,623
	2006: $13,604,712		2006: $3,224,298

6 NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates→ **Large C&I-Retrofit**

Rebates	2004: $9,753,354	***Program***	2004: $3,547,621
	2005: $7,906,038	***Spending***	2005: $3,587,143
	2006: $8,772,635		2006: $5,209 284

7 (Unitil) Program Spending = PP&A+MKTING+STAT+EVAL
8 (Unitil) General program expenditures are not reported by end-use. Costs have been allocated based on kWh savings.
9 (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs. Program Spending is generally not available by measure. However, Program Spending estimates were provided by allocating overall Program Spending by program to measure groupings using the proportion of annual kWh savings that each measure grouping represented.

[10] (WMECO) Program Spending data is not explicitly available for retrofit projects. It is included for 2004, only, as part of Massachusetts Custom Programs – Non-Lighting Measures provided in Table 6.6 for WMECo's New Construction Program.

[a] (CLC) "No Activity" indicates that there were no measures implemented within the measure grouping for that year. Incomplete Data " Inc/Data " indicates that more than 75% of the data is not available. "Not Available" indicates that no data appeared in the database. Not Available is not the same as zero; zeros are shown as reported.

[b] (CLC) Custom and prescriptive measures cannot be separated within the current data structure. As a result, all non-lighting measures are listed under Massachusetts Custom Programs – Non-Lighting Measures (Table 6.6). This category includes both custom and prescriptive measures.

[c] NSTAR does not currently offer or has not offered programs in the past related to retrofit replacements of Unitary Packaged HVAC equipment due to the poor cost-effectiveness of the measures. The HVAC prescriptive end-use measure units include mostly variable speed drives (VSDs), and some larger rooftop HVAC systems. This data will also be reported in Retrofit Variable Speed Drives Table 6.5.

Program Differences by EEPP

Application processing, payments and tracking of customer and/or vendor rebates is provided separately for each EEPP. Differences in the types of HVAC installations that are allowed for an incentive are listed below for each EEPP.

CLC

In addition to the core "circuit rider" services, application processing and program delivery are also handled by the circuit rider for CLC customer projects.

National Grid

Application processing and program delivery are implemented by National Grid field support representatives.

NSTAR

NSTAR will process all HVAC Early Replacement Program projects under their Construction Solutions program. The existing equipment is considered to be at the end of its useful life (equipment replacement) and the incentive reflects a portion of the incremental cost.

Refer to the program description provided in Section 6.3.1 Lost Opportunity Unitary Packaged HVAC for more detail.

Unitil/ FG&E

Application processing and program delivery are implemented by Unitil/FG&E field support representatives.

WMECo

Application processing and program delivery are implemented by WMECo Account Executives and field support representatives with assistance from the "circuit rider".

7.3.2 Retrofit – Energy Management System (EMS)

Program	Massachusetts EMS	
Program Type	Retrofit	
Program Names	**CLC**	C & I Retrofit
	National Grid	Energy Initiative
	NSTAR	Business Solutions
	Unitil/FG&E	Large Business Services
	WMECo	C & I Customers under Custom
Program Details		
Goals	To promote sound energy management practices.	
Description	Applies to existing facilities that do not currently have EMS installed. Incentives are available using a prescriptive formula on $/point and sf basis up to maximum limit. The exception is for Unitil/FG&E where all incentives are calculated on a custom basis.	
Target Audience	C&I customers. No specific industry sectors are targeted at this time.	
Program Implementation & Contractor Support	**CLC**	Program deliver through in-house program support staff, including circuit rider, and prescriptive process.
	National Grid	Through National Grid's field support staff and tech reps and the efforts for their various agents, customers are made aware of the availability of prescriptive EMS incentives.
	NSTAR	Program delivery through program and field support staff with prescriptive application process.
	Unitil/FG&E	Custom application process
	WMECo	Prescriptive PA collects data from customer or vendor.
Incentive Structure	**CLC**	Dual Enthalpy. $250 (1 per unit) DCV $200 (1 per unit) ECM $150 (fan applications only) Hotel Occupancy Sensors $75 Programmable. Thermostats $50

	National Grid	Incentive paid on a $/pt added bases. Three levels of incentives offered: $225/pt for buildings up to 40K sqft - limit 16 pts; $300/pt for buildings > 40k up to 80K sqft. – limit 48 pts; $200/point for buildings > 80k up to 200K sqft – limit 128 pts. Hotel occupancy sensors that control heat pump or PTAC units. $75 per sensor
	NSTAR	$/pt. based upon sqft up to point cap Hotel Occupancy Sensor also offered
	Unitil/FG&E	Site-specific up to 50% of installed cost based on project cost-effectiveness
	WMECo	❖ ***Retrofit***: $400/Point or 50% installed cost, which ever is less ❖ ***New Construction***: ECC-Baseline
Baseline/Specifications	Manual controls or no controls.	
Eligibility Criteria	Incentives are available to industrial, commercial, institutional and agricultural electric service customers.	
Training & Education	Presentations at professional society meetings such as local chapters of ASHRAE and AEE. **NSTAR**: partnering with Iowa Energy Center http://www.ddc-online.org/	
Marketing and Outreach Strategy	Direct contact with large C&I customers by EEPP field representatives (or circuit rider), general marketing letters, website.	
	CLC	Company website, along with direct contact with customers and vendor outreach.
	National Grid	Company website, along with direct contact with customers and vendor outreach.
	NSTAR	Biannual Open House to make the equipment vendors aware of incentives that are available to NSTAR customers.
	Unitil/FG&E	Company website, along with direct contact with customers and vendor outreach.
	WMECo	Direct contact with customers and vendor outreach.
Other Program Integration/ Coordination	Not Applicable	
Program Past Performance	See Table 7.3.2 below	

Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program measures provided for each EEPP, as part of the Technical Resource Manual.	
Future Consideration	This is a stable program and no major changes are anticipated at this time	
Other Program Information		
Program Contacts	**CLC**	John Burns: 508-375-6829 jburns@capelightcompact.org
	National Grid	Fran Boucher 508-421-7299 francis.boucher@us.ngrid.com
	NSTAR	Tumin Chan 781-441-8880 tumin.chan@nstar.com
	Unitil/FG&E	Ed Mailloux 603-773-6541 mailloux@unitil.com
	WMECo	Ron Johnston 413-787-9272 johnsyx@nu.com
Coordination Among Program Administrators	A committee exists to evaluate controversial new technologies.	
Program History	Massachusetts EMS programs have been available since the outset of the programs.	
Specification Reference	Not Applicable	
Evaluation Reports Available	1. Boulder Energy Associates, "1994 Impact Evaluation of Energy Management Systems", May 31, 1995	
Other Programs Funded / Sponsored	Not Applicable	

Program Past Performance

On the following page is a table that provides program performance data by EEPP for the past three years (PY 2004 thru 2006). Estimated savings are calculated differently for each EEPP. Refer to Section 5.0 for specific reference to more detailed impact analysis by company provided in their Technical Resource Manual (Refer to footnotes and Section 14 for reporting detail and disclaimers by EEPP).

Table 7.3.2 Retrofit EMS Past Performance

EEPP	PY	Units #[1,2]	Incentives[3]	Gross kWh Annual Savings	Net[4] Summer kW Savings	Net[4] Winter kW Savings	Program Spending[7,8,9]
CLC[a,b]	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	1	$ 9,800	14,220	2.0	2.0	$ 588
NGrid	2004	1,102	$ 118,700	4,400,753	146	189	*see footnote 5*
	2005	1,196	$ 63,161	1,422,497	31	43	*see footnote 5*
	2006	2,150	$ 253,200	1,605,869	160	440	*see footnote 5*
NSTAR[c]	2004 2005 2006	***Data for retrofit EMS are integrated into Massachusetts Custom Programs - Non-Lighting Measures in Table 7.6.1.[5]***					
Unitil/ FG&E	2004	0	$0	0	0.00	0.00	$0
	2005	1	$ 21,363	187,340	18.80	15.42	$ 21,590
	2006	0	$0	0	0.00	0.00	$0
WMECo[d]	2004 2005 2006	***Data are not explicitly available, dollars and saving are included in Massachusetts Custom Programs - Non-Lighting Measures in Table 7.6.1.[10]***					

[1] (NSTAR) Unit # not applicable of custom projects.

[2] (Unitil) Reflects number of projects completed. (CLC) Reflects number of measures as reported within their measure database.

[3] Incentives refer to Customer Incentives.

[4] (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.

[5] National Grid tracks non rebate spending by Program→

	Large C&I-Retrofit		
Rebates	2004: $10,049,110	***Program Spending***	2004: $2,708,962
	2005: $9,512,105		2005: $2,438,623
	2006: $13,604,712		2006: $3,224,298

[6] NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates→

	Large C&I-Retrofit		
Rebates	2004: $9,753,354	***Program Spending***	2004: $3,547,621
	2005: $7,906,038		2005: $3,587,143
	2006: $8,772,635		2006: $5,209 284

[7] (Unitil) Program Spending = PP&A+MKTING+STAT+EVAL

[8] (Unitil) General program expenditures are not reported by end-use. Costs have been allocated based on kWh savings.

[9] (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs. Program Spending is generally not available by measure. However, Program Spending estimates were provided by allocating overall Program Spending by program to measure groupings using the proportion of annual kWh savings that each measure grouping represented.

[10] (WMECO) Program Spending data is not explicitly available for retrofit projects. It is included for 2004, only, as part of Massachusetts Custom Programs – Non- Lighting Measures provided in Table 6.6 for WMECo's New Construction Program.

[a] (CLC) "No Activity" indicates that there were no measures implemented within the measure grouping for that year. "Not Available" indicates that no data appeared in the database. Not Available is not the same as zero; zeros are shown as reported.

[b] (CLC) Custom and prescriptive measures cannot be separated within the current data structure. As a result, all non-lighting measures are listed under Massachusetts Custom Programs – Non-Lighting Measures (Table 6.6). This category includes both custom and prescriptive measures.

[c] NSTAR does not currently offer or has not offered prescriptive programs in the past related to system controls. As a result, EMS projects are processed under Custom applications and included in Massachusetts Custom Programs – Non-Lighting Measures Table 7.6.1.

[d] WMECo does not have a separate program for retrofit EMS. Performance numbers are reported in aggregate as Custom Programs.

Program Differences by EEPP

CLC

Assistance is provided by CLC staff and the Cool Choice/MotorUp circuit rider, a P.E. who is under a separate contract to CLC for technical assistance services.

National Grid

Application processing and program delivery are implemented by National Grid's Key Account Managers and Business Service Representatives.

NSTAR

Application processing and program delivery are implemented by NSTAR's Energy Efficiency's C&I Program Managers and Customer Account Executives.

NSTAR provides training for their business partners, who include, motor dealers, HVAC Contractors, Refrigeration and Compressed Air contractors as well as commercial and Industrial customers throughout the year. NSTAR also actively participates in many conferences and trade shows by sponsoring booths, training sessions and educational materials.

Unitil/ FG&E

Application processing and program delivery are implemented by Unitil/FG&E field support representatives.

WMECo

Application processing and program delivery are implemented by WMECo field support representatives.

7.4 Retrofit Premium-Efficiency Motors

Program	**Premium-Efficiency Motors**	
Program Type	Retrofit; Custom	
Program Names	**CLC**	Medium & Large C&I Retrofit
	National Grid	Energy Initiative
	NSTAR	No Program under Business Solutions for Retrofit Motors
	Unitil/FG&E	Large Business Solutions
	WMECo	Express Service
Program Details		
Goals	1. To promote sound motor management practices 2. To facilitate the selection and purchasing of premium efficiency motors for motor replacement.	
Description	EEPP retrofit programs serve mostly large C&I customers (> 100 kW) and covers replacement of existing motors, VFDs, lighting, compressed air, HVAC (EMS) and custom projects.	
Target Audience	Large C&I customers with retrofit projects and motor dealers serving customers within EEPP service territories. No specific industry sectors are targeted at this time.	
Program Implementation & Contractor Support	The sponsors of *Massachusetts MotorUp* in 2007 hired a circuit rider, Alan Mulak, P.E., to provide technical support and marketing services to both motor dealers and customers, as assigned by each EEPP. For 2008, this circuit rider function is handled individually by each EEPP. Overlap exists with this outreach effort in identifying projects that may need to be administered through Custom programs. Since there are no retrofit programs available for premium efficiency motors in 2007 or 2008, customers are required to work with individual EEPP field representatives to determine eligibility under Custom programs. Refer to section below on “Program Differences by EEPP” for more detail.	

Incentive Structure	NEMA Premium™ motor incentives range from $130 for a 1 hp open drip-proof motor to $3,030 for a 200 hp open drip-proof motor. Totally enclosed fan-cooled NEMA Premium motor rebates range from $150 for a 1 hp motor to $4,730 for a 200 hp motor. Incentives typically cover 40-50 percent of the installed cost. • *Massachusetts MotorUp* for NEMA Premium™ motors 1-200 hp. • Custom incentives are calculated for motors not covered under *MotorUp* or over 200 hp. • Custom incentives for various VSD & Motor hp applications are available through the different EEPPs. Refer to section below on "Program Differences by EEPP" for more detail. Refer to Table 7.4.a "NEMA Premium Qualifying Efficiencies and Incentives" provided below for prescriptive incentives available through *Massachusetts MotorUp*.
Baseline/Specifications	The baseline adjustment factor for replacement motors was originally based on "New England Motor Baseline Study," Appendix E, 1992 DSM Performance Measurement Report (prepared by Easton Consultants), and escalating program efficiency eligibility thresholds, which reflect the 1992 Energy Policy Act motor efficiency standards implemented in 1997.
Eligibility Criteria	Incentives are available to industrial, commercial, institutional and agricultural electric service customers. Motors must be installed or stocked in service territories of participating EEPPs. Motors covered by the program must be new, three phase, induction motors, NEMA Design A & B, 1-200 HP, Open Drip Proof (ODP) or Totally Enclosed Fan Cooled (TEFC), 1200, 1800, or 3600 RPM. Other motors may be eligible for rebate under other EEPPs efficiency programs. To qualify for an incentive, the motor(s) must operate a minimum of 2,000 hours per year.
Training & Education	Training for approximately four (4) motor dealers/ annually, which is provided as outreach for *Massachusetts MotorUp*, or upon special request. EEPP field support representatives (or circuit rider) are trained on the program at the beginning of each new program year.
Marketing and Outreach Strategy	Marketing through seminars on motor management; direct contact with large C&I customers by EEPP field representatives (or circuit rider), general marketing letters, website.
Other Program Integration / Coordination	MDM Planning Kit and training on MDM 1-2-3, as well as Motor Master+, for motor dealers and their customers. A pilot program for motor systems and motor management was initiated in 2006 (National Grid only), to be expanded in 2007 and continued in 2008, to test acceptance of a program that integrates motor management practices with motor systems that use NEMA Premium Efficiency Motors, VFDs and other process-related controls.
Program Past Performance	See Table 7.4.b for performance by program year. Program performance may only exist for some EEPPs for Custom projects, as no retrofit program was in existence from 2004 – 2006 for CLC, NSTAR, FG&E or NSTAR.

Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program measures provided for each EEPP, as part of the Technical Resource Manual.
Future Consideration	No retrofit program for motors will be offered in 2007 or 2008. Eligible projects must be submitted through Custom. Incorporate pilot program for motor systems and motor management as a standard offer in future program years for interested EEPPs.

Other Program Information

Program Contacts	**CLC**	John Burns (508) 375-6829
	National Grid	Sarah Dagher (978) 974-9475
	NSTAR	Cherie Miles (781) 441-8037
	Unitil/FG&E	Ed Mailloux (603) 773-6541
	WMECo	Jack Burke (413) 787-9470
Coordination Among Program Administrators	Statewide for Massachusetts, Rhode Island and parts of New Hampshire.	
Program History	As early as 1987, rebates were available through the individual EEPPs' Retrofit programs	
Specification Reference	NEMA Premium Efficiency Motor specifications, which mirror CEE's Premium Motor specifications. NEMA Premium™ efficiency levels are contained in NEMA Standards Publication MG 1-2003, in Tables 12-12 and 12-13, respectively. This publication can be downloaded from www.nema.org/stds.	
Evaluation Reports Available	1. Easton Consultants, "New England Motor Baseline Study", June 30, 1992 2. Science Applications International Corp., "Motor Run-Time and Persistence Study", June 29, 1995 3. Nexus Market Research, Inc. Dorothy Conant, Shel Feldman Management Consulting, "Scoping Study on Market Penetration Tracking of Energy-Efficient Motors and Packaged HVAC Systems in New England and New York", August 08, 2003	
Other Programs Funded / Sponsored	CEE MDM Campaign Sponsor; CEE Motor Management and Motor Systems (National Grid and NSTAR annually funded through 2009)	

Incentive levels

Incentive levels for retrofit programs were originally intended to cover 50% of the total project cost (materials and labor). Comprehensive rebates up to 50% of the total project costs may be available through Custom programs for each EEPP, depending on the specific costs and savings associated with the motors system. See Table 7.4.a below for customer incentive levels by horsepower and enclosure type for NEMA Premium™ motors 1 to 200 hp.

Table 7.4.a Qualifying Efficiencies/Equipment and Incentives for Motors

Premium Efficiency Motor Incentives OPEN DRIP PROOF (ODP)				
SIZE HP	SPEED (RPM)			Customer Incentive ($/Motor)
	1200	1800	3600	
	NEMA Nominal Efficiency			
1	82.5%	85.5%	77.0%	$45
1.5	86.5%	86.5%	84.0%	$45
2	87.5%	86.5%	85.5%	$54
3	88.5%	89.5%	85.5%	$54
5	89.5%	89.5%	86.5%	$54
7.5	90.2%	91.0%	88.5%	$81
10	91.7%	91.7%	89.5%	$90
15	91.7%	93.0%	90.2%	$104
20	92.4%	93.0%	91.0%	$113
25	93.0%	93.6%	91.7%	$117
30	93.6%	94.1%	91.7%	$135
40	94.1%	94.1%	92.4%	$162
50	94.1%	94.5%	93.0%	$198
60	94.5%	95.0%	93.6%	$234
75	94.5%	95.0%	93.6%	$270
100	95.0%	95.4%	93.6%	$360
125	95.0%	95.4%	94.1%	$540
150	95.4%	95.8%	94.1%	$630
200	95.4%	95.8%	95.0%	$630

Premium Efficiency Motor Incentives TOTALLY CLOSED FAN COOLED (TEFC)				
SIZE HP	SPEED (RPM)			Customer Incentive ($/Motor)
	1200	1800	3600	
	NEMA Nominal Efficiency			
1	82.5%	85.5%	77.0%	$50
1.5	87.5%	86.5%	84.0%	$50
2	88.5%	86.5%	85.5%	$60
3	89.5%	89.5%	86.5%	$60
5	89.5%	89.5%	88.5%	$60
7.5	91.0%	91.7%	89.5%	$90
10	91.0%	91.7%	90.2%	$100
15	91.7%	92.4%	91.0%	$115
20	91.7%	93.0%	91.0%	$125
25	93.0%	93.6%	91.7%	$130
30	93.0%	93.6%	91.7%	$150
40	94.1%	94.1%	92.4%	$180
50	94.1%	94.5%	93.0%	$220
60	94.5%	95.0%	93.6%	$260
75	94.5%	95.4%	93.6%	$300
100	95.0%	95.4%	94.1%	$400
125	95.0%	95.4%	95.0%	$600
150	95.8%	95.8%	95.0%	$700
200	95.8%	96.2%	95.4%	$700

Program Past Performance

Motors that are eligible for an incentive are three phase ODP & TEFC motors less than or equal to 200 HP meeting a minimum qualifying efficiency. The baseline efficiency is that defined by EPACT and the June 13, 2001 CEE guidelines for NEMA Premium Efficiency motors.

Below is a table that provides program performance data by EEPP for the past three years (PY 2004 thru 2006). Estimated savings are calculated differently for each EEPP Refer to Section 5.0 for specific reference to more detailed impact analysis by company provided in their Technical Resource Manual (Refer to footnotes and Section 14 for reporting detail and disclaimers by EEPP).

Table 7.4.b Retrofit Premium Efficiency Motors Past Performance

EEPP	PY	Units #[1,2]	Incentives[3]	Gross kWh Annual Savings	Net[4] Summer kW Savings	Net[4] Winter kW Savings	Program Spending[7,8,9]
CLC[a,b]	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	2	$ 5,983	Not Available	Not Available	Not Available	Not Available
NGrid	2004	57	$ 31,280	125,143	19	15	*see footnote 5*
	2005	25	$ 19,860	63,788	9	7	*see footnote 5*
	2006	252	$ 68,580	138,403	23	18	*see footnote 5*
NSTAR[c]	2004 2005 2006	***No program for Retrofit Motors. Data for prescriptive VSD/ Motors systems provided for in Retrofit Variable Speed Drives Table 7.5.[6]***					
Unitil/ FG&E	2004	1	$60	1753.00	0.29	0.23	$160
	2005	1	$350	6585.00	0.75	0.62	$759
	2006	2	$940	9432.00	2.76	2.26	$685
WMECo	2004	22	$ 2,735	23,609	4.81	22	*see footnote 10*
	2005	29	$ 3,299	35,502	6	29	*see footnote 10*
	2006	9	$ 2,970	58,420	4	9	*see footnote 10*

1 (NSTAR) Unit # not applicable of custom projects.
2 (Unitil) Reflects number of projects completed. (CLC) Reflects number of measures as reported within their measure database.
3 Incentives refer to Customer Incentives.
4 (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.
5 National Grid tracks non rebate spending by Program→ **Large C&I-Retrofit**

Rebates	2004: $10,049,110	***Program Spending***	2004: $2,708,962
	2005: $9,512,105		2005: $2,438,623
	2006: $13,604,712		2006: $3,224,298

6 NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates→ **Large C&I-Retrofit**

Rebates	2004: $9,753,354	***Program Spending***	2004: $3,547,621
	2005: $7,906,038		2005: $3,587,143
	2006: $8,772,635		2006: $5,209 284

7 (Unitil) Program Spending = PP&A+MKTING+STAT+EVAL
8 (Unitil) General program expenditures are not reported by end-use. Costs have been allocated based on kWh savings.
9 (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs.

Program Spending is generally not available by measure. However, Program Spending estimates were provided by allocating overall Program Spending by program to measure groupings using the proportion of annual kWh savings that each measure grouping represented.

[10] (WMECO) Program Spending data is not explicitly available for retrofit projects. It is included for 2004, only, as part of Massachusetts Custom Programs – Non-Lighting Measures provided in Table 6.6 for WMECo's New Construction Program.

[a] (CLC) "No Activity" indicates that there were no measures implemented within the measure grouping for that year. "Not Available" indicates that no data appeared in the database. Not Available is not the same as zero; zeros are shown as reported.

[b] (CLC) Custom and prescriptive measures cannot be separated within the current data structure. As a result, all non-lighting measures are listed under Massachusetts Custom Programs – Non-Lighting Measures (Table 6.6). This category includes both custom and prescriptive measures.

[c] NSTAR does not currently offer or has not offered programs in the past related to retrofit replacements motor equipment due to the poor cost-effectiveness of the measure. Prescriptive rebates are offered for combined VSD and motor systems. This data will also be provided in Retrofit Variable Speed Drives Table 6.5.

Program Differences by EEPP

The collaborative effort supported by the EEPPs for planning programs for 2007, yielded a consistent approach for not offering retrofit motor programs in Massachusetts. Past program activity did not produce results proven to be cost-effective. Thus, for PY 2008, no retrofit motor program is available in Massachusetts. EEPPs will continue to allow Custom applications for motor replacement and VSD projects, based on individual project requirements. Actual payment and tracking of customer and/or vendor rebates are provided separately for each EEPP. Differences to program delivery and how applications are processed, are described below for each EEPP.

CLC

In addition to the core "circuit rider" services, application processing and program delivery are also handled by the circuit rider for CLC customer projects.

National Grid

In addition to the core "circuit rider" services, application processing and program delivery are also handled by the circuit rider, or hired contractor, for National Grid customer projects.

Additional training seminars for motor dealers/ located in National Grid's service territory may be contracted to include training on MDM, Motor Master+ and National Grid's Motor Management Pilot.

NSTAR

NSTAR's choice not to offer incentives for retrofit motors is based primarily on B-C model analysis. In reviewing projects of this type, the energy savings did not justify the cost in a prescriptive program. However, if NSTAR is approached with a viable project, they would allow it under the custom application if it passed the B-C model.

Alternatively, NSTAR feels that there is a greater benefit to both their customers and the program if they offer an "enhanced" incentive under the Business Solutions (EI) "Motor & VSD" application form. In doing so, the additional incentive amount is offset by the combined savings of both the premium efficiency motor and variable speed drive. (Refer to section 7.5 Retrofit Variable Speed Drives).

Unitil/ FG&E

Application processing and program delivery are implemented by Unitil/FG&E field support representatives.

WMECo

Application processing and program delivery are implemented by WMECo Account Executives, field support representatives, with additional assistance from the “circuit rider”.

7.5 Retrofit Variable Speed Drives (VSDs)

Program	**Retrofit Variable Speed Drives**	
Program Type	Retrofit; Custom	
Program Names	**CLC**	Medium & Large C&I Retrofit
	National Grid	Energy Initiative
	NSTAR	Business Solutions
	Unitil/FG&E	Large Business Solutions
	WMECo	Express Service
Program Details		
Goals	1. Expand the use of variable speed drives on motor systems that have varying centrifugal load operations such as variable flow or pressure regulation. 2. Integration of NEMA Premium™ efficiency motors and variable speed drives, where applicable.	
Description	EEPP retrofit programs serve mostly large C&I customers (> 100 kW) and covers replacement of existing motors, VSDs, lighting, compressed air, HVAC (EMS) and custom projects. Large C&I program to offer financial incentives for VSD applications which can significantly reduce the energy consumed by fans, centrifugal pumps, and other motor-driven machinery operated under varying loads. This program addresses most popular VSD applications. For other VSD applications, use the Custom Approach. • Systems must have varying load operations such as variable flow or pressure regulation. Fan and pump operations that would otherwise be regulated by on/off cycling are not eligible for VSD incentives. Note: Variable speed drive (*VSD*) systems [*also called adjustable speed drives (ASD) or variable frequency drives (VFDs*)]	
Target Audience	Large C&I customers with retrofit projects and motor dealers & distributors serving customers within EEPP service territories, who promote and sell drive technology. No specific industry sectors are targeted at this time.	
Program Implementation & Contractor Support	Each EEPP has their field support representatives to provide customer assistance for a proposed project. Processing of applications are handled in-house by each EEPP.	

Incentive Structure	Incentives are designed to cover up to 50 percent of the total project cost (labor and materials); and comprehensive rebates cover up to 75 percent of the total project cost. VSD incentive amounts vary and are based on cumulative motor HP controlled by each VSD for an installation.	
	CLC	o VSD for 5 hp – 20 hp ($1,700 - $2,600) for specific HVAC installations. o VSD for all other applications use the Custom form. In general, rebates are designed to cover up to 50% of the cost of the efficiency measure or to buy down the cost of the equipment to a one and a half year payback period, whichever is less.
	National Grid	VSD for 5 hp – 100 hp ($1,500 - $6,300 incentive) for specific installations.
	NSTAR	o VSD for 5 hp – 100 hp ($1,700 - $7,000 incentive) for specified applications o VSD & Motor 5 hp – 100 hp ($2,000 - $10,200 incentive) for specific applications
	Unitil/FG&E	Custom only – incentives based on up to 40% of installed cost.
	WMECo	VSD for 5 hp – 100 hp ($920 - $9,290) for specific HVAC fan and pump installations.
	Custom incentives may be calculated for motors and drives that do not fit into prescriptive categories.	
Baseline/Specifications	The baseline is a composite fan or pump curve comprised of various, less-efficient control types specific to the selected installation type. Hours of operation vary based upon the facility type load shape.	
Eligibility Criteria	Incentives are available to industrial, commercial, institutional and agricultural electric service customers. Systems must have varying load operations such as variable flow or pressure regulation. Fan and pump operations that would otherwise be regulated by on/off cycling are not eligible for VFD incentives. Systems with constant speed and variable load operations (such as conveyors) are not eligible for VFD incentives.	
	CLC	VSD incentives offered on 8 prescriptive HVAC installation types from 5 hp – 20 hp.
	National Grid	VSD incentives offered on 9 prescriptive HVAC installation types from 5 hp – 100 hp.

	NSTAR	VSD incentives offered on 9 prescriptive HVAC installation types from 5 hp – 100 hp. VSD & Motors: to qualify for an incentive HVAC-VSD installations must be with new NEMA Premium™ motors. (See Section 6.4 "Lost Opportunity Premium Efficiency Motors", Table 6.4.a for more detail).
	Unitil/FG&E	No prescriptive VSD installations. Custom only.
	WMECo	VSD prescriptive incentives offered on HVAC applications from 5 hp – 100 hp.
	VSDs installed in process applications, waster water or municipal water supply applications may alternately use the Custom Application process, which requires detailed energy savings calculations. • To qualify for an incentive, the motor(s) being controlled by a VSD must operate a minimum of 2,000 hours per year. • VSDs must be equipped with a minimum of 3% impedance series reactor in its AC power input connection. • VSDs must comply with Massachusetts Harmonics requirements.	
Training & Education	Training to motor dealers/ as part of *Massachusetts MotorUp* outreach efforts, or upon special request to address comprehensive motor systems, including applications suitable for VSDs. EEPP field support representatives (or circuit rider) are trained on the program at the beginning of each new program year.	
Marketing and Outreach Strategy	Outreach is provided through a collaborative effort that supports the marketing of *Massachusetts MotorUp*, promoting the benefits of a motor management plan and integration of VSDs. Other outreach includes direct contact with large C&I customers by EEPP field representatives (or circuit rider), general marketing letters, website. No marketing campaign to promote drive technology/products is planned for 2007, or for 2008.	
Other Program Integration / Coordination	A pilot program for motor systems and motor management was initiated in 2006 (National Grid only), to be expanded in 2007, and continued in 2008, to test acceptance of a program that integrates motor management practices with motor systems that use NEMA Premium Efficiency Motors, VSDs and other process-related controls.	
Program Past Performance	See Table 7.5 for performance by program year.	
Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program measures provided for each EEPP, as part of the Technical Resource Manual.	
Future Consideration	Continue to promote awareness about the additional energy saving benefits of VSDs, and integrate VSDs into program messaging and motor-related services offered by each EEPP.	

	Continue to support CEE's efforts for integration of VSDs (referred to as ASDs by CEE) into their MDM campaign messaging and tools.	
Other Program Information		
Program Contacts	**CLC**	John Burns (508) 375-6829
	National Grid	Kevin Keena (508) 421-7279
	NSTAR	Cherie Miles (781) 441-8037
	Unitil/FG&E	Ed Mailloux (603) 773-6541
	WMECo	Jack Burke (413) 787-9470
Coordination Among Program Administrators	Efforts have been made to integrate messaging through *Massachusetts MotorUp* to create awareness about VSDs.	
Program History	As early as 1987, rebates were available through the individual EEPPs' Retrofit programs	
Specification Reference	NEMA Premium Efficiency Motor specifications, which mirror CEE's Premium Motor specifications. NEMA Premium™ efficiency levels are contained in NEMA Standards Publication MG 1-2003, in Tables 12-12 and 12-13, respectively. This publication can be downloaded from www.nema.org/stds.	
Evaluation Reports Available	1. Demand Management Institute, "Prescriptive Variable Frequency Drive Worksheet Development", June 9, 2006	
Other Programs Funded / Sponsored	CEE MDM Campaign Sponsor; CEE Motor Management and Motor Systems (National Grid and NSTAR annually funded through 2009). These programs will continue in 2008 integration of VSDs (CEE refers to them as ASDs) into campaign messaging and tools.	

Incentive levels

Incentive levels were originally intended to cover 50% of total project costs. Incentives range from $1,500 to $7,000 for cumulative motor horsepower of 5 hp – 100 hp controlled by each VSD (refer to table above for detail by EEPP).

Program Past Performance

Below is a table that provides program performance data by EEPP for the past three years (PY 2004 thru 2006). Estimated savings are calculated differently for each EEPP Refer to Section 5.0 for specific reference to more detailed impact analysis by company provided in their Technical Resource Manual (Refer to footnotes and Section 14 for reporting detail and disclaimers by EEPP).

Table 7.5 Retrofit VSDs Past Performance

EEPP	PY	Units #[1,2]	Incentives[3]	Gross kWh Annual Savings	Net[4] Summer kW Savings	Net[4] Winter kW Savings	Program Spending[7,8,9]
CLC[a,b]	2004	2	---	58,220	Not Available	Not Available	$ 10,271
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	16	$ 228,535	688,773	151.8	170.6	$ 28,472
NGrid	2004	7	$ 21,550	175,588	12	29	*see footnote 5*
	2005	23	$ 63,213	289,397	60	62	*see footnote 5*
	2006	81	$ 194,100	1,688,185	137	331	*see footnote 5*
NSTAR[c]	2004	---	$0	---	---	---	*see footnote 6*
	2005	2	$ 7,000	62,192	4	0	*see footnote 6*
	2006	---	$0	---	---	---	*see footnote 6*
Unitil/ FG&E	2004	3	$ 73,415	1,443,825	123.77	101.50	$ 131,550
	2005	0	$0	0	0.00	0.00	$0
	2006	0	$0	0	0.00	0.00	$0
WMECo[d]	2004 2005 2006	***Data are not explicitly available, dollars and saving are included in Massachusetts Custom Programs - Non-Lighting Measures in Table 7.6.1.[10]***					

[1] (NSTAR) Unit # not applicable of custom projects.
[2] (Unitil) Reflects number of projects completed. (CLC) Reflects number of measures as reported within their measure database.
[3] Incentives refer to Customer Incentives.
[4] (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.
[5] National Grid tracks non rebate spending by Program→ **Large C&I-Retrofit**

Rebates	2004:	$10,049,110	***Program***	2004: $2,708,962
	2005:	$9,512,105	***Spending***	2005: $2,438,623
	2006:	$13,604,712		2006: $3,224,298

[6] NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates→ **Large C&I-Retrofit**

Rebates	2004:	$9,753,354	***Program***	2004: $3,547,621
	2005:	$7,906,038	***Spending***	2005: $3,587,143
	2006:	$8,772,635		2006: $5,209 284

[7] (Unitil) Program Spending = PP&A+MKTING+STAT+EVAL
[8] (Unitil) General program expenditures are not reported by end-use. Costs have been allocated based on kWh savings.
[9] (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs. Program Spending is generally not available by measure. However, Program Spending estimates were provided by allocating overall Program Spending by program to measure groupings using the proportion of annual kWh savings that each measure grouping represented.

[10] (WMECO) Program Spending data is not explicitly available for retrofit projects. It is included for 2004, only, as part of Massachusetts Custom Programs – Non- Lighting Measures provided in Table 6.6 for WMECo's New Construction Program.

[a] (CLC) "No Activity" indicates that there were no measures implemented within the measure grouping for that year. "Not Available" indicates that no data appeared in the database. Not Available is not the same as zero; zeros are shown as reported.

[b] (CLC) Custom and prescriptive measures cannot be separated within the current data structure. As a result, all non-lighting measures are listed under Massachusetts Custom Programs – Non-Lighting Measures (Table 6.6). This category includes both custom and prescriptive measures.

[c] NSTAR does not currently offer or has not offered programs in the past related to retrofit replacements motor equipment due to the poor cost-effectiveness of the measure. Prescriptive rebates are offered for combined VSD and motor systems. Very few VSD/Motor applications are retrofit projects, and as a result, are processed under Custom. These results will be aggregated with the data provided in Massachusetts Custom – Non-Lighting Measures Table 7.6.1.

[d] WMECo does not have a separate program for retrofit or new construction variable speed drives. Performance numbers are reported in aggregate as Custom Programs.

Program Differences by EEPP

Application processing, payments and tracking of customer and/or vendor rebates is provided separately for each EEPP. Differences in the types of VSD applications that are allowed for an incentive are listed below for each EEPP.

CLC

Application Types

BEF Building Exhaust Fan
CWP Chilled / Condensing Water Pump
FWP Boiler Feed Water Pump
HWP Hot Water Circulator Pump
MAF Make-up Air Fan
RFA HVAC Return Air Fan
SFA HVAC Supply Air Fan
WHP Water Source Heat Pump Circulator Fan

National Grid

Application Types

BDF Boiler draft fan
CWP Chilled water distribution pump
FWP Boiler feed water pump
HPP WSHP circulation pump
HWP Heating hot water pump
PCP Process cooling pump
PE Process exhaust and make-up air fan
REF Return fan on return air handler or on VAV packaged HVAC unit
SF Supply fan on supply air handler or on VAV packaged HVAC unit

NSTAR

Application processing and program delivery are implemented by NSTAR's Energy Efficiency's C&I Program Managers and Customer Account Executives. Customers must seek NSTAR pre-approval before submitting an application for qualifying equipment.

NSTAR provides training for their business partners, which includes, motor dealers, HVAC Contractors, Refrigeration and Compressed Air contractors as well as commercial and Industrial customers throughout the year. NSTAR also actively participates in many conferences and trade shows by sponsoring booths, training sessions and educational materials.

Application Types

BEF Building Exhaust Fan
CTF Cooling Tower Fan
CWP Chilled / Condensing Water Pump
FWP Boiler Feed Water Pump
HWP Hot Water Circulator Pump
MAF Make-up Air Fan
RFA HVAC Return Air Fan
SFA HVAC Supply Air Fan
WHP Water Source Heat Pump Circulator Loop

Unitil/ FG&E

Application processing and program delivery are implemented by Unitil/FG&E field support representatives.

WMECo

Application processing and program delivery are implemented by WMECo Account Executives, C&LM Staff, or "circuit rider".

Application Types

CTF Cooling Tower Fan
CWP Chilled / Condensing Water Pump
MAF Make-up Air Fan
RFA HVAC Return Air Fan
SFA HVAC Supply Air Fan
WHP Water Source Heat Pump Circulator Loop

7.6 Massachusetts Retrofit Custom

7.6.1 Retrofit Custom

Program	**Massachusetts Custom**	
Program Type	Retrofit	
Program Names Custom	**CLC**	Large C&I Retrofit
	National Grid	Energy Initiative
	NSTAR	Business Solutions
	Unitl/FG&E	*NOT PARTICIPATING IN THIS PROGRAM*
	WMECo	Custom Services & New Construction and Major Renovations Energy Solutions
Program Details		
Goals	To promote the widest possible range of technically sound electric efficiency practices to replace existing systems that are still in good operating condition. This program EXCLUDES systems that; 1. Are not at the end of their useful life; 2. Need to increase the quality of the environment or a product produced; or 3. Seek to increase production capacity.	
Description	Applies to energy efficiency measures that are not otherwise eligible for incentives under any retrofit "Prescriptive" incentive programs. It requires that the opportunity meet the requirements of the program Benefit Cost tests. The incentive is specific to the parameters of the individual project for each specific customer. Determination of eligibility requires a budget be developed for the more efficient approach. Engineering calculations must be carried out to project electric and non- electric savings (Non Electric Benefits NEBs) achieved by the proposed case verses the existing case.	
Target Audience	All C&I customers.	

Program Implementation & Contractor Support	**CLC**	Program implementation is delivered through TA . Oversight and technical analysis is accomplished through a Vendor Management contract with Honeywell, Inc. CLC will, upon pre-approval, share the cost of a technical study on a 50-50 basis with the customer's share applied towards their co-pay should they proceed with the recommendations. CLC Primary TA include: • DMI • Alan Mulak, P.E., LLC
	National Grid	All program implementation in house but use TA vendors to do supporting detailed tech analysis. In general the cost of these outside services are split 50-50 with the customer. Occasionally, the technical analysis and savings calculations used to support the incentive are calculated in house by the utility when time and resources allow. All work done by outside TA vendors is reviewed by in house technical staff. Peer Review: The Technical studies for all projects that save in excess of 250,000 kWh annually require separate review by a second National Grid's in house energy efficiency expert.
	NSTAR	All program implementation in house but use TA vendors to do supporting detailed tech analysis. In general the cost of these outside services are split 50-50 with the customer. Occasionally, the technical analysis and savings calculations used to support the incentive are calculated in house by the utility when time and resources allow. All work done by outside TA vendors is reviewed by in house technical staff.
	Unitil/FG&E	Not Participating
	WMECo	Performs in house evaluation, with technical support primarily by the following consulting engineering firms: W.H. Fuller LLC, The Nicholas Group, Advanced Energy Management, Compressed Air Technologies.
	WHOLE BUILDING ASSESMENT AND RETROCOMMISSIONING National Grid uses a Whole Building Assessment program that includes Energy Star Benchmarking along with a Retro-commissioning program to generate customer interest in pursuing Custom Projects. These programs provide a deeper, one on one, interaction with the customer, and provide more specific direction to customers who are not clear how or where to get started. **COMPRESSED AIR OPTIMIZATION** National Grid working with local compressed air vendors, provides targeted field services including metering and energy analysis to promote best practices in compressed air efficiency for existing systems. **COMMISSIONING** National Grid conducts commissioning (Cx) on all projects that receive an incentive of over $100,000. This is carried out by outside vendors who do on	

	site, inspections, testing and monitoring to assure systems are installed and operating in a manner that delivers or exceeds the delivery of the electric savings projected in the application. If it falls short, and cannot be made to perform up to standards, adjustments are made to the energy savings calculations and it may impact the project incentive.	
Incentive Structure	**CLC**	Incentive Caps/Limits: Project incentives are capped at $75,000 per year. Government projects are capped at $75,000 per year per community served by the facility. For example a regional school serving three towns could receive $225,000 for a project ($75,000 X 3).
	National Grid	Design incentives are available to maximize customer's participation in efficiency opportunities. Incentives are designed to cover 40 to 50% percent of the cost (labor and materials). Incentive Caps/Limits: limits the incentives based on simple payback. Incentives are limited such that the owner's simple payback, on the cost of the measure is not less than 2.0 years. Payment for any single building project limited to $400,000. Further, on projects receiving an incentive of more than $100,000, the incentive is capped so the customer does not receive more than $30 per "unit" (or New Lifetime kW-year and Net Lifetime MWh) saved.
	NSTAR	Design incentives are available to maximize customer's participation in efficiency opportunities. Incentives are designed to cover up to 50% percent of the cost (labor and materials, depending upon the specific costs and savings associated with the energy efficiency measures. Flexibility of extending the incentive calculation using the prescriptive formula when a Prescriptive equivalent form is available. Incentive Caps/Limits: No lower limit on the simple payback of the project. There is an upper limit of $500,000 incentive per customer per year. Other factors that can affect the upper limit cap are: *1)* past participation of the customer to the program (i.e. how many times this customer has been to the well) and *2)* contributions by this customer to the EE funds for the past five years.
	Unitil/FG&E	Not Participating
	WMECo	Design incentives are available to maximize customer's participation in efficiency opportunities. Incentives are designed to cover 40 to 50% percent of the cost (labor and materials). Incentive Caps/Limits: Currently, no incentive caps.
Baseline/Specifications	The existing operating conditions are the basis for determining savings.	

Eligibility Criteria	Incentives are available to industrial, commercial, institutional and agricultural electric service customers. Categories include HVAC, Process, Lighting, Controls, Building Envelope and other energy saving technologies. Note: 1. The project is part of an existing facility or system that is currently operating; in the same function, to the same standard of performance, as the proposed system will perform. . 2. Measures that are intended principally to reduce electric Demand are not eligible. 3. Measures that result in fuel switching are not eligible with the exception of Cape Light Compact where this is allowed. 4. Some technologies where detailed engineering calculations can not be provided to document predicted savings, such as plug in devices or products that have a poor history of performance persistence, are not eligible.
Training & Education	• Public Seminars - Compressed Air Challenge Level 1 & 2 Training • Advanced Buildings 90 minute and 4 hour trainings (2 to 4 times a year) • Advanced Buildings Lunch and Learns • Energy fairs and trade shows such as: - Building Energy 2007 - Build Boston 2007
Marketing and Outreach Strategy	Direct contact with large C&I customers by EEPP field representatives , general marketing letters, seminars, Lunch and Learn trainings, outreach through local professional society presentations (ASHRAE, Association of Energy Engineers) and newsletters, along with utility websites.
Other Program Integration / Coordination	Not Applicable
Program Past Performance	See Table 7.6.1 for performance by program year.
Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program measures provided for each EEPP, as part of the Technical Resource Manual.
Future Consideration	Not Applicable

Other Program Information

Program Contacts	**CLC**	John Burns (508) 375-6829
	National Grid	Fran Boucher 508-421-7299
	NSTAR	Tumin Chan 781-441-8880 Hugh Gaasch 781-441-8706

	Unitil/FG&E	Not Participating
	WMECo	Robert Dvorchik 413-499-9004
Coordination Among Program Administrators	Annually a team gathers to discuss changes for subsequent years and reviews new technologies for future consideration and cost-effective analysis.	
Program History	The Massachusetts Custom programs have been available since the outset of the programs of each EEPP.	
Specification Reference	Not Applicable	
Evaluation Reports Available	Each EEPP has a group that is responsible for evaluation of the many custom applications. See a partial list of completed and active studies below. 1. "New England Power Service Company Custom Persistence Study", *date unknown* 2. Michael Ketcham, David Wortman, PE, Wortman Engineering, "Impact Evaluation Study of 1998 Custom Comprehensive Installations", February 24, 2000 3. Michael Ketcham, David Wortman, PE, Wortman Engineering, "Impact Evaluation Study of 1999 Custom O&M Installations", June 7, 2000 4. HEC, Inc., "Impact Evaluation Study of 1999 Custom HVAC Installations", December 8, 2000 5. Demand Management Institute, "Final Report: National Grid USA Service Company Evaluation of 2000 Custom Process Installations - Part II", June 26, 2002 6. Science Application International Corp., "National Grid USA Service Company Impact Evaluation of 2002 Custom Comprehensive Projects - Final Report", June 8, 2004 7. Select Energy Services, Inc., "Final Report for National Grid USA Service Company Evaluation of 2003 Custom Process Installations - Part I", August 24, 2005 8. Select Energy Services, Inc., "Final Report for National Grid USA Service Company Evaluation of 2003 Custom HVAC Installations - Part II", September 27, 2005 9. Demand Management Institute, "Evaluation of 2003 Custom HVAC Installations - Part I", October 12, 2005 10. "(WMECo) Custom Services Impact Evaluation 2004 Measure Installations", March 2006 11. TecMarket Works and Summit Blue Consulting, "Final Approach for Estimating and Tracking the Value of Custom Program Non-Electric Benefits: Strategies for Quantifying Non-Electric Benefits in Custom Program Applications", May 23, 2006 12. Demand Management Institute, "Impact Evaluation of 2004 Custom Process Installations - Part I", June 1, 2006	

	13. Select Energy Services, Inc., “Evaluation of 2004 Custom Process Installations - Part II”, June 19, 2006 14. RLW Analytics, Sample Design and Impact Evaluation Analysis of the 2005 Custom Program, July 18, 2006 15. Science Applications International Corp., “Impact Evaluation of 2004 Custom Process Installations - Part III”, July 3, 2006 16. Demand Management Institute, “Impact Evaluation of 2005 Custom Process Installations - Part I”, June 5, 2007 17. UTS Energy Engineering, LLC, “Impact Evaluation of 2005 Custom Process Installations - Part II”, June 19, 2007 18. GDS Associates, Inc., “Impact Evaluation of 2005 Custom Process Installations - Part III”, July 20, 2007 19. RLW Analytics, Inc., “Impact Evaluation of 2006 Custom Lighting Installations”, July 5, 2007 20. RLW Analytics, Inc., “Sample Design and Impact Evaluation of 2006 Custom Programs”, July 20, 2007
Other Programs Funded / Sponsored	Not Applicable

Program Past Performance

On the following page is a table that provides program performance data by energy efficiency program administrator for the past three years (PY 2004 thru 2006). Estimated savings are calculated differently for each program administrator. Refer to Section 5.0 for reference to detailed impact analysis by company (Refer to footnotes and Section 14 for reporting detail and disclaimers by EEPP).

Table 7.6.1 Retrofit – Massachusetts Custom Programs Past Performance

Retrofit Massachusetts Custom Programs – Lighting Measures							
EEPP	**PY**	**Units #[1,2]**	Incentives[3]	**Gross kWh Annual Savings**	**Net[4] Summer kW Savings**	**Net[4] Winter kW Savings**	**Program Spending[7,8,9]**
CLC[a,b]	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
NGrid	2004	59	$2,744,174	5,938,063	1,327	828	*see footnote 5*
	2005	25	$1,277,994	3,653,596	624	420	*see footnote 5*
	2006	18	$ 487,150	2,493,082	330	399	*see footnote 5*
NSTAR	2004	---	$4,743,582	28,577,781	3,758	3,461	*see footnote 6*
	2005	---	$1,436,674	10,516,803	2,065	2,114	*see footnote 6*
	2006	---	$1,397,531	11,279,560	1,526	1,754	*see footnote 6*
Unitil/ FG&E	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	n/a	n/a	n/a	n/a	n/a	n/a
	2006	n/a	n/a	n/a	n/a	n/a	n/a
WMECo[c]	2004	20	$ 163,819	5,781,955	313.20	275.20	*see footnote 10*
	2005	50	$1,505,186	11,279,787	2536.59	2359.78	*see footnote 10*
	2006	65	$3,079,192	16,674,465	2547.83	2483.88	*see footnote 10*
Retrofit Massachusetts Custom Programs – Non-Lighting Measures							
EEPP	**PY**	**Units #[1,2]**	Incentives[3]	**Gross kWh Annual Savings**	**Net[4] Summer kW Savings**	**Net[4] Winter kW Savings**	**Program Spending[7,8,9]**
CLC[a,b]	2004	5	$ 1,088	121,904	34.4	66.4	$ 21,506
	2005	92	$ 123,106	58,285	Inc/Data	Inc/Data	$ 10,581
	2006	265	$ 78,339	231,445	Inc/Data	Inc/Data	$ 9,567
NGrid	2004	61	$1,441,594	7,839,432	1,348	1,226	*see footnote 5*
	2005	48	$1,742,788	10,255,157	1,228	944	*see footnote 5*
	2006	99	$1,527,632	11,294,935	1,337	1,443	*see footnote 5*
NSTAR[d]	2004	---	$1,906,382	13,963,984	1,077	1,562	*see footnote 6*
	2005	---	$2,233,746	17,416,023	1,379	2,288	*see footnote 6*
	2006	---	$1,995,623	19,987,836	2,989	4,452	*see footnote 6*
Unitil/ FG&E	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	n/a	n/a	n/a	n/a	n/a	n/a
	2006	n/a	n/a	n/a	n/a	n/a	n/a
WMECo[c]	2004	40	$ 968,799	6,034,568	170.90	174.60	*see footnote 10*
	2005	60	$2,113,388	9,295,156	660.41	370.70	*see footnote 10*
	2006	58	$1,966,379	10,792,556	1392.03	1350.33	*see footnote 10*

[1] (NSTAR) Unit # not applicable of custom projects.
[2] (CLC) Reflects number of measures as reported within their measure database.
[3] Incentives refer to Customer Incentives.
[4] (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.
[5] National Grid tracks non rebate spending by Program→

	Large C&I-Retrofit		
Rebates	2004: $10,049,110	***Program***	2004: $2,708,962
	2005: $9,512,105	***Spending***	2005: $2,438,623
	2006: $13,604,712		2006: $3,224,298

[6] NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates→

	Large C&I-Retrofit		
Rebates	2004: $9,753,354	***Program***	2004: $3,547,621
	2005: $7,906,038	***Spending***	2005: $3,587,143
	2006: $8,772,635		2006: $5,209 284

[7] (Unitil) Program Spending = PP&A+MKTING+STAT+EVAL
[8] (Unitil) General program expenditures are not reported by end-use. Costs have been allocated based on kWh savings.
[9] (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs. Program Spending is generally not available by measure. However, Program Spending estimates were provided by allocating overall Program Spending by program to measure groupings using the proportion of annual kWh savings that each measure grouping represented.
[10] (WMECO) Program Spending data is not explicitly available for retrofit projects. It is included for 2004, **only**, as part of Massachusetts Custom Programs Table 6.6 for WMECo's New Construction Program. Program spending results for program years 2005 and 2006 have yet to be verified and reported.
[a] (CLC) "No Activity" indicates that there were no measures implemented within the measure grouping for that year. Incomplete Data " Inc/Data " indicates that more than 75% of the data is not available. "Not Available" indicates that no data appeared in the database. Not Available is not the same as zero; zeros are shown as reported.
[b] (CLC) Custom and prescriptive measures cannot be separated within the current data structure. As a result, all lighting & control measures are listed under Lighting and Controls, rather than under Massachusetts Custom Programs – Lighting Measures. All remaining non-lighting results are listed under Massachusetts Custom Programs – Non-Lighting Measures. This category includes both custom and prescriptive measures.
[c] (WMECo) Custom projects listed include WMECO Custom and RFP Municipal Program totals.
[d] (NSTAR) Custom – Non-Lighting includes Compressed Air, HVAC, Process and Refrigeration.

Program Differences by EEPP

CLC

Program implementation is delivered through TA. Oversight and technical analysis is accomplished through a management contract with Honeywell, Inc.

National Grid

Application processing and program delivery are implemented by National Grid's Key Account Managers and Business Service Representatives.

Technical review and energy modeling/analysis is provided by in-house efficiency engineer experts or uses TA to do supporting detailed technical analysis.

NSTAR

Application processing and program delivery are implemented by NSTAR's Energy Efficiency's C&I Program Managers and Customer Account Executives.

NSTAR does all program implementation in house but uses TA to do supporting detailed technical analysis.

Unitil/ FG&E

Application processing and program delivery are implemented by Unitil/FG&E field support representatives. FG&E does not offer a Custom program for retrofit projects.

WMECo

Application processing and program delivery are implemented by WMECo field support representatives. WMECO performs in house evaluation, with technical support provided by TA .

7.6.2 Retro-Commissioning and O&M

Program	Massachusetts Retro-Commissioning Initiative	
Program Type	Retrofit Custom	
Program Names Custom	**CLC**	Large C&I Retrofit
	National Grid	Energy Initiative
	NSTAR	Business Solutions / Retro-Commissioning
	Unitil/FG&E	*NOT PARTICIPATING IN 2008*
	WMECo	Custom Services & New Construction and Major Renovations Energy Solutions
Program Details		
Goals	Identify lost-cost/no-cost energy conservation measures that would readjust the controls and HVAC equipment to operate according to the current occupancy of the building. The following are objectives are integral to the initiative: • Develop a comprehensive and acceptable operation and maintenance (O&M) plan; • Develop a comprehensive and acceptable retro-commissioning plan; • Identify capital projects that can lead to substantial energy savings; • Generate a comprehensive report of the findings; and • Educate the building personnel how to operate the building efficiently.	
Description	Commissioning is a process to ensure that a new building will operate as designed and meet expected performance standards. Retro-commissioning, however, is a process of testing, troubleshooting, and adjusting systems in a building with the expectation to raise existing performance standards. The retro-commissioning process can significantly reduce energy consumption with little financial investment. Experience suggests that the cost of retro-commissioning can be paid back through improved system performance, reduced energy costs, and improved occupant comfort. Another aspect of this Program is offering customers a Whole Building Assessment which Benchmarks the operating efficiency of the customer facility and identifies a preliminary list of efficiency opportunities for that facility.	
Target Audience	Large to Medium sized customers with existing facilities that are in need of control and operational improvements.	
Program Implementation & Contractor Support	**CLC**	Recommends Energy Star Benchmarking and scoping assessments. Where retro-commissioning is warranted a recommendation is made in the scoping report and available to the customer through a third party vendor.

	National Grid	Uses a Whole Building Assessment program that includes Energy Star Benchmarking along with a Retro-commissioning program to generate customer interest in pursuing Custom Projects. These programs provide a deeper, one on one, interaction with the customer, and provide more specific direction to customers who are not clear how or where to get started.
	NSTAR	Uses Energy Star Benchmarking and scoping assessments. Where retro-commissioning is warranted, a recommendation is made in the scoping report and available to the customer through a third party vendor. A pool of TA is available to NSTAR.
	Unitil/FG&E	Not Participating in 2008
	WMECo	Not Participating in 2008
Incentive Structure	**CLC**	Project incentives are capped at $75,000 per year. Government projects are capped at $75,000 per year per community served by the facility. For example a regional school serving three towns could receive $225,000 for a project ($75,000 X 3).
	National Grid	Incentives are handled through a retrofit Custom project process with incentives targeted at 45% of labor and material costs. An incentive cap, which typically buys down the project to a 2 year payback for the customer, is not applied.
	NSTAR	Custom or Prescriptive. For Custom Measures that have less than one year payback period the Customer is required to implement at his/her own cost. For Custom Measures that have greater that one year PB the Business Solutions Custom track is available. There is no restriction on the Prescriptive Measures
	Unitil/FG&E	No Program Available for 2007 or 2008.
	WMECo	No Program Available for 2007 or 2008.
Baseline/Specifications	The adopted strategies used to conduct the Retro-Commissioning initiative are: • Building Assessment • Data Collection • Building Analysis • Documentation • Presentations • Development of Retro-Commissioning / Training Plan • Retro-Commissioning Plan	

Eligibility Criteria	Retro-Commissioning initiative is best suited for Commercial and Industrial customers with the following: • All types of energy use (e.g. gas, electricity, steam, etc.) • HVAC and process systems • Desire to reduce operating costs • An energy management system • Resources dedicated and senior management support to pursue energy savings opportunities.
Training & Education	No specific training available for 2007 or 2008.
Marketing and Outreach Strategy	Direct contact with large C&I customers by EEPP field representatives, seminars, and outreach through local controls contractors and energy engineering firms.
Other Program Integration / Coordination	Possible integration with Demand Response opportunities. See Section 9.1 "Demand Response" for more detail.
Program Past Performance	See Table 7.6.2.a for performance by program year
Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program initiatives provided for each EEPP, as part of the Technical Resource Manual.
Future Consideration	Explore opportunity to bundle both retro-commissioning services with Demand Response opportunities in the retro-commissioning study. Refer to Section 9.1 Demand Response for more detail. In 2008, National Grid is interested in determining benefits of working with a control company that would combine a full retro-commissioning plan that includes both gas and electrical savings and demand response, thereby bundling services under one project working with a controls vendor.

Other Program Information

Program Contacts	**CLC**	John Burns (508) 375-6829 - jburns@capelightcompact.org
	National Grid	Fouad Dagher 508-421-7231 - fouad.dagher@us.ngrid.com
	NSTAR	Hugh Gaasch 781-441-8706 - w.hugh.gaasch@nstar.com Tumin Chan 781-441-8880 - tumin.chan@nstar.com
	Unitil/FG&E	Not Applicable
	WMECo	Ron Johnston 413-787-9272 - johnsyx@NU.com
Coordination Among Program Administrators	Massachusetts Program Administrators continue to explore options, as part of a state-wide effort, to integrate retro-commissioning type services (and other energy efficiency and peak load reduction programs) with Demand Response, as a viable option for reducing overall energy-use in a commercial building (both peak and non-peak).	

Program History	The Massachusetts Custom programs have been available since the outset of the programs of each utility. The Retro-Commissioning initiative has been available since 2002, as part of the Custom programs. The complimentary O&M and Benchmarking efforts were introduced in 2004.
Specification Reference	Not Applicable
Evaluation Reports Available	1. "O&M Services 1996/97 Impact Evaluation Report", June 1999 2. RLW Analystics, Inc., "Commercial and Industrial O&M Market Segment Baseline Study - Final Report", July 1999 3. Michael Ketcham, David Wortman, PE, Wortman Engineering, "Impact Evaluation Study of 1999 Custom O&M Installations", June 2000
Other Programs Funded / Sponsored	Not Applicable

Incentive levels

Experience gained by the EEPP's suggests that continuing to develop retro-commissioning to offer customers more efficiency options in operating their facilities will provide additional savings that may be missed without a targeted retro-commissioning effort. Most of the measures identified offer immediate to six month paybacks and costs, and generally involve some degree of control strategies for the building.

For 2008, the EEPP's will explore offering incentives for retro-commissioning measures that offer a 2-year simple payback, which is a threshold that is currently in place for energy efficiency measures to be eligible for incentives.

Additionally, it makes sense for the EEPP's to explore offering an incentive for a retro-commissioning study that includes options for bundling of both retro-commissioning services and demand response opportunities.

Program Past Performance

On the following page is a table that provides program performance data by EEPP for the past three years (PY 2004 thru 2006). Estimated savings are calculated differently for each EEPP Refer to Section 5.0 for specific reference to more detailed impact analysis by company provided in their Technical Resource Manual (Refer to footnotes and Section 14 for reporting detail and disclaimers by EEPP).

Table 7.6.2.a Retro-Commissioning Initiative Past Performance

EEPP	PY	Units #[1,2]	Incentives[3]	Gross kWh Annual Savings	Net[4] Summer kW Savings	Net[4] Winter kW Savings	Program Spending[7,8,9]
CLC[a,b]	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
NGrid	2004 2005 2006	**Retro-Commissioning and O&M Programs result in efficiency projects which are ultimately handled through standard Custom project application process and the savings and incentives do not get specifically broken out for tracking.[5]**					
NSTAR[c]	2004	No data	No data	No data	No data	No data	*see footnote 6*
	2005	No data	No data	No data	No data	No data	*see footnote 6*
	2006	No data	No data	No data	No data	No data	*see footnote 6*
Unitil/ FG&E	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	n/a	n/a	n/a	n/a	n/a	n/a
	2006	n/a	n/a	n/a	n/a	n/a	n/a
WMECo	2004	0	0	0	0	0	$ 21,132
	2005	3	$ 21,021	361,123	0.00	0.00	$ 77,154
	2006	5	$ 78,246	606,249	14.99	0.00	$ 173,999

1 (NSTAR) Unit # not applicable of custom projects.
2 (Unitil) Reflects number of projects completed. (CLC) Reflects number of measures as reported within their measure database.
3 Incentives refer to Customer Incentives.
4 (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.
5 National Grid tracks non rebate spending by Program→

	Large C&I-Retrofit		
Rebates	2004: $10,049,110	***Program Spending***	2004: $2,708,962
	2005: $9,512,105		2005: $2,438,623
	2006: $13,604,712		2006: $3,224,298

6 NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report Appendix 3, Table 2 (Reported) minus rebates→

	Large C&I-Retrofit		
Rebates	2004: $9,753,354	***Program Spending***	2004: $3,547,621
	2005: $7,906,038		2005: $3,587,143
	2006: $8,772,635		2006: $5,209 284

7 (Unitil) Program Spending = PP&A+MKTING+STAT+EVAL
8 (Unitil) General program expenditures are not reported by end-use. Costs have been allocated based on kWh savings.
9 (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs. Program Spending is generally not available by measure. However, Program Spending estimates were provided by allocating overall Program Spending by program to measure groupings using the proportion of annual kWh savings that each measure grouping represented.
a (CLC) "No Activity" indicates that there were no measures implemented within the measure grouping for that year.
b (CLC) Custom and prescriptive measures cannot be separated within the current data structure. As a result, all non-lighting measures are listed under Massachusetts Custom Programs – Non-Lighting Measures (Table 7.6.1). This category includes both custom and prescriptive measures.
c (NSTAR) No data was provided for Retro Commissioning. These projects may be reported under Massachusetts Custom – Non-Lighting Table 7.6.1.

Program Differences by EEPP

The ability to successfully meet the objectives of the Retro-Commissioning Initiative is directly linked to: 1) Support of customers' senior management to achieve optimal operations; 2) Involvement and assistance of the financial and facility managers in a facility; and 3) Empowerment of a person at the facility site to champion retro-commissioning.

Each EEPP provides their own manner of program outreach and implementation to achieve success for their customers in identifying ways to reduce operating costs during peak and off peak periods, and delivering a comprehensive and acceptable retro-commissioning and O&M plan, as described below for each EEPP.

CLC

Retro-Commissioning is a component of a larger scoping assessment project and is not ordinarily offered as stand-alone program.

National Grid

National Grid has specific Program Managers that market the efforts though our Customer Services Representatives and directly to control companies and energy efficiency consultants involved in this type of work.

NSTAR

Application processing and program delivery are implemented by NSTAR's Energy Efficiency's C&I Program Managers and Customer Account Executives.

NSTAR provides training for their business partners, who include, motor dealers, HVAC Contractors, Refrigeration and Compressed Air contractors as well as commercial and Industrial customers throughout the year. NSTAR also actively participates in many conferences and trade shows by sponsoring booths, training sessions and educational materials.

Unitil/ FG&E

Not participating in a Retro-Commissioning initiative for 2007 or 2008.

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WMECo

Not participating in a Retro-Commissioning initiative for 2007 or 2008. However, if presented with a project, it would be evaluated under the Custom program.

8 Small Business Program

Program	Small Business Program	
Program Type	Retrofit	
Small Commercial Program Names	**CLC**	Small C&I Retrofit
	National Grid	Small Business Services Energy Efficiency Program
	NSTAR	Small Business Solutions
	Unitil/FG&E	Small C&I Retrofit
	WMECo	Small Business Energy Advantage
Program Details		
Goals	To provide energy efficiency expertise, comprehensive retrofit services, and education and training, to small commercial customers.	
Description	The Small Business Program offers comprehensive retrofit services on a turnkey basis to small business customers. This program offers small business customers the opportunity to receive financial incentives as well as educational services for projects involving the replacement of existing electrical or mechanical equipment where the equipment being replaced continues to function, but is outdated and energy inefficient. Energy service providers, secured by the Energy Efficiency Program Provider ("EEPP") through a competitive RFP process, provide customers with energy efficiency expertise, direct installation of both prescriptive and custom energy efficiency measures (EEM), and other strategies to encourage the early replacement of existing equipment with high efficiency alternatives. Energy efficient lighting, lighting controls, refrigeration, and custom measures, are typical EEMs addressed through this program.	
Target Audience	Small commercial and business customers with an average demand $\leq$ 200 kW or refer to section below on "Program Differences by EEPP" for more detail.	

Program Implementation & Contractor Support	The Small Business Program is implemented by direct installation Energy Service Providers (), secured by the sponsoring EEPP, through a competitive bidding process. The implementation includes the following elements: 1) Marketing to eligible customers, 2) Performing customer site visits, collecting all equipment and energy data, identifying all cost effective efficiency opportunities, and performing analyses, 3) Presenting all recommendations to the customer, 4) Preparing and submitting completed customer rebate/incentive applications, 5) Installing all eligible measures accepted by the customer and coordinating proper disposal/recycling of existing equipment, and 6) Tracking all program activity, equipment and recommendations in an electronic database and providing program and project data to the sponsoring EEPP on an on-going basis. Refer to section below on "Program Differences by EEPP" for more detail.
Incentive Structure	Financial incentives are provide to reduce the cost of installing energy efficiency equipment and are based on the total installed costs of the energy efficiency measures (EEMs. The incentive is paid directly to the Energy Services Provider upon conclusion of the project. Additionally, technical assistance is available on an as needed basis. To further assist small commercial customers, zero percent financing may be available for the remaining project cost. Unitil/FG&E does not offer financing. In most cases, disposal of environmentally hazardous electrical and mechanical material resulting from this project, such as magnetic ballasts, is at no cost to the customer. Refer to section below on "Program Differences by EEPP" for more details.
Baseline/Specifications	High performance T-8s are, where practical, the high efficiency baseline for lighting technology.
Eligibility Criteria	Small commercial and business customers are defined by: • Customers with an average demand $\leq$ 200 kW • State and Municipal accounts • Multi-family complexes Refer to section below on "Program Differences by EEPP" for more details.
Training & Education	No specific training program is available or planned for 2008.

Marketing and Outreach Strategy	The Small Business Program's direct installation are responsible for marketing the program within their assigned territories. Key elements in their marketing efforts include: 1) Direct mail and telemarketing, 2) Outreach to neighborhood business associations, and 3) Communication with sponsoring EEPP on small commercial business customer program inquiries and requests for program participation. Refer to section below on "Program Differences by EEPP" for more details
Other Program Integration / Coordination	For EEPPs with gas and electric, we leverage the electric and gas energy efficiency programs so customers can benefit from both electric and gas energy efficiency improvements.
Program Past Performance	See Table 8.0 for performance by program year. In 2006, a total of 2,587 energy efficiency projects were completed.
Program Impact & Cost Analysis	See Section 5.0 for specific reference to impact and cost analysis for specific program measures provided for each EEPP, as part of the Technical Resource Manual.
Future Consideration	In 2008, the EEPPs: • Will continue to offer a Small Business Program, adjusting incentives as needed • Are considering pilots supporting emerging technologies in lighting, refrigeration, and controls. • Are exploring leveraging the Small Business Program with Load Response Programs.

Other Program Information

Program Contacts	**CLC**	John Burns (508) 375-6829
	National Grid	Mark Siegal (508) 421-7296
	NSTAR	Nelson Medeiros (781) 441-8703
	Unitil/FG&E	Ed Mailloux (603) 773-6541
	WMECo	Kim Kiernan (413) 787-9275
Coordination Among Program Administrators	A state-wide evaluation may be initiated in 2008.	
Program History	The Small Business Program was developed and implemented in the mid 90's. Over time, the customer contribution has increased while the eligible customer segment expanded.	
Specification Reference	Not Applicable	

Evaluation Reports Available	1. RLW Analytics, Inc. "Energy Initiative and Small C&I Programs Indoor Prescriptive Lighting Impact Study", June 19, 2000 2. RTI Health, Social, and Economics Research, "Small Commercial and Industrial Program Evaluation", June 2002 3. RLW Analytics, Inc., "2003 Multiple Small Business Lighting Retrofit Program Impact Evaluation Final Report", June 2004 4. RLW Analytics, Inc., "National Grid Lighting Controls Impact Evaluation, Final Report, 2005 Energy Initiative, Design 2000*plus* and Small Business Services Programs", June 4, 2007 5. Summit Blue Consulting, "Billing Analysis of the Small Business Services Program Final Report", June 07, 2004 6. RLW Analytics, Inc., "NSTAR Small Business Solutions Program, Program Year 2004 Impact Evaluation", July 2005 7. RLW Analytics, Inc., "NSTAR Electric Small Business Solutions Program, Program Year 2004 Process Evaluation", November 2005 8. RLW Analytics, Inc., "Small Business Services Custom Measure Impact Evaluation", March 23, 2007 9. RLW Analytics, Inc., "Impact Evaluation Analysis of the 2005 Custom SBS Program", May 29, 2007 10. PA Consulting Group, "The Cape Light Compact Small Government Retrofit Program – Evaluation Report – Final", May 31, 2007.
Other Programs Funded / Sponsored	Not Applicable

Program Past Performance

The Small Business Program has been an effective energy efficiency program targeting this market segment. Over the years, it has evolved into a mature program for implementing standard cost effective energy efficiency measures as well as a testing ground for implementing program viable, new technologies.

On the following page is a table that provides program performance data by sponsoring EEPP for the past three years (PY 2004 thru 2006). Estimated savings may be calculated differently for each EEPP. Refer to Section 5.0 for reference to detailed impact analysis by company (Refer to footnotes and Section 14 for reporting detail and disclaimers by EEPP).

Table 8.0 Small Commercial Program Efficiency Past Performance

Small C&I Programs – All Measures							
EEPP	**PY**	**Units #[1]**	Incentives[2]	**Gross kWh Annual Savings**	**Net[3] Summer kW Savings**	**Net[3] Winter kW Savings**	**Program Spending[4,5]**
CLC[a]	2004	227	$2,673,568	3,662,243	---	648.0	$ 605,456
	2005	140	$ 710,748	1,396,590	---	221.2	$ 223,432
	2006	278	$1,244,988	3,225,940	---	621.9	$ 461,529
NGrid	2004	881	$3,392,104	7,393,064	2,189	1,216	$ 564,781
	2005	642	$3,729,238	14,082,282	1,869	1,375	$ 181,670
	2006	1,015	$4,461,446	13,574,099	3,213	1,624	$ 1,050,650
NSTAR[b]	2004	1,539	$7,008,442	25,917,961	5,239	3,459	$ 3,509,805
	2005	1,648	$6,359,944	23,498,967	4,752	3,117	$ 3,760,220
	2006	1,325	$6,338,396	23,559,425	4,815	3,051	$ 2,677,121
Unitil/ FG&E	2004	23	$ 192,531	846366	259.63	194.71	$ 104,376
	2005	37	$ 248,640	917,736	268.53	201.37	$ 184,995
	2006	15	$ 68,204	185,483	67.27	50.43	$ 75,192
WMECo[c]	2004	113	$ 727,838	4,998,096	985.18	728.15	$ 906,504
	2005	97	$1,019,584	6,645,561	1474.10	1474.10	$ 1,301,181
	2006	90	$ 791,756	4,269,685	900.09	900.09	$ 1,001,590

[1] (Unitil) Unit # reflects number of projects completed.
[2] Incentives refer to Customer Incentives.
[3] (NSTAR) Net values incorporate Realization Rates, Freeriders and Spillover.
[4] (CLC) Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation. Program Spending does not include Customer Incentives or Participant Costs.
[5] (Unitil) Program Spending = PP&A+MKTING+STAT+EVAL
[a] (CLC) Measure data used for Small C&I program results shown for Gross kWh Savings and Max kW (Winter kW) Savings. The Annual Report was used to provide data for total units, rebates and program spending.
[b`] (NSTAR) Data for Small C&I is represented at the project level in the aggregate per year. The data source is NSTAR's NEEDs tracking system.
[c] (WMECo) Custom projects listed include WMECO Custom and RFP Municipal Program totals.

Program Differences by EEPP

Each sponsoring EEPP's approach to implementing the small commercial program is similar, but not identical. Applications forms, program incentives, financing options, and implementation vary based on several factors, including, but not limited to, program delivery, allocated budgets, demographics, customer facility types, internal limitations in offering services, etc. These differences are described below for each sponsoring EEPP:

CLC

Financing option: Not available at this time.

Financial incentives up to 80% of qualifying measures cost (100% for Municipal) subject to $75,000 cap.

Small C&I defined as small business customers served by rate G-1 and G-5 (if demand does not exceed 100kW).

National Grid

Financing: Customer share of the project cost appears on the electric bill either as:

- One Time Charge: Customer may make a one-time payment in which case the customer share is discounted 15%.
- 12 or 24 Month Financing: Customer may make monthly payments over 12 or 24 months at zero percent financing.

Rebate Level: For 2008, National Grid intends to pay 70% of the project cost, a decrease from 80% in 2007.

Eligible Customers:

- Average demand less than or equal to 200 kW
- Customers with multiple facilities: Up to five sites can participate in the program per year. Additional sites can participate in Energy Initiative or the following year.
- Multi-family complexes are provided services through National Grid's Energy*Wise* Program.

NSTAR

Strategic accounts including municipal accounts are not eligible for this program.

Financing option: Customer financing available at 0% "off-bill" financing for a term no greater than 12 months.

Marketing: Targeting specific hard-to-reach segments of the market such as customers in economic development zones and ethnic neighborhoods,

Unitil/ FG&E

Financing option: Not available at this time.

Financial incentives up to 75% of qualifying measures installed cost.

Projects completed in multi-family common areas may be provided through the SC&I Retrofit.

WMECO

Financing option: Zero percent financing is available up to twenty- four months. It is billed separately from the customer's electric bill.

Multi-family complex may be under small business no matter the size of units if they are under a commercial rate.

Financial incentives are up to 35% of the total installed costs of the installed energy efficient measures with a maximum cap of approximately $5,000.00

9 Other Commercial & Industrial Products and Services

9.1 Demand Response – Wholesale Market Related Programs

Program	**Demand Response – Wholesale Market Related Programs**	
Program Type	Customer Education, New Technology, R & D	
Program Names	**CLC**	Not Applicable
	National Grid	Demand Response Audits, Capacity Related Measures, Advanced Metering Pilots, ISO Load Response Programs, Utility Congestion Relief Pilot
	NSTAR	Demand Response Audits, Capacity Related Measures, Advanced Metering Pilots, ISO Load Response Program, Utility Congestion Relief Pilot
	Unitl/FG&E	Not Applicable
	WMECo	Not Applicable
Program Details		
Goals	1. Maximize the use of Demand Resources so as to reduce the need for new generation and transmission and distribution systems. 2. Introduce customers to wholesale hourly energy and forward capacity markets. 3. Assist customers with decisions regarding their participation in wholesale hourly energy and forward capacity markets and help them develop specific action plans that maximize the related benefits. 4. Investigate, evaluate, and pilot advanced metering systems to enable efficient operations and participation in wholesale markets. 5. Investigate, evaluate, and pilot new technologies for demand response for potential use by customers. 6. Leverage related energy efficiency measures to provide additional demand response benefits. 7. Maximize the use of FCM funds for DSM programs.	
Description	The Forward Capacity Market (FCM) in New England was recently established to allow Demand Resources to compete with Supply Resources to meet the future capacity needs of the electric system. This market is rapidly developing, and to the extent capacity needs can be met with Demand Resources, less new generation will be needed. To date, efforts in this area have been more focused on customer education and piloting new demand response enabling technologies than they have been on specific incentive programs.	

Target Audience	Large C&I customers as well as chain/national accounts who can benefit from load aggregation and can leverage existing energy management systems.
Program Implementation & Contractor Support	Utility staff educates customers about the forward capacity market and opportunities to participate in Price and Demand Response programs administered locally and/or through the ISO. Customers have the opportunity to enroll in the ISO Price and Demand Response programs either through the utility or a third party market participant. Technical assistance consultants are utilized to provide demand response audits for customers. Other Demand Response Providers supplement this by working directly with customers.
Incentive Structure	There are currently no incentive worksheets specific to Demand Response. Demand Response audits and related activities are paid from energy efficiency funds, which may include revenue generated by overall energy efficiency efforts that are registered in the FCM.
Baseline/Specifications	The baseline is no customer participation in wholesale hourly energy or capacity markets or in targeted utility demand response programs.
Eligibility Criteria	All customers capable of reducing at least 100 KW of demand in a single load zone with short notice as well as chain/national accounts that can aggregate facilities to reach the 100 KW minimum per load zone are eligible to participate in ISO-NE programs or markets.
Training & Education	Customers learn about the wholesale markets and load response opportunities from their utility representative, their competitive supplier, other enrolling participants, as well as formal presentations given to groups by ISO-NE and/or utility experts during utility sponsored supplier seminars and other trade group meetings.
Marketing and Outreach Strategy	Direct contact with large C&I customers by utility field representatives, general marketing letters, website; direct marketing by competitive suppliers and demand response providers; and additional direct contact via trade groups and professional organizations.
Other Program Integration / Coordination	FCM funds will be allocated between Energy Efficiency and Demand Response activities. Engineers providing typical technical assistance walkthrough services are beginning to consider demand response as a possible opportunity in audits. Lighting and HVAC controls tie in to demand response capabilities and is an area for further integration. For demand savings generated by Program Administrator (PA) energy efficiency programs, the PAs have reserved the right to report these savings into the FCM and invest the revenue in energy efficiency and demand response efforts. Customers have the ability to participate in the FCM with demand savings from energy efficiency projects implemented in their facilities, but must forego energy efficiency program rebates to do so.
Program Past Performance	As of August 1, 2007, 650 customer assets in Massachusetts representing 235.5 MW, were enrolled in and ISO-NE Demand Response Program. This was broken down by 57.8 MW in the voluntary Price Response program and 177.7 MW enrolled in the Real Time Demand Response program.

<table>
<tr><td rowspan="7">Program Impact & Cost Analysis</td><td colspan="2">Minimal impact information is available to date, mainly because relatively little money has been spent on demand response in comparison to other DSM activities.

The following represents the approximate amount of money spent on demand response efforts in 2006:</td></tr>
<tr><td>CLC</td><td>Not Applicable</td></tr>
<tr><td>National Grid</td><td>$200,000</td></tr>
<tr><td>NSTAR</td><td>$200,000</td></tr>
<tr><td>Unitil/FG&E</td><td>Not Applicable</td></tr>
<tr><td>WMECo</td><td>Not Applicable</td></tr>
<tr><td colspan="2">Demand Response audits have led to enrollments in both Price and Demand Response programs administered by ISO-NE. In 2005 ISO-NE evaluated the Price Response program and found it to have had a positive impact on wholesale energy prices; i.e. participation has lowered wholesale energy prices by more than the customer credits earned. Other less formal evaluations have shown that demand response audits have led to both energy efficiency projects identified in the audit and increased demand response performance.

As more money is allocated to demand response, additional evaluation efforts are needed.</td></tr>
<tr><td>Future Consideration</td><td colspan="2">Consider offering incentives to customers for implementing automated dispatchable demand response projects. This may include an examination of whether existing benefit/cost tests appropriately capture dispatchable demand reduction benefits. .
Consider adding a custom measure type for demand response measures.
Retro commissioning programs might include a demand response module where applicable.
Technologies for residential and small commercial load control, including air conditioning, water heating, pool pumps, and plug-in appliance loads needs to be evaluated on a regular basis so that when technology is sufficiently mature to become a viable capacity resource as well as allowing the customer to take advantage of dynamic pricing. Pilot programs utilizing these technologies will be implemented in 2008:
National Grid will be piloting a residential cost monitor and is currently investigating additional technologies that can read its residential and small commercial meters wirelessly in real time.
Pilot programs may be implemented by NSTAR in 2008 for residential and/or small commercial load control and dynamic pricing.
Pilots will need to be evaluated to determine the costs and benefits prior to any large scale deployment.</td></tr>
</table>

Other Program Information		
Program Contacts	**CLC**	Kevin Galligan (508) 375-6828
	National Grid	Doug Smith (508) 421-7630
	NSTAR	David Olivier (781) 441-8715
	Unitil/FG&E	Lisa Glover (603) 773-6483
	WMECo	Jack Burke (413) 787-9470
Coordination Among Program Administrators	The Massachusetts Program Administrators (PAs) are collectively submitting a letter to DOER to request funding to test combination energy technologies. A more detailed overview is provided at the end of this section "Fund Request to Test Combination Energy Technologies".	
Program History	No SBC appropriation has been previously designated to specifically address integrating energy efficiency and demand response projects with an incentive program. Flexibility has been allowed to provide funding for audits and to pilot "new" technologies.	
Specification Reference	ISO-NE Load Response Manual: http://www.iso-ne.com/rules_proceds/isone_mnls/MLRP/m_lrp_load_response_program_revision_11_07_31_07.doc. Other references include Market Rule 1 as it pertains to the Forward Capacity Market, and/or the ISO-NE demand reserves pilot program rules, National Grid's Targeted Demand Response Program; and Constellation's Hourly Indexed Pricing rates.	
Evaluation Reports Available	1. Summit Blue Consulting, "Assessment of Demand Response Options – NSTAR and Market.-Wide Perspectives: Process Review of C/I Demand Response Pilot", December 9, 2003. 2. PA Government Services, "National Grid USA Process Evaluation of 2004 Targeted Demand Response Program", June 30, 2005	
Other Programs Funded / Sponsored	Not Applicable	

Program Differences by EEPP

CLC

Cape Light Compact does not plan to offer a targeted program or "pilot" effort for Demand Response in 2008.

National Grid

National Grid provides free demand response audits for any customer who requests one who is participating in and ISO-NE or Targeted Demand Response Program. These audits are also used to identify more traditional EE measures.

National Grid is currently evaluating residential DLC systems and, pending acceptance of a technology partner, anticipates funding a pilot installation in 2008.

NSTAR

NSTAR provides similar demand response services as described for National Grid. In addition, a pilot program on residential direct load control will be conducted in 2008.

Unitil/ FG&E

Fitchburg Gas & Electric does not presently offer a targeted program for Demand Response but will evaluate the costs and benefits of implementing a "pilot" project if and opportunity and funding exists.

WMECo

Western Massachusetts does not presently offer a targeted program for Demand Response but will evaluate the costs and benefits of implementing a "pilot" project if and opportunity and funding exists.

Integrating Technologies and Approach for Future Research & Development

From the customer's viewpoint, demand response, combined heat and power (CHP), renewable energy, and energy efficiency are all similar services in that they are all designed to lower energy costs. They serve a common purpose but have significantly different delivery mechanisms in Massachusetts, and have been promoted separately. While energy efficiency has been fully supported through retail rates for over 20 years and has evolved into a mature and successful industry, the same cannot be said for combined heat and power (CHP), renewable energy and demand response. Renewable Energy has been supported through the MTC for the past 10 years but has not fully taken hold due to a number of factors including upfront costs. Demand response has been supported through ISO-NE programs, and has grown significantly over the past few years. However, to date most of the demand response actions taken by end users are manual and/or related to the use of emergency generators during capacity shortages. In order to reach its true potential automated load control must be installed in customer facilities, but needs a capital infusion to get there.

Each of these services is linked together –

- demand side management
- peak demand and energy reduction
- electric grid utilization efficiency
- promotion of new technologies to customers
- vendor facilitation and market transformation
- financial mechanisms to bridge gaps in value chain
- common marketing and implementation structures
- M&V processes

If the fully developed Energy Efficiency model is leveraged to deliver combined heat and power (CHP), renewable energy, and demand response services, the resulting synergies will be significant and enable them to quickly realize their full potential. In addition, by providing these services

comprehensively, there may also be other cross fertilization benefits as we have experienced with comprehensive energy efficiency projects.

Renewable energy projects would continue to be funded by the MTC, but facilitated and marketed through the existing successful energy efficiency model administered by the utilities. Projects enabling demand response would be funded through revenues obtained from registering energy efficiency programs into the ISO-NE Forward Capacity Market (FCM). This can provide a funding mechanism for incremental demand response measures which complement both energy efficiency and renewable projects.

There are several challenges to integrating these services. The language and underlying structures guiding the MTC as well as energy efficiency with regard to both charter and cost effectiveness (more so the latter than the former) is one significant challenge. As an example, current cost effectiveness models lump all peak energy into a single bucket as opposed to placing a higher value on so called 'critical peak' energy. Part of the difficulty in meeting this and other challenges is the lack of evaluation data on such a comprehensive approach. Research across the nation has not shown any programs which have attempted to link all three services into a single demand side management delivery mechanism. One path to full integration of a delivery system for additional services could be a loosening of existing restrictions on a pilot basis. With limited financial exposure, the benefits and synergies could be identified and quantified, and decisions with regards to moving to a common delivery system for additional services going forward could be based on pilot results.

These pilot projects could, among other things, be a combination of electric and thermal energy efficiency, electric demand response, customer-owned generation (renewable or CHP), or other measures customers would be interested in pursuing. The projects would be evaluated after the fact to determine; a) how to test overall cost benefits; b) measurement and verification systems needed for properly evaluating projects; and, c) proposed new measures with appropriate incentives for market transformation.

9.2 Engineering Services and Technical Assistance

CLC, National Grid, NSTAR, Unitil/FG&E and WMECo all offer similar engineering and support services to assist commercial and industrial customers (including government customers for some EEPPs) in identifying, evaluating and implementing energy efficient opportunities for their facility. These services are available for new construction, expansion of manufacturing capacity or energy saving retrofit projects.

Technical assistance provides:

- Design and construction assistance to help you identify energy efficient opportunities or develop your ideas.
- Information necessary to help you apply for eligible incentives including; scope, budgeting, projected energy savings, value of related non-electric benefits and the value of qualified incentives. Non-electric benefits may include fuel, labor or maintenance savings.
- Detailed energy audits of your systems.
- Assistance in the selection and installation of the energy efficient equipment.
- Testing and monitoring of new efficient equipment.

These services are performed by independent qualified technical consultants, such as Professional Engineers and Lighting Professionals, working in partnership with the EEPPs. TA service, for some projects, may be provided by in-house technical support personnel.

The costs of these Engineering Services are typically equally shared between the EEPP and the customer. Pre-approval from the EEPP field representative is needed before a customer can participate in this program service offering.

Additional technical assistance services, such as metering of customers' inefficient equipment, may be offered by some of the EEPPs, but not all.

The Cape Light Compact offers similar services to all Commercial, Industrial and Government customers.

FG&E / Unitil

Unitil/FG&E provides these services as a component of its commercial and industrial programs. By default, the small business customers receive these services as part of the Company's Small Commercial and Industrial Retrofit Program. Generally, larger customers participating in the C&I Retrofit and New Construction programs arrange for their own technical services, however, if needed, the Company can arrange for either in-house or third-party engineering services.

Turnkey Services

National Grid offers a turnkey service program called the Project Expediter Program. Through this

program, a select group of independent contractors qualified through a bid process, called Project Expediters, help customers identify and install energy efficient opportunities.

The turnkey services that are provided include:

- Inspect facilities for energy efficiency opportunities
- Recommend appropriate energy efficiency measures
- Provide analysis of project economics
- Maximize benefits of incentive programs
- Provide complete installation services
- Provide extended lamp and ballast warranties
- Recycle lamps and ballasts

NSTAR provides similar turnkey service limited to small business customers, as part of the Small Business Solutions Program.

WMECO does not offer turnkey service listed above.

9.3 Lamp & Ballast Recycling Service

CLC

Cape Light Compact offers a recycling service as part of its energy efficiency programs for large and small business customers. A recycling vendor, currently Veolia Environmental Services, working with the CLC implementation vendor picks up fluorescent lighting materials from customers' facilities and recycles/disposes of the materials in an environmentally responsible manner within 7-10 days. This service is provided at no extra cost to customers. In some cases, fluorescent ballasts are recycled for customers participating in the Large C&I Programs; fluorescent lamps and ballasts are recycled for customers participating in the Small Business Energy Efficiency Program.

National Grid

National Grid offers a recycling service as part of its energy efficiency programs for large and small business customers. A recycling vendor, currently Veolia Environmental Services, has the capabilities to pick-up fluorescent lighting materials from customers' facilities and recycle/dispose of the materials in an environmentally responsible manner, at no extra cost to customers. In some cases, fluorescent ballasts are recycled for customers participating in the Large C&I Programs; fluorescent lamps and ballasts are recycled for customers participating in the Small Business Energy Efficiency Program.

NSTAR

NSTAR Electric provides, by a certified and approved vendor, recycling and hazardous waste disposal to all of its customers who participate its energy efficiency programs. The Small C&I Program customers are offered these services for both lamp and ballasts, while the Medium & Large Program offers ballast pick-up only. There is no cost to the customer in either program.

Unitil/FG&E

Unitil/FG&E does not offer this service in 2007 or 2008.

WMECo

Western Massachusetts Electric does not offer this service in 2007 or 2008.

9.4 Whole Building Assessment

In order to encourage more comprehensive and wide-ranging energy efficiency, various tools are used to measure whole-building energy use and provide technical and financial support for all sizes and complexities of projects. Examples include EPA's Energy Star Portfolio Manager tool and utility interval data services.

Data of all fuel types are combined with building characteristics to provide a benchmark rating against other buildings of a similar type. After the data are collected, an energy audit is conducted by contracted , which looks to find low-cost/no-cost measures, measures that require capital outlays and may be eligible for utility incentives, and potential measures that may require further study. A scoping report of these findings is given to the customer. The customer is then provided assistance to undertake any projects it deems worthy. Finally, support is provided to re-benchmark the facility and track ongoing building performance. All training and technical support is typically provided on a 50/50 cost share basis, and any other opportunities for utility funding are noted in the report.

National Grid offers municipal customers one “free” building assessment if they commit to a project. In addition, Project Expediter lighting proposals/reports are provided “free” to the customer.

The programs are marketed in numerous ways: through contractors selected to perform the benchmarking, through other utility energy efficiency , and through utility staff, marketing materials, and websites. Eligibility is only limited by the building types that are available in the particular benchmarking tool that is used.

Commercial and Municipal customers located in service territories of CLC, National Grid and NSTAR are eligible for this service.

9.5 New England Building Operator Certification (BOC)

Building Operator Certification (BOC) is a nationally-recognized training and certification program for building operators offering improved job skills and more comfortable energy-efficient facilities. Building engineers, building services managers, maintenance supervisors, O&M technicians, electricians, skilled trades, and facilities specialists have benefited from participating in BOC training. Certification provides a credential for professional development and offers employers a way to identify skilled operators.

To receive BOC Level I certification, participants must attend seven Level I classes (56 hours), and successfully complete open book tests and facility on-site projects. To receive BOC Level II certification, participants must attend six Level II classes (49 hours), and successfully complete open book exams and facility on-site projects.

LEVEL I CERTIFICATION

A total of 56 hours of classroom training and five project assignments include the following topics:

- Building Systems Overview
- Energy Conservation Techniques
- HVAC Systems and Controls
- Efficient Lighting Fundamentals
- Indoor Air Quality
- Facility Electrical Systems
- Environmental Health & Safety
- Regulations

LEVEL II CERTIFICATION

A total of 49 hours of classroom training and three project assignments include the following topics:

- Preventive Maintenance & Troubleshooting
- Advanced Electrical Diagnostics
- HVAC Troubleshooting & Maintenance
- HVAC Controls & Optimization

In March 2007, the Northeast Energy Efficiency Partnership (NEEP) announced its decision to end service administering the nationally-recognized Building Operator Certification (BOC) program, which the Massachusetts' EEPPs were sponsors. In the wake of this decision, Alan Mulak and the Northwest Energy Efficiency Council (NEEC) formed a strategic alliance to maintain BOC program continuity for key customers and sponsors in the Northeast.

Program Plan 2008-10

Northeast Region sponsors played an active role in promoting BOC to customers, offering tuition subsidies, and participating in BOC training with information about energy efficiency program offerings. The 2005 Evaluation Report by RLW Analytics, *"Impact and Process Evaluation Building Operator Training and Certification (BOC) Program Final Report"*, found that sponsor involvement in BOC contributes to its credibility and impact in the market and recommended that sponsors continue to play an active role in representing the BOC to customers and evaluating program impacts in the market. The report also recommended that the BOC administrator have an active presence in BOC training and a lead role in day-to-day administration, including filling seats in course series. The BOC program plan builds on the success achieved by BOC Northeast sponsors and stakeholders in building awareness, recognition and value for BOC in the commercial buildings market over the past six years.

In the last quarter of 2007, NEEC and the EEPP Sponsors will join in an educational partnership to offer BOC training and certification in for building operators managing commercial and institutional facilities in the Northeast. NEEC and the EEPP Sponsors agree to the responsibilities as follows:

1. NEEC and the EEPPs agree to jointly develop a 2008 BOC course schedule. The parties will work from the proposed schedule listed below as the base offering. NEEC will provide additional BOC course series in locations where customer demand is evident and upon request by the sponsoring utility.

   2008 BOC Level I - Proposed
   - Northboro, MA – NGrid – Spring 08
   - Westwood, MA – NStar – Spring 08
   - Andover, MA – Philips Academy – Spring 08
   - Buzzards Bay, MA – Cape Light Compact – Summer 08
   - Providence, RI – RISEO – Fall 08
   - Springfield, MA – Berkshire Gas & Western Mass Electric Co. – Fall 08

2. Each EEPP agrees to host the BOC course series at a suitable facility of their choice.

3. NEEC will have primary responsibility for recruiting participants to register for BOC course series. Each EEPP agrees to inform their customers of BOC training opportunities using NEEC-provided BOC marketing materials.

4. Each EEPP agrees to the performance-based sponsorship plan listed below.

2008 Sponsorship Plan

<table>
<tr><th>Old Sponsorship Plan</th><th>New Sponsorship Plan</th></tr>
<tr><td>$500 scholarship per customer registering for BOC</td><td>$100 incentive per customer upon graduation,
and</td></tr>
<tr><td rowspan="3">Total sponsor contribution per series is $5,000 to $10,000*

* Based on 10 to 20 customers per series</td><td>$200 incentive per participant upon submittal of an approved incentive application for energy efficiency project at their facility which the BOC graduate identified, or upon verification (by NEEC) of an energy audit conducted at their facility in which the BOC graduate participated,
and</td></tr>
<tr><td>$200 per participant for sponsor name & logo on all BOC collateral and web site, one comp seat in BOC course, invitation to speak in BOC class, and ad space in BOC Bulletin.</td></tr>
<tr><td>Total contribution per customer is $200-$500.
Total contribution per series is $2,000 to $10,000**

** Based on 10-20 customers per series meeting various criteria above</td></tr>
</table>

C&I electric customers located in service territories of CLC, National Grid, NSTAR. Unitil/FG&E and WMECo are eligible for this training service.

C&I gas customers of Berkshire Gas, KeySpan (National Grid) and Bay State Gas are also eligible for this training service.

9.6 Economic Development & Energy Efficiency Programs

The northeast has long claimed the highest electricity costs in the continental United States. This reality is a burden for existing businesses, and is viewed as a barrier to regional economic development. The Commonwealth's energy efficiency programs have evolved into effective tools to address both issues. Small business programs provide full service retrofit solutions that have historically lowered electricity costs for participants. Retrofit programs serving larger buildings have likewise saved owners in their energy bills.

Developers who work with Massachusetts new construction programs – Design2000Plus, Energy Conscious Construction, and Construction Solutions – can receive incentives to install premium efficient equipment that has, historically reduced building electric energy consumption by 20% as compared to buildings that have not received efficiency services.

In addition, the Massachusetts electric utilities and Energy Efficiency Program Providers all offer a suite of ancillary and supportive services around their core incentive program that enhance their value to customers. For example:

- *Commissioning Services* provide owners with the certainty that the new equipment that they have cost shared with the ratepayer-funded programs was been installed and is operating according to design intent – guaranteeing that the reduced operating costs they count on will be achieved.
- *Retro-commissioning Services* allow owners of existing buildings to secure the reliable and impartial technical assistance they need (facilitated by and cost-shared with the utility programs) to identify low cost and no cost ways to improve the operations and maintenance of the energy-consuming equipment in their buildings.
- *Technical Assistance Services* provide commercial and industrial customers with access to a number of specialized and prequalified engineering firms who can help them identify specific building or production related energy savings projects, quantify the costs and savings associated with these projects, and then assist them through implementation. Both the technical assistance costs and the project costs are eligible for significant utility program cost sharing.

This broad array of program and services - developed, tested and modified over twenty years of implementation experience – are designed to provide every customer in the Commonwealth – or every prospective customer looking to locate a facility in the Commonwealth – with access to some meaningful service and/or incentive that meets their particularized energy efficiency need. These services:

- Reduce the energy cost dollars being "exported" out of state;
- Reduced the Commonwealth's dependence on energy imported from beyond its borders;
- Create jobs for local engineering firms, electrical contractors, and supply houses;
- Reduce customers effective cost per kWh: Building owner that operate their facility 20% efficiently than a competitors to produce an equal amount of work is getting, in effect, a 20% rate reduction.

9.7 Multi-Family Programs (non-residential service-related)

CLC

Multi-family projects are not treated differently than other C&I customers. Multi-Family projects are eligible for any and all C&I programs.

National Grid

The Energy*Wise* Program, initiated in February 1998, is designed to provide residential customers (both electrically heated and non-electrically heated) that have high electricity consumption with measures and education to improve energy efficiency. Multifamily complexes (more than four units per complex), including both homeowners and renters are eligible for the program. Facilities can be condominium complexes, apartment complexes or public housing complexes. The complex can contain one or more buildings, be master metered or individually metered.

The program creates direct savings through the installation of energy saving measures in electrically heated and non-electrically heated dwelling units. Electrically heated complexes receive insulation, thermostats, heat pump tune-ups and air sealing. All complexes, regardless of heating type, receive installation of other appropriate measures, primarily lighting. Whenever possible efficient lighting fixtures are installed before compact fluorescent lamps are installed. Efficient lighting is installed in dwelling units, as well as common interior and exterior areas. Customers with electric water heating receive domestic hot water measures. Qualifying participants are eligible to have refrigerators or freezers replaced. Customer co-payments vary by measure. The Energy*Wise* Program also seeks to achieve savings through changes in consumer behavior with an education component that is intended to provide participants with more information about energy consumption in their multifamily complexes, and steps they can take to reduce their electric bills and consumption. For larger common area measures, such as HVAC equipment, pump and motors, the Company's Large C&I Programs are responsible for these types of retrofits.

The site assessment/audit is free to the customer and is conducted by one of three Energy*Wise* Program (). Most lighting, insulation and refrigerator replacement measures for complexes containing 20 or more dwelling units are put out to bid by the . The oversee all aspects of the Program, inspect all installations and are responsible for collecting all customer co-payments.

Wherever possible gas heated complexes will be referred to GasNetworks for residential and commercial gas measure rebates.

NSTAR

NSTAR's Multi-family (four or more stories) program is part of the Construction Solutions program, comprising of the same incentive structure. The only exception is that CFLs are supplied in the individual housing units, in addition to whatever incentives are paid through participation in the C&I programs. Incentives are paid on the entire building and permanent systems (such as HVAC equipment) installed at the time of construction, regardless of whether they ultimately are shifted to a residential meter. Program offerings do not include incentives for measures such as residential appliances.

Program delivery is provided by an outside contractor, ICF International.

Unitil/FG&E

Generally, multi-family projects are managed through Unitil's existing residential programs which provide incentives associated with residential living spaces. Installations in common areas, such as lighting or HVAC equipment, would be implemented through the Company's Small Business Program, which offers custom incentives up to 75% of installation costs based on cost-effectiveness.

WMECo

Multi-family projects are not treated differently than other C&I customers, if the multi-family unit is on a commercial rate. Multi-Family projects are eligible for all C&I programs.

9.8 Financing for Energy Efficiency Programs

The Massachusetts' EEPPs offer a variety of program support services for C&I customers, of which one is financing. The financing program offered by each EEPP is listed below.

CLC

No financing program is available for 2007 or 2008.

National Grid

Through a leasing vendor, National Grid offers an equipment financing program with many attractive features for our business customers including:

- Competitive interest rates, fixed for the term of the lease
- Financing up to 100% of the cost from $5,000 to $4,000,000
- Flexible lease terms from 2-7 years
- Leasing arrangement exists between the customer and vendor only; it does not involve National Grid, eliminating a third party.

Customers can conserve their existing capital for other uses by utilizing the leasing program. Cost savings from energy efficient equipment can be greater than the lease payment, resulting in a positive cash flow from the start of the lease, and payment schedules can be customized to match the savings generated.

In addition, all Small Business Services program participants have the option to pay their share of measure costs on their monthly bill in up to 24 equal installments. This option is also offered to select medium business and municipal participants in the Energy Initiative retrofit program for larger customers as long as total project costs do not exceed approximately $80,000.

NSTAR

Under NSTAR Electric's Small Business Solutions program, all qualifying customers are eligible for an incentive up to 70% of the total installed cost. To assist small businesses, NSTAR Electric offers an "off-bill" financing option to allow these customers the ability to finance their portion of the project cost, at zero percent interest, for a period of 12 months.

In 2008, NSTAR Electric will offer a similar financing program to municipal customers.

Unitil/FG&E

No financing program is available for 2007 or 2008.

WMECo

Small Business Energy Advantage Customers receive a zero percent loan up to twenty-four months. Industrial customers with less than 100 employees, needing financing for an energy efficiency project, are referred to the Western Massachusetts Energy Trust. Loan proceeds are used for an energy efficiency project producing electrical energy savings. The Energy Trust loan funds projects at zero percent interest for a three-year term, with a maximum individual loan amount of $75,000.

10 Massachusetts C&I Proposed Program Changes for 2008

- Cape Light Compact (CLC)
- National Grid
- NSTAR Electric (NSTAR)
- Fitchburg Gas & Electric Company d/b/a Unitil (Unitil/FG&E)
- Western Massachusetts Electric Company (WMECo)

10.1 CLC – C&I Proposed Program Changes for 2008

No changes to the C&I programs are proposed for 2008.

10.2 National Grid – C&I Proposed Program Changes for 2008

SUMMARY OF PROPOSED CHANGES TO THE NATIONAL GRID LARGE BUSINESS SERVICES PROGRAMS FOR 2008

Category	Energy Initiative	Design 2000*plus*
Lighting	• Increase the incentive for Measure Codes 30, 32 and 34 by $5.	• Increase the incentive for Measure Codes 30, 32, and 33 by $5. • Performance Lighting will now have only one incentive level; $0.80 per watt saved.
Motors	• N/A – prescriptive rebates are not offered under Energy Initiative.	• No changes
HVAC	• No change	• An early replacement initiative is being considered which targets existing unitary and split HVAC units manufactured before 1992 or units that have a field tested efficiency of a EER 7.0 or less. This offering will depend on the success of a pilot program underway as of this writing (10/31/2007).
Compressed Air	• No changes	• No changes
Variable Frequency Drives	• No changes	• No changes
Custom	• No Changes	• The incentive paid for custom measures will be dropped from 75% to 70% capped at a level that affords the customer an eighteen month payback.
Advanced Buildings and Comprehensive Design Approach	**N/A**	Two tier incentive levels will be created to promote even more comprehensive efforts by design teams and their clients in new construction. • A lower tier will pay an incentive of up to 80% (CDA) of the incremental cost on qualifying electric efficiency measures that are part of comprehensive project that reduce energy use to at least 20% better than a code compliant design. For the higher tier, projects that are designed to be least 25% more efficient than the code compliant design and follow best sustainable practices in the design process will receive an additional 10% incentive. • Advanced Building Projects will always receive incentives derived from the higher tier (25% more efficient than code) efficiency improvement threshold.

Category	Energy Initiative	Design 2000*plus*
Whole Building Assessment and Retro-commissioning	Through Whole Building Assessment and retro-commissioning, the Company will explore the possibility of working with customers' controls that might afford additional opportunities for demand response.	N/A
Commercial and Industrial Self-Directed Energy Investment Program (CISDEP- replaces the Accelerated Application Process)	Participants are able to accrue funds based on what they pay in to the SBC for up to a 3 year period vs up to 2 years under APP. 90% of these funds are available for projects of the participant elects to provide their own technical assistance (vs 85% under AAP). Also, measures that are eligible under this program can include a broader range of demand side resources such as demand response and combined heat and power with efficiencies over 65%. Further consideration will be given as to whether these funds can be used for renewable energy (consistent with the definitions by the MRET). For these projects, incentives will not exceed the NPV of avoided cost of energy and capacity.	Same as under EI. This program is also available under Small Business Services.

Category	Energy Initiative	Design 2000*plus*
Demand Response and Forward Capacity Market	• The Company will Pilot an incentive 'kicker' to a customer for the automation of additional load reduction in response to a price or reliability signal. The intent of this is to provide the customer with an increased level of automation for controllable systems they have installed or are in the process of installing under our efficiency programs. Eligible customers must be receiving their energy supply via dynamic pricing supply and/or enrolled in the ISO-NE Price or Demand Response programs. Upper limit of 100% incremental cost of the automation component. Eligible measures may include lighting controls, HVAC controls, EMS, VFD, or related Custom Measures. • Demand Response audits will be further refined in 2008 to increase their value to customers and to begin to address the different rules that will govern participation in the FCM post transition. • Pilot a program to utilize both technical assistance and targeted incentives for customers working with Demand Response Providers and/or competitive suppliers toward the installation end to end automation of existing non critical loads for deployment in the ISO-NE emergency demand response programs and/or the FCM. Incentive funding for these projects will be capped at net estimated 1 year payback to customer. Eligible projects must provide the demand response provider with the ability to control the customer's loads.	N/A
Small Business Services	The Small Business Services program will reduce the customer incentive from 80% to 70% of the total installed cost of a measure.	

These proposed enhancements continue to reflect the Company's objectives to improve the way buildings are designed, constructed and operated.

10.3 NSTAR – C&I Proposed Program Changes for 2008

SUMMARY OF PROPOSED CHANGES TO
NSTAR
COMMERICIAL & INDUSTRIAL PROGRAMS FOR 2008

PROGRAM	CHANGES
Construction Solutions[5]	• No changes
Business Solutions[6]	• The Company currently plans to implement a program for municipal customers in 2008. Unique barriers to implementing energy efficiency still exist for NSTAR Electric's municipal customers. These barriers include availability of funding, competitive bidding requirements, and non-financial resource constraints. The complexity and severity of these issues vary among NSTAR's municipal customers as each city or town has its own local regulations and may interpret state regulations differently. NSTAR Electric will implement an energy efficiency retrofit program for municipal customers that addresses the barriers indicated above. The program design will focus on cost and energy savings, ensure cost effectiveness, and take advantage of bulk purchasing of services, competitive bidding and cost/benefit-based project analysis.
Small Business Solutions	• No changes
Motors Initiative	• No changes
Unitary High Performance HVAC Pilot	• NSTAR Electric will not offer this program in 2008.
ENERGY STAR Benchmarking	• NSTAR Electric may offer incentives to ESTAR benchmarking participants based on targeted and sustainable performance improvements as well as seek out enhancements for this program that are commensurate with market conditions and customer demand.
High Efficiency Power Supply Initiative	• No changes
MA Energy Efficiency Partnership	• No changes
New Buildings Institute Initiatives	• NSTAR Electric will be implementing Advanced Buildings Core Performance and initiating a prescriptive incentive structure for customer participation.
Compressed Air Challenge	• No changes

[5] This change should be added for clarification after the proposed program changes were filed - "Incentive adjustments and updates to the prescriptive applications based upon statewide utility review committee recommendations".

[6] This change should be added for clarification after the proposed program changes were filed - "Incentive adjustments and updates to the prescriptive applications based upon statewide utility review committee recommendations".

PROGRAM	CHANGES
Web-Based Educational Software	• No changes
Operations & Maintenance Training	• No changes

10.4 Unitil/FG&E – Proposed Program Changes for 2008

No changes to the C&I programs are proposed for 2008.

10.5 WMECO – C&I Proposed Program Changes for 2008

SUMMARY OF PROPOSED CHANGES TO
WMECO
COMMERCIAL AND INDUSTRIAL PROGRAMS FOR 2008

Category	Retrofit	New Construction
Lighting	• Increase Lighting Rebate Cap* to $10,000 per account * Pre-Approval need for Projects exceeding Cap	• Performance Lighting ▪ Tier 1 => 25% reduction below Mass Code ; incentive = $0.15 per watt reduced ▪ Tier 2 => Tier 1 plus 75% of connected wattage from advanced technologies, incentive = $0.50 per watt reduced ▪ Incentive Capped at $35/fixture
HVAC	• No Change	• No Change
Motors	• No Change	• No Change
Compressed Air	• No Change	• No Change
Custom	• No Change.	• No Change
Municipal Program	NA	
RFP	• Market Based RFP Likely in 1 or 2 phases • $500K available per phase • 40 % Incentive Level	NA
Small Business Program	• 35% Incentive Level • Raise project cap from $5k to $10k	NA
Advanced Buildings	NA	• WMECO will participate in Advanced Building Program in 2008; Details TBD
Other Initiatives	*Prime Audit Program?*	NA

11 List of Evaluations Studies referenced in Program Descriptions

The references for the evaluations studies that are listed on the following pages were provided by National Grid. These studies are listed throughout the Program Planning Manual under the applicable program descriptions. In some cases, the evaluations and/or research studies were prepared on behalf of "The Massachusetts Joint Utilities" in which case, the results of the studies apply to all Massachusetts EEPPs who participated in that particular program, and all shared in the cost of the study. In other cases, the studies that are listed were completed for National Grid, unless otherwise noted in the study title.

It should be noted that the list includes only those evaluation studies that have been completed prior to planning for 2008 Program Year. Additional studies that have been planned; or that are currently in process of being completed for the 2007 Program Year, are not listed, and should be considered during the C&I program planning process for the 2009 Program Year.

List of Evaluation Studies for PPM

date revised: 10/25/2007

PPM Program	DATE	STUDY TITLE
All C&I	Jul-02	PA Consulting Group, National Grid 2001 Commercial and Industrial Free-ridership and Spillover Study, July 2002
All C&I	May-03	PA Government Services, Inc., National Grid 2002 Commercial and Industrial Free-ridership and Spillover Study, May 2003
All C&I	Oct-05	Megdal & Associates with Opinion Dynamics Corp., 2004 Commercial and Industrial Programs Free-Ridership and Spillover Study Executive Summary of National Grid Results - Final Report, October 2005
All C&I	Nov-05	ERS, Measure Life Study, prepared for The Massachusetts Joint Utilities, November 11, 2005
All C&I	Nov-05	Energy & Resource Solutions, Inc., Measure Lilfe Study Prepared for the Massachusetts Joint Utilities, November 17, 2005
All C&I	Aug-06	PA Consulting Group, 2005 Commercial and Industrial Programs Free-ridership and Spillover Study- Revised, August 11, 2006
All C&I	Sep-06	PA Consulting Group, National Accounts Study: Customer Energy Efficiency Equipment Decision Making Process and Standard Practice - Final, September, 8, 2006
All C&I	Mar-06	RLW Analytics, NSTAR Construction and Business Solutions Report on 2004 Measures, March 9, 2006
All C&I	Jul-06	RLW Analytics, NSTAR Construction and Business Solutions Report on 2005 Measures, July 21, 2006
BOC	Sep-02	Evaluation of the Buiilding Operator Training and Certification (BOC) Program in the Northeast, September 2002
BOC	Jun-05	Impact and Process Evaluation Building Operator Training and Certification (BOC) Program, June 2005
Compressed Air	Jan-00	Aspen Systems Corp., Final Report: The Compressed Air Systems Market Assessment and Baseline Study for New England, January 2000
Compressed Air	Mar-06	Demand Management Institute, Impact Evaluation of 2004 Compressed Air Prescriptive Rebates, May 15, 2006
Compressed Air	May-06	RLW Analytics, Sample Design and Impact Evaluation Analysis for Prescriptive Compressed Air Measures in the Energy Initiative and Design 2000 Programs, May 31, 2006
Custom - Lost Opp.	Feb-00	Impact Evaluation Study of 1998 Custom Comprehensive Installations
Custom, Retro-Cx	Jun-00	Michael Ketcham, David Wortman, PE, Wortman Engineering, Impact Evaluation Study of 1999 Custom O&M Installations, June 2000

Custom	Dec-00	HEC, Inc., Impact Evaluation Study of 1999 Custom HVAC Installations
Custom	Jun-02	Demand Management Institute, Final Report: National Grid USA Service Company Evaluation of 2000 Custom Process Installations - Part II, June 2002
Custom - Lost Opp.	Jun-04	Science Application International Corp., National Grid USA Service Company Impact Evaluation of 2002 Custom Comprehensive Projects - Final Report, June 2004
Custom	Aug-05	Select Energy Services, Inc., Final Report for National Grid USA Service Company Evaluation of 2003 Custom Process Installations - Part I, August 2005
Custom	Sep-05	Select Energy Services, Inc., Final Report for National Grid USA Service Company Evaluation of 2003 Custom HVAC Installations - Part II, September 2005
Custom	Mar-06	(WMECo) Custom Services Impact Evaluation 2004 Measure Installations, March 2006
Custom	May-06	Final Approach for Estimating & Tracking the Value of Custom Program Non-Electric Benefits & Strategies for Quantifying Non-Electric Benefits in Custom Applications, May 2006
Custom	May-06	TecMarket Works and Summit Blue Consulting, Final Approach for Estimating and Tracking the Value of Custom Program Non-Electric Benefits: Strategies for Quantifying Non-Electric Benefits in Custom Program Applications, May 23, 2006
Custom	Jun-06	Demand Management Institute, Impact Evaluation of 2004 Custom Process Installations - Part I, June 1, 2006
Custom	Jun-06	Select Energy Services, Inc., Evaluation of 2004 Custom Process Installations - Part II, June 19, 2006
Custom	Jul-06	RLW Analytics, Sample Design and Impact Evaluation Analysis of the 2005 Custom Program, July 18, 2006
Custom	Jul-06	Sciece Applications, Inc., Impact Evaluation of 2004 Custom Process Installations - Part III, July 3, 2006
Custom	Jun-07	Demand Management Institute, Impact Evaluation of 2005 Custom Process Installations - Part I, June 5, 2007
Custom	Jun-07	UTS Energy Engineering, LLC, Impact Evaluation of 2005 Custom Process Installations - Part II, June 19, 2007
Custom	Jul-07	RLW Analytics, Inc. Sample Design and Impact Evaluation of 2006 Custom Programs, July 20, 2007
Custom	Jul-07	GDS Associates, Inc., Impact Evaluation of 2005 Custom Process Installations - Part III, July 11, 2007
Custom	Jul-07	RLW Analytics, Inc., Impact Evaluation of 2005 Custom Lighting Installations, July 5, 2007
HVAC	Feb-98	New England Unitary HVAC Research Report, February 1998
HVAC	Dec-99	Massachusetts Commercial HVAC Study, December 1999

HVAC & Motors	Aug-03	Nexus Market Research, Inc. Dorothy Conant, Shel Feldman Management Consulting, Scoping Study on Market Penetration Tracking of Energy-Efficient Motors and Packaged HVAC Systems in New England and New York, August 2003
HVAC - Chillers	Sep-05	ers - energy & resource solutions, Lost Opportunity Chiller Baseline Evaluation, September 2005
HVAC - Retrofit	Mar-06	New Buildings Institute, Inc., Phase I: Commercial Rooftop HVAC Unit Retrofit Programs, March 28, 2006
HVAC	Jun-06	KEMA, Packaged Commercial HVAC Equipment Market Characterization - Final Report [Phase 2], June 30, 2006
HVAC	Jun-06	New Buildings Institute, Inc., Phase 3: Strategic Recommendations for Commercial HVAC Programs, June 30, 2006
HVAC	Jul-07	PA Consulting Group, National Accounts Study: HVAC Customer Energy Efficiency Equipment Decision Making Process and Standard Practice - Final, July 5, 2007
Lighting - Retrofit	Jun-00	RER, Energy Initiative Lighting Program Evaluation, June 2000
Lighitng - Retrofit	Jun-04	RLW Analytics, Inc., National Grid 2003 Energy Initiatiave "EI" Program Lighting Impact Evaluation - Final Report, June 2004
Lighting	Aug-05	RLW Analytics, Inc., National Grid USA Custom Lighting Impact Study Executive Summary 2004 Energy Initiatiave and Design 2000plus Program, August 2005
Lighting	Aug-05	ers - energy & resource solutions, Assessment of Massachusetts Lighting Compliance Documents, September 2005
Lighting	Jun-06	Market Research Report prepared for NEEP Commercial Lighting Initiative, June 2006
Lighting	Sep-06	CT & MA Utilities 2004-2005 Lighthing Hours of Use for School Buildings Baseline Study, September 2006
Lighting, Small C&I	Jun-00	RLW Analytics, Inc. Energy Initiative and Small C&I Programs Indoor Prescriptive Lighting Impact Study, June 2000
Lighting, Small C&I	Jun-04	RLW Analytics, Inc. National Grid Lighting Controls Impact Evaluation, Final Report, 2005 Energy Initiative, Design 2000plus and Small Business Services Programs, June 4, 2007
Motors - Lost Opp.	Apr-98	Northeast Premium Efficiency Motors Market Transformation Initiative Economic Analysis, April 1998
Motors - Lost Opp.	Aug-99	Easton Consultants, Inc., and Xenergy, Inc., Northeast Premium Motor Initiative Market Baseline and Transformation Assessment - Final Report, August 1999
Retro-Commissioning	Jun-99	O&M Services 1996/97 Impact Evaluation Report, June 1999
Retro-Commissioning	Jul-99	RLW Analystics, Inc., Commercial and Industrial O&M Market Segment Baseline Study - Final Report, July 1999
Small C&I	Nov-05	RLW Analytics, Inc., NSTAR Electric Small Business Solutions Program, Program Year 2004 Process Evaluation, November 2005

Small C&I	Mar-07	RLW Analytics, Inc., Small Business Services Custom Measure Impact Evaluation, March 23, 2007
Small C&I	May-07	RLW Analytics, Inc., Impact Evaluation Analysis of the 2005 Custom SBS Program, May 29, 2007
Small C&I, Govt. Retrofit	May-07	The Cape Light Compact Small Government Retrofit Program – Evaluation Report - Final, by PA Consulting Group, May 31, 2007.
Variable Speed Drives	Jun-06	Demand Management Institute, Prescriptive Variable Frequency Drive Worksheet Development, June 9, 2006

12 Service Territories OF EEPPs

- Massachusetts Energy Efficiency Program Provider Service Territory Map
- Listings of Cities and Towns by EEPP
    - CLC
    - National Grid
    - NSTAR
    - Unitil/FG&E
    - WMECo
- Customer Breakout Table for Massachusetts EEPPs

12.1 Massachusetts Energy Efficiency Program Provider Service Territory Map

Map provided on following page

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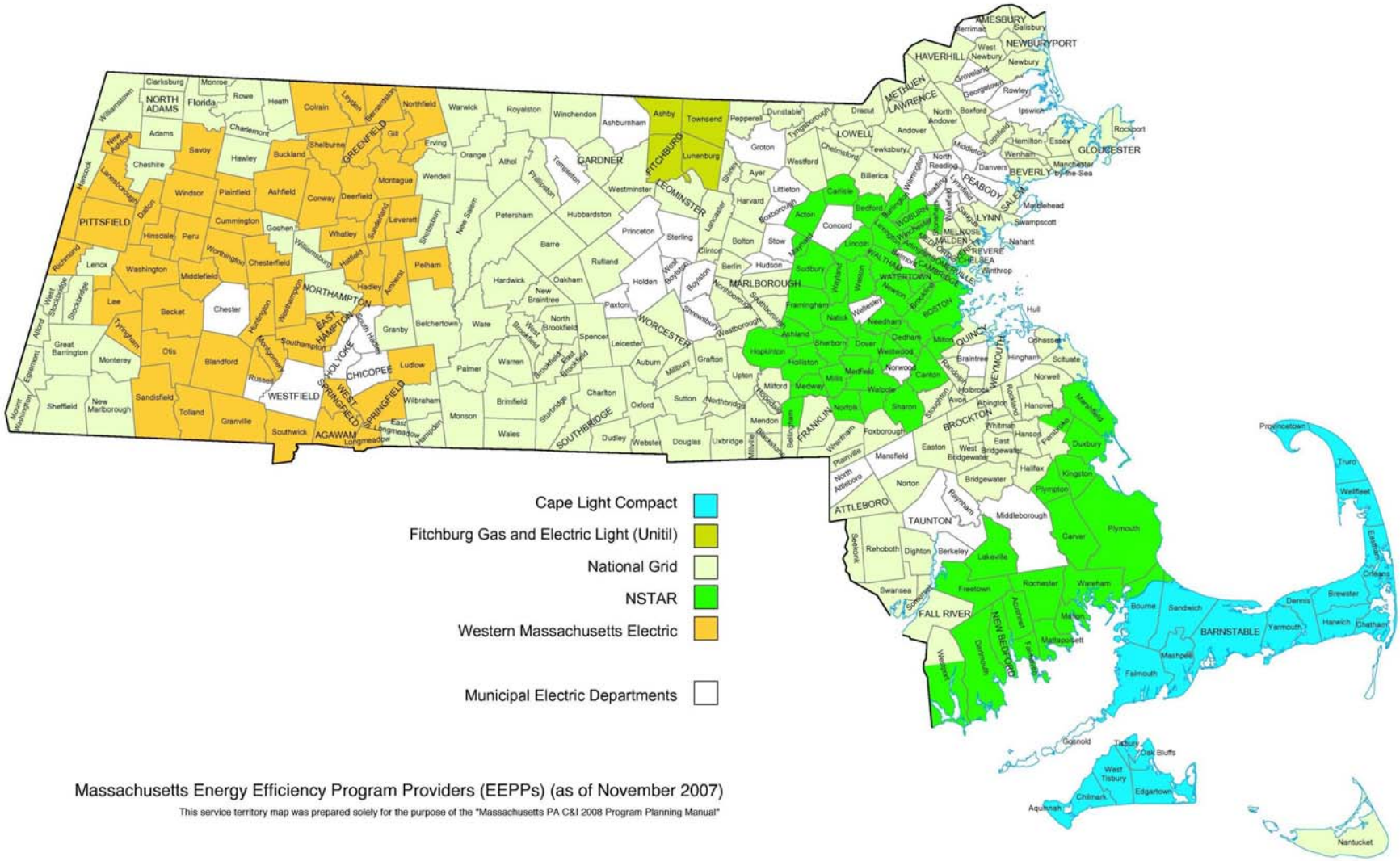

Massachusetts Energy Efficiency Program Providers (EEPPs) (as of November 2007)

This service territory map was prepared solely for the purpose of the "Massachusetts PA C&I 2008 Program Planning Manual"

12.2 EEPP Listing of Cities and Towns in Massachusetts

12.2.1 CLC Service Territory Cities and Towns

Cape Cod
Barnstable
Bourne
Brewster
Chatham
Dennis
Eastham
Falmouth
Harwich
Mashpee
Orleans
Provincetown
Sandwich
Truro
Wellfleet
Yarmouth

Martha's Vineyard
Aquinnah
Chilmark
Edgartown
Oak Bluffs
Tisbury
West Tisbury

12.2.2 National Grid Service Territories Cities and Towns

CENTRAL DISTRICT		MERRIMACK VALLEY
Auburn	New Braintree	Amesbury
Ayer	North Brookfield	Andover
Ballard Hill	Oakham	Ballardvale
Berlin	Oxford	Billercia
Bolton	Pepperell	Boxford
Bramanville	Perryville	Bradford
Brookfield	Pitcherville	Byfield
Charlton	Podunk	Chelmsford
Chaseville	Rochdale	Collinsville
Cherry Valley	Rutland	Dracut
Clinton	Sanderdale	Haverhill
Coldbrook Springs	Saundersville	Haverhill
Cominsville	Shaker Village	Lawrence
Dodge	Shirley	Lowell
Dudley	Southbridge	Methuen
Dunstable	Spencer	Newbury
East Brookfield	Still River	Newburyport
East Pepperell	Stoneville	North Andover
Farnumsville	Sturbridge	Nuttings Lake
Fisherville	Sutton	Salisbury
Fiskdale	Texas	Tewksbury
Gardner	Waterville	Tyngsboro
Grafton	Webster	Ward Hill
Harvard	West Brookfield	West Newbury
Hillsville	Westminster	Westford
Hubbardston	Westville	
Kittville	Whitmanville	
Lancaster	Wilkinsonville	
Leicester	Williamsville	
Leominster	Winchendon	
Lunenburg	Winchendon Springs	
Manchaug	Worcester	
Millbury		

NORTH SHORE

Annisquam
Asbury Grove
Beverly
Beverly Farms
Essex
Everett
Gloucester
Hamilton
Lanesville
Lynn
Magnolia
Malden
Manchester
Medford
Melrose
Nahant
Peabody
Pigeon Cove
Prides Crossing
Revere
Rockport
Sagus
Salem
Swampscott
Topsfield
Wenham
Winthrop

SOUTH SHORE

Abington
Avon
Bridgewater
Brockton
Cohasset
East Bridgewater
Easton
Halifax
Hanover
Hanson
Hingham
Holbrook
Monponsett
Norwell
Pembroke
Quincy
Randolph
Rockland
Scituate
Sharon
Stoughton
West Bridgewater
Weymouth
Whitman
Wollaston

SOUTHEAST

Attleborough
Bellingham
Blackstone
Carryville
Chartley
Chockalog
Cordaville
Dighton
Douglas
Fall River
Fayville
Foxboro
Franklin
Hebronville
Hopedale
Ironstone
Linwood
Marlborough
Mendon
Milford
Millville
Northborough
Northbridge
Norton
Plainville
Rakeville
Rehoboth
Riverdale
Rockdale
Seekonk
Somerset
Southborough
Southville
Spindleville
Swansea
Tasseltop
Unionville
Upton
Uxbridge
Wadsworth

SOUTHEAST

Westborough
Westport
Wheelockville
White City
Whitinsville
Wrentham

WESTERN

Adams
Alford
Ashley Falls
Athol
Barre
Belchertown
Blackinton
Bondsville
Briggsville
Brimfield
Charlemont
Cheshire
Clarksburg
Clayton
Drury
East Longmeadow
Egremont
Erving
Farley
Farnams
Florence
Florida
Furnace
Gardner
Gilbertville
Glendale
Goshen
Granby
Great Barrington
Hampden
Hancock
Hardwick
Hartsville
Hawley
Haydenville
Heath
Holland
Hoosac Tunnel
Housatonic
Hubbardston
Interlaken
Lake Buel
Leeds
Lenox
Mill River
Millers Falls
Monroe
Monroe Bridge
Monson
Monterey
Mount Washington
New Marlboro
New Salem
North Adams
Northampton
Old Furnace
Orange
Palmer
Petersham
Phillipston
Rowe
Royalston
Sheffield
Shutesbury
Southfield
Stockbridge
Thorndike
Three Rivers
Tully
Wales
Ware
Warren
Warwick
Wendell
Wendell Depot
West Stockbridge
Wheelwright
Wilbraham
Willamsburg
Williamstown
Winchendon

12.2.3 NSTAR Service Territories Cities and Towns

CITY / TOWN	SERVICE
Acton	Electric
Acushnet	Electric/Gas
Allston	Electric
Arlington	Electric
Aquinnah	Electric
Ashland	Electric/Gas
Assonet	Electric/Gas
Auburn	Gas
Auburndale	Electric
Barnstable	Electric
Bedford	Electric
Bellingham	Electric
Belmont	Gas
Berlin	Gas
Bolton	Gas
Boston	Electric
Bourne	Electric
Boylston	Gas
Brewster	Electric
Brighton	Electric
Brookline	Electric
Burlington	Electric
Cambridge	Electric/Gas
Canton	Electric
Carlisle	Electric
Carver	Electric/Gas
Charlestown	Electric
Chatham	Electric
Chelsea	Electric
Chestnut Hill	Electric
Chilmark	Electric
Dartmouth	Electric/Gas
Dedham	Electric/Gas
Dennis	Electric
Dorchester	Electric
Dover	Electric/Gas
Duxbury	Electric

CITY / TOWN	SERVICE
East Boston	Electric
Eastham	Electric
Edgartown	Electric
Fairhaven	Electric/Gas
Falmouth	Electric
Framingham	Electric/Gas
Freetown	Electric/Gas
Grafton	Gas
Harwich	Electric
Holden	Gas
Holliston	Electric/Gas
Hopedale	Gas
Hopkinton	Electric/Gas
Hudson	Gas
Hyannis	Electric
Hyde Park	Electric/Gas
Jamaica Plain	Electric
Kingston	Electric/Gas
Lakeville	Electric
Leicester	Gas
Lexington	Electric
Lincoln	Electric
Marion	Electric/Gas
Marlborough	Gas
Marshfield	Electric
Martha's Vineyard	Electric
Mashpee	Electric
Mattapan	Electric
Mattapoisett	Electric/Gas
Maynard	Electric/Gas
Medfield	Electric
Medway	Electric
Mendon	Gas
Middleborough	Electric
Milford	Gas
Millbury	Gas
Millis	Electric

CITY / TOWN	SERVICE
Millville	Gas
Milton	Electric
Natick	Electric/Gas
Needham	Electric/Gas
New Bedford	Electric/Gas
Newton	Electric
Newton Center	Electric
Newton Highlands	Electric
Newton Lower Falls	Electric
Newton Upper Falls	Electric
Newtonville	Electric
Norfolk	Electric
Northborough	Gas
Northbridge	Gas
Oak Bluffs	Electric
Orleans	Electric
Pembroke	Electric
Plymouth	Electric/Gas
Plympton	Electric
Provincetown	Electric
Readville	Electric
Rochester	Electric/Gas
Roslindale	Electric
Roxbury	Electric
Sagamore	Electric
Sandwich	Electric
Scituate (Humarock)	Electric
Sharon	Electric
Sherborn	Electric/Gas
Shrewsbury	Gas

CITY / TOWN	SERVICE
Somerville	Electric/Gas
Southborough	Gas
Stoneham	Electric
Stow	Gas
Sudbury	Electric
Sutton	Gas
Tisbury	Electric
Truro	Electric
Upton	Gas
Uxbridge	Gas
Waban	Electric
Walpole	Electric
Waltham	Electric
Wareham	Electric
Watertown	Electric
Wayland	Electric/Gas
Wellfleet	Electric
West Boylston	Gas
West Newton	Electric
West Roxbury	Electric
West Tisbury	Electric
Westborough	Gas
Weston	Electric
Westport	Electric
Westwood	Electric/Gas
Winchester	Electric
Woburn	Electric
Worcester	Gas
Yarmouth	Electric

12.2.4 Unitil/ FG&E Service Territories Cities and Towns

FG&E CITIES / TOWNS
Ashby
Fitchburg
Lunenburg
Townsend

12.2.5 WMECO Service Territories Cities and Towns

Greenfield / Hadley District

Amherst
Ashfield
Bernardston
Buckland
Chester
Chesterfield
Colrain
Conway
Cummington
Deerfield
Easthampton
Erving (part)
Gill
Greenfield
Griswoldville
Hadley
Hatfield (North and West)
Huntington
Lake Pleasant ***
Leverett
Leyden
Lyonsville
Middlefield (part)
Millers Falls ***
Montague ***
Montgomery
Northfield
North Leverett
Pelham
Plainfield
Russell (see also Woronoco)
Shattuckville
Shelburne
Shelburne Falls
Southampton
South Deerfield
Sunderland
Turners Falls ***
Westhampton
Whately
Windsor (part)
Windsor Ponds
Woronoco
Worthington

Pittsfield District	Springfield District
Bancroft	Agawam
Becket	Chicopee *
Blandford	Feeding Hills
Cheshire (part)	Granville
Dalton	Holyoke **
East Otis	Indian Orchard
Hancock (part)	Longmeadow
Hinsdale	Ludlow
Lanesboro	Southwick
Lee	Springfield
Lenoxdale	West Granville
Middlefield	West Springfield
Monterey	Westfield *
New Ashford	Wilbraham *
Otis	
Peru	
Pittsfield	
Richmond	
Sandisfield	
Savoy	
Tolland	
Tyringham	
Washington	
Windsor (part)	

* WMECO Services these towns in part (ex. Friendly Ice Cream, Spalding)

** Holyoke Water Power services a group of industrial customers

*** These four communities are part of Montague
Note: WMECO services a handful of residential customers in East Longmeadow and Shutesbury

12.3 C&I Customer Break-out by Service Territories

Occasionally, the MA Program Administrators of the Energy Efficiency Program Providers (EEPP) jointly sponsor evaluation studies and/or market research, state-based C&I program activities or other related collaborative efforts that require cost share analysis to estimate each EEPP's contribution to the total cost of a joint project.

A couple different approaches are provided, based on a few different data sources that provide total C&I kWh sales and customer data. Joint projects that involve regional participation typically base cost share allocations on data provided by NEEP shown in Table 12.3.4.

Cost share for each Program Administrator with respect to NUP Advisors and other Collaborative efforts are based on data sources provided by DOER as shown below in Table 12.3.1.

A more up-to-date source of data, using mitigation data as reported by the electric utilities to DOER, is recommended for joint C&I program related projects such as state-based marketing efforts, program outreach, circuit rider, training and other joint coordination activities. Table 12.3.2 and 12.3.3 provide total customer and sales detail for "All Companies", as well as a breakout table for the MA EEPPs that was created using the mitigation data source provided by the Massachusetts Division of Energy Resources (DOER). The month of August 2007 was chosen as the basis for analysis because it is the peak summer month for electricity sales.

Table 12.3.1 MA Collaborative Energy Efficiency Assessment Cost Share

SBC_Charge	$0.0025
Max_Legisative_Percent	0.75%
YearDoc	2006 Report

Administrator	Annual kWh Customer	Electric EE Assessment	% Share
A MECo	21,844,535,664	**$409,585**	45.8%
B NSTAR Electric	19,313,093,280	**$362,120**	40.5%
C WMECo	3,967,358,278	**$74,388**	8.3%
D FG&E Electric	489,169,844	**$9,172**	1.0%
E CLC	2,050,468,254	**$38,446**	4.3%
Grand Total	47,664,625,320	**$893,712**	100.0%

Data provided by Larry Masland, DOER and appear to have 2006 sales data.

Table 12.3.2 MA All Companies August 2007 Total kWh Sales

	Incumbent Generation		Competitive Generation	
ALL COMPANIES August 2007	**Number of Basic Service Customers**	**kWh Used by Basic Service Customers for Month**	**Number of Competitive Generation Customers**	**kWh of Competitive Generation Used for Month**
Residential-- Non Low Income	1,864,813	1,365,691,755	240,962	189,057,323
Residential -- Low Income	171,072	101,639,717	12,265	7,859,508
Residential -- Time-of-Use	336	606,461	40	254,685
Small Commercial & Industrial	216,929	291,117,661	56,799	147,714,203
Medium Commercial & Industrial	31,173	347,201,727	13,509	308,549,536
Large Commercial & Industrial	1,987	224,084,272	4,874	1,454,985,755
Farms	581	1,347,726	42	539,809
Street Lights	9,703	9,760,984	6,766	17,813,487
Total Sales to Ultimate Consumers	2,296,594	2,341,450,303	335,257	2,126,774,306

Link to data provided by DOER - http://wwww.mass.gov/Eoca/docs/doer/pub_info/0708.xls

Table 12.3.3 MA EEPP August 2007 Cost Share Allocation

August 2007 Mitigation Data provided by DOER

MA EEPP	kWh Incumbent & Competitive C&I Generation TOTALS	% Cost Share Allocaton base on Total kWh C&I Sales
CLC	143,811,389	5.2%
National Grid	1,182,262,731	42.6%
NSTAR	1,189,284,356	42.9%
Unitil/FG&E	27,067,877	1.0%
WMECo	231,226,801	8.3%
MA EEPP Totals	**2,773,653,154**	**100.0%**

National Grid kWh Sales include Mass Electric and Nantucket.
NSTAR kWh Sales calculated based on totals for Boston Edison, Cambridge and Commonwealth less ~ 10.8% of total for CLC.
CLC kWh Sales are based on ~10.8% of calculated NSTAR Sales.

Table 12.3.4 NEEP Regional Cost Share

Recommended % Cost Shares for Northeast Region based on 2005 kWh Total Sales (provided by E. Titus, NEEP)

Note: 2005 kWh Sales data source either FERC Form 1 or Annual Report sources or EIA Res, C&I or Total, as provided.

STATE	COMPANY		2005 Sales (Million kWh)	Allocation - % of Total
VT	E VT		5,866	5%
RI	Narr Electric		7,115	6%
ME	E ME		12,363	11%
MA	Cape Light Compact		2,084	2%
MA	Fitchburg		514	0%
MA	NGRID MA		16,674	15%
MA	NSTAR Elec		19,315	18%
MA	WMECo		4,147	4%
NH	NGRID NH		804	1%
NH	NHEC		747	1%
NH	PSNH		8,116	7%
NH	Unitil		1,260	1%
CT	CL&P		24,568	22%
CT	UI		6,062	6%
Total			**109,634**	**100%**

For The Region as a Whole, State Subtotals Are:

STATE	COMPANY		2005 Sales (Million kWh)	Allocation - % of Total
VT	E VT		5,866	5%
RI	Narr Electric		7,115	6%
ME	E ME		12,363	11%
MA	State-level		42,734	39%
NH	State-level		10,927	10%
CT	State-level		30,630	28%
Total			**109,634**	**100%**

13 Regional Utility (EEPPs) Program Cross-Comparison Charts

- 2007 Regional Utility Cross-Comparison Chart
- 2008 Massachusetts EEPP Cross-Comparison Chart

13.1 2007 Regional Utility Cross-Comparison Chart

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 *(NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)*											
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA
LED exit signs	$15.00	none	$20/fixture for <75kW only (new fixtures only)	Retrofit only: $10/fixture	Retrofit ONLY: $20.00/fixture (no retrofit kits)	$10.00, retrofit only (Express Lighting Rebate – ESLR)	New construction: $20/fixture for <50kW and no chains/nat'l acc'ts w/5+ facilities in territory Retrofit: $25/fixture 2007 No rebate for New Construction. Can be incorporated in Custom form for Retrofit	$15.00	none	$6.00 Energy Star registered products only(no retrofit kits)	none
Solid state exit signs	$20.00	none	none	Same as above	Same as above	Same as above	Same as above	$20.00	none	Same as above	none

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 *(NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)*											
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA
Hard wired CFL		$12.00	$25/ 1 lamp fixture $30/ 2 > lamps	Retrofit: $20/fixture $40/fixture with dimmable ballast New Construction: $40/fixture with dimmable ballast ONLY	Retrofit: $20/fixture $40/fixture with dimmable ballast New Construction: $40/fixture with dimmable ballast ONLY for <200kW only and no chains/nat'l acc'ts w/5+ facilities in territory	Retrofit (ESLR): $25/fixture $40/fixture with dimmable ballast New Construction & Major Renov & Planned Remodel: Watts/S.F calcuation Is used (No Bonus Incentive)	Retrofit: $25/ 1 lamp fixture $30/ 2 lamp fixture $40/ dimmable fixture New construction: $40 dimmable CF fixture For <200kW only and no chains/nat'l acc'ts $20/ 1 lamp fixture $25/ 2 lamp fixture 2007 Performance Lighting $.40/Sq.' for Tier1 and $.80/Sq.' for Tier2. Retrofit other than gut rehab use Custom Form		$20.00 max. $10 dimming CF fixture **New Construction** : $0.30-$1.00 per watt saved for all lighting measures	none	none

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 *(NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)*											
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA
T-5/T-8 high bay		$35.00 in new construction; Retrofit: $75	$50/fixture for 250<watts<400 $75/fixture for watts>400	Industrial: Retrofit: $70/fixture <220 watts, $120/fixture >=220 watts New: $30/fixture <220 watts, $40/fixture >=220 watts	Industrial: Retrofit: $70/fixture <220 watts, $120/fixture >220 watts New: $30/fixture <220 watts, $40/fixture >220 watts	Retrofit (ESLR): $30 for T5 & HO T5; $50 for Biax T5 New Construction & Major Renov & Planned Remodel: Watts/S.F calcuation Is used	Retrofit: $125/fixture New Construction: $30/fixture 2007 Performance Lighting $.40/Sq.' for Tier1 and $.80/Sq.' for Tier2. Retrofit other than gut rehab use Custom Form		$50.00 $10 dimming	$35 per fixture minimum of four lamps per fixture	**New:** $75/fixture

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 *(NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)*											
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA
T-8 lamp/ballast	$5.00 - $10.00	None	**New Constr:** Performance based only **Retro:** $20/fixture <75kW $10/fixture >75kW	**New Constr:** $10/fixture for <50kW only and no chains/nat'l acc'ts w/5 + facilities in territory **Retro:** $10 for lamp/ballast retro $24/pair of fixtures for tandem wired lamp/ballast All fixtures that specify a 4ft 32W T8 must meet CEE's High Performance T8 spec. 32W T8 to HPT8 conversions are not allowed.	**NONE**	**None for Regular T8's**	**New Constr:** $10/ballast **Retro:** $18/ballast 2007 None	$5.00 - $10.00	none	$5 per fixture	**New**: $10/1 T8 or T5 lamp with elec ballast $20/2 T8 or T5 lamp with elec ballast $30/3 T8 or T5 lamp with elec ballast **New**: $15/1 T8 or T5 lamp with low power elec ballast $25/2 T8 or T5 lamp with low power elec ballast $35/3 T8 or T5 lamp with low power elec ballast **New**: $20/2 T8 or T5 lamp with low glare fixture and elec ballast $30/3 T8 or T5 lamp with low glare fixture and elec ballast $20/2 T8 or T5 lamp with low glare fixture and tandem-wired elec ballast

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 (NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)											
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA
occupancy sensors	$50/ remote mounted only	$50/ Remote mount only	Non High bay: $20/wall mount $35/remote mount, $25/occupancy controlled high-low High Bay: $35/remote mount, $75/occupancy controlled high-low	$75/ remote-mounted $25 for wall mounted (replace std wall switch) retrofit and new	$30/wall mount $75/ceiling mount	Retrofit (ESLR) $10/wall or ceiling mount; hard-wired & 100 watts min control $30/high bay fixture, hard-wired & 100 watts min control. ECC: $10/fixtr or $75/fixtr for Hi Bay	$30/wall mount $75/remote mount 2007 $25 Wall $75 Ceiling $50 Hi Bay	$25.00 (existing facilities only)	$30/wall or fixture mount $75/remote mount	$10 wall mounted $20 ceiling mounted	$75 per control ceiling/remote mount $40 per ballast Hi-Low switching of fluorescent systems $30 per control wall mount
daylight dimming		Fluorescent fixtures: $40.00 per ballast H.I.F.: $60.00	Fluorescent fixtures: $25/fixture HID/fluorescent high bay: $75/ fixture	$40 per ballast – retrofit and new	$40 per ballast	Retrofit (ESLR) $30/ballast $40/CF fixture w/dimmable ballast ECC: $20/Fixtr	$40 per ballast 2007 Custom		Custom	Fluorescent controls: $65/DC-1 $100/DC-2 $100/HID dimming	$40 per ballast

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 (NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)											
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA
New pulse start metal halide fixture		None	$45/fixture for >150 watts only	Retrofit only $45 for pulse start MH kit $70 for pulse start MH fixture. $100 per fixture for HPS New Construction: no prescriptive HID incentives Any applications for outdoor HID lighting must follow custom	Industrial: Retrofit **ONLY**: $70/fixture	Retrofit (ESLR) $25, ECC: Watts/S.F & will get $20/Fixtr Bonus	New Construction: $10 Retrofit: $80/fixture $45/lamp & ballast kit		None – need electronic ballast - $75	$25/fixture interior use $60/fixture exterior use	$30/lamp & magnetic pulse start ballast kit $60/lamp & electronic pulse start ballast kit
HP T8, 1-4 lamp 4',existing fixture		$15.00	Performance lighting incentives only	See "T8 lamp/ballast" above	**New Constr:** SUPER T8 ONLY $10.00 **Retro:** SUPER T8 ONLY $15.00	Retro (ESLR) $10/Fixtr (1-2 Lamps & $15/Fixt (3-4 Lamps); $25/Fixt w/ Reflector	No Super T8 lamp/ballast incentive Retrofit: $40/fixture for high-efficiency troffer fixture 2007 Performance Lighting $.40/Sq.' for Tier1 and $.80/Sq.' for Tier2. Retrofit other than gut rehab use Custom Form		Super T8: $20.00 low BF ballast $10 dimming	$10/fixture	none

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 *(NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)*											
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA
HP T8, 1-4 lamp 4', new fixture		$20.00	Performance lighting incentives only	Retrofit: $30 for high efficient parabolic, prismatic or indirect/direct recessed/surface fixture $60 for high efficient deep cell (4" to 5" deep) parabolic $60 for "advanced fluorescent recessed/surface New Contruction: $15 for high efficient parabolic, prismatic or indirect/direct recessed/surface fixture $30 for high efficient deep cell (4" to 5" deep) Fixtures using 32W 4ft T8 lamps must use eligible CEE HP T8 lamps and ballasts	**New Constr:** SUPER T8 ONLY $10.00 **Retro:** SUPER T8 ONLY $15.00	$30/Fixtr (1-4 Lamps) NEW	No Super T8 lamp/ballast incentive New: $15/fixture for high-efficiency troffer fixture 2007 Performance Lighting $.40/Sq.' for Tier1 and $.80/Sq.' for Tier2. Retrofit other than gut rehab use Custom Form		Same as above	Same as above	$15/2 lamp with instant startor programmed electronic ballast $20/3 lamp with instant startor programmed electronic ballast

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 *(NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)*											
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA
Recessed fixture/HP T8		$25.00	Performance lighting incentives only	Same as "HP T8, 1-4 lamp 4', new fixture" as above,	**New Constr:** SUPER T8 or T5 ONLY $20.00 **Retro:** SUPER T8 or T5 ONLY $40.00	Same as above	No Super T8 lamp/ballast incentive New: $15/fixture for high-efficiency troffer fixture Retrofit: $40/fixture for high-efficiency troffer fixture 2007 Performance Lighting $.40/Sq.' for Tier1 and $.80/Sq.' for Tier2. Retrofit other than gut rehab use Custom Form		Same as above	$15/fixture $20/fixture for >= 90 MLPW	none
Pendant mounted HP T8		$35.00	Performance lighting incentives only	New Construction only - $30 per 4 ft section. Fixtures using 32W 4ft T8 lamps must use eligible CEE HP T8 lamps and ballasts unless dimming ballasts are specified.	**New Constr:** SUPER T8 or T5 ONLY $30.00	Same as Above	2007 Performance Lighting $.40/Sq.' for Tier1 and $.80/Sq.' for Tier2. Retrofit other than gut rehab use Custom Form		Same as above	$15/fixture	$35 per 4ft. section of not greater than 3 lamps

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 (NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)											
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA
8' premium efficiency industrial fixture		$25.00	Performance lighting incentives only	Retrofit: 4' = $30 8' = $35 4' Tandem wired = $20 8' Tandem wired = $25 New Construction: 4' = $20 8' = $25 4' Tandem wired = $10 8' Tandem wired = $15 White reflectors not allowed under new construction Fixtures using 32W 4ft T8 lamps must use eligible CEE HP T8 lamps and ballasts	Retrofit: with reflector 4' = $35 8' = $45 SUPER T8 or T5 ONLY New: with reflector 4' = $25 8' = $30 SUPER T8 or T5 ONLY	Varies: from $15 - $50 depending upon existing fixtr (ex. T12 HO, T12 VHO, HID, etc)	No Super T8 lamp/ballast incentive 2007 Performance Lighting $.40/Sq.' for Tier1 and $.80/Sq.' for Tier2. Retrofit other than gut rehab use Custom Form		none	none	none

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 (NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)											
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA
Advanced Lighting Design		Custom $SqFt. For min. 20% lower than Code watts/Sq Ft	New Construction: $1.00 per watt per SqFt lower than %20 below ASHRAE 1999. Retrofit: $1.00/watt/SqFt lower than 10% below ASHRAE	New Constr **ONLY**: Performance Lighting for min 25% lower than Code watts/sqft Incentive is 2-Tier based upon equipment Metric: Performance lighting must constitute 10% of the total of performance lighting and D2 prescriptive lighting.	New Constr **ONLY**: Performance Lighting for min 25% lower than Code watts/sqft Incentive is 2-Tier based upon equipment	New Constr **ONLY**: Performance Lighting for min 25% lower than Code watts/sqft Incentive is 2-Tier based upon equipment	2007 Performance Lighting $.40/Sq.' for Tier1 and $.80/Sq.' for Tier2. Retrofit other than gut rehab use Custom Form		custom		
Motors		Same as MotorUp	From $45-630 for Open Drip Proof Motors, depending on HP From $50-700, for Totally-Enclosed Fan Cooled Motors.	New Constr only: MotorUp 75% of incr. cost 1-200 HP $/motor depending on type, size, RPM	New Constr **ONLY**: MotorUp & NSTAR form 75% of incr. cost 1-200 HP $/motor depending on type, size, RPM	Simply MotorUp and ECC will mimic MotorUp	Motor Up		$45-700 per motor depending on size and type	$25 for 1 HP $30 -1.5-5HP $60 - 7.5-20HP $100 -25HP $115 -30HP $125 -40HP $140 -50HP $215 -60HP $270 -75HP $325 -100HP $400 -125HP $450 -150HP $480 -500HP >2000 hr/yr	$45-700 per motor depending on size and type

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 (NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)											
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA
HVAC – Packaged 1-30 tons		Same as Cool Choice	Same as CoolChoice	New Constr: CoolChoice 75% of incr.cost $/ton depending on equipment type and size $250/ unit for adding dual enthalpy controls $200/unit for adding demand control venhilation $150/motor for ECM fan motors	**New Constr:** NSTAR form 75% of incr.cost Unitary & Heat Pumps > 30 Ton & Air-cooled + Water-cooled chillers up to 1000 Tons $/ton depending on equipment type and size Incentive is performance based.	Simply CoolChoice and ECC will mimic CoolChoice	Cool Choice		$79/ton $250 for dual enthalpy system		$92 for <5.4 tons min 13.0 SEER $73 for >=5.4 to <11.25 tons min 11.0 EER $79 for >=11.25 to <20 tons min 10.8 EER $79 for >=20 to 30 tons min 10.0 EER

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 (NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)										
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont NYSERDA	LIPA
Chillers – Air & Water Cooled and Gas Absorbtion			$16-$54/ton water-cooled <70tons for .75 - .56 kW/ton $25-$60/ton water-cooled 70 to <150tons for .75 - .56 kW/ton $16-$141/ton water-cooled 150 to <300tons for .62 - .37 kW/ton $16-$129/ton water-cooled 150 to <300tons for .50 - .32 kW/ton $12-$170/ton water-cooled >=300tons for .53 - .33 kW/ton $12-$124/ton water-cooled >=300tons for .46 - .32 kW/ton $14-$52/ton air-cooled <150tons for 1.20 – 1.01 kW/ton $8-$46/ton air-cooled >=150tons for 1.20 – 1.01 kW/ton Indirect&Direct Fired Gas Absorbtion (>=1.1 F.L. or P.L. COP): $450/ton<100tons $230/ton 100to400 tons $185/ton >400 tons (2 stage only) $1 per CFM for Regenerative Desiccant Units	New Construction: Incentives for Air and water cooled chillers from 150 to 1000 tons. Incentives are paid on $/ton if certain EER thresholds are met or exceed and varies depending on type and size of chiller .	**New Constr:** NSTAR form 75% of incr.cost Unitary & Heat Pumps > 30 Ton & Air-cooled + Water-cooled chillers up to 1000 Tons $/ton depending on equipment type and size Incentive is performance based.	Basically it is $/ton depending on equipment type and size Incentive is performance based on Market conditions of sampling of actual Incremetal Costs updated as of Aug-06 (by Dave Bebrin) Chiller Incentives are NOT MADE public All projects are case-specific	X$/Ton based on type of unit. + $5/ton incremental based on 0.10 EER increase (this program is fairly complex and cannot be adequately described here)		custom	$30/ton air cooled chiller <150 tons min 10.2 EER ($5/ton for each .1 EER point above) $25/ton water cooled chillers >=30 to <70 min .8 peak kW/ton ($8/ton for each .01 kW/ton point below) $25/ton water cooled chiller >=70 to <150 tons.74 peak kW/ton ($8/ton for each .01 kW/ton point below) $25/ton water cooled chiller >=150 to <300 tons.63 peak kW/ton and .56 kW/ton IPLV ($5/ton for each .01 kW/ton point below) $13/ton water cooled chiller >=300 to <=1000 tons.56 peak kW/ton and .54 kW/ton IPLV ($7/ton for each .01 kW/ton point below)

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 (NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)										
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont NYSERDA	LIPA
HVAC – EMS		Custom		New Construction: Hotel occupancy sensors that control heat pump or PTAC units. $75 per sensot Retrofit: Incentive paid on a $/pt added bases. Three levels of incentives offered: $225/pt for buildings 5k to 40K sq ft up to 16 points $300/pt for buildings > 40k up to 80k sq ft. up to 48 points $200/point for buildings > 80k up to 200k sq ft. up to	**Retrofit ONLY:** $/pt. based upon sqft up to point cap Hotel Occ. Sensor also offered	ECC: baseline Retrofit: $400/Point or 50% installed cost, which ever is less	2007 Dual Enth. $250 (1 per unit) DCV $200 (1 per unit) ECM $150 (fan applications only) Hotel Occ. Sensors $75 Prog. Thermostats $50		custom	

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 (NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)											
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA
Variable frequency Drives		Prescrtiptive on HVAC Custom: 35% installed cost retro; 75% incremental new	Centrifugal Fan Applications: $155/culmative controlled HP, 5<HP<10; $120/HP, 10<HP<20; $65/HP, HP>20. Chilled Water Pump Motors: $60/VFD rated HP, HP>20	**New Constr:** 9 prescriptive HVAC installation types from 5hp-50hp. Code required NOT eligible **Retro:** 9 prescriptive HVAC installation types from 5hp-100hp.	**New Constr:** 9 prescriptive HVAC installation types from 5hp-50hp. Code required NOT eligible **Retro:** 9 prescriptive HVAC installation types from 5hp-100hp.	HVAC: Same as LIPA. Process is Custom Incremental Cost-based or 50% of Cost,for Retrofit	2007 New Construction: 5 prescriptive HVAC installation 5hp-20hp. Code required ineligible Retrofit: 5 prescriptive HVAC installation 5hp-100hp. All others use Custom Form		custom	$20/HP, <20HP $17.50/HP. 20<HP<40 $15/HP, 40<HP<100 $10/HP, >100	Varying amounts from $1,800/7.5 cumulative motor HP controlled by each VFD to $2,500/20 cumulative motor HP controlled by each VFD

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 *(NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)*											
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA
Air Compressors		All custom: 35% installed cost retro; 75% incremental new		Retrofit: 45% of cost 15-75 HP $/HP varies depending on control type: L/NL, Vari-displac, VFD New Constr: 45% of cost 15-75 HP $/HP varies depending on control type: L/NL, Vari-displac, VFD	**New Constr ONLY**: 45% of cost 15-75 HP $/HP varies depending on control type: L/NL, Vari-displac, VFD Incentives also for dryers & storage Metric: Leak/O&M Survey/repairs at 5,6,7 customer sites	Less of Actual Incremental Cost or 50% of the Installed Cost, which eve is less	Custom		custom		
Transformers					**NONE**	**NONE**	None		$250-1200 depending on size		

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 (NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)											
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA
Custom		35% installed cost retro; 75% incremental new		New Construction: Up to 75% of incremental cost Retrofit: Up to 50% of total installed cost	**New Constr:** B-C Model Analysis - Up to 75% incremental cost **Retro:** B-C Model Analysis - Up to 50% total cost	If the ECM qualifies, 100% of Incremetal Cost for Custom Services or ECC	Small C&I 80% of Project cost Lg. C&I 50% of incremental or 1 ½ yr. payback whichever is less Government 100% of incremental (New Const.) or 100% of project cost (retrofit) All projects capped $75,000/program year				

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 (NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)										
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA
Custom CDA		None		2007 Incentives same as for Adv.Buildings but the bldg must use at least 20% less energy (electricity and heating fuel combined) than a building built to min. code eff. stnds. Carrying over from 2006; buildings used for Industrial purposes, mfg, food processing or storage are excluded. For bldgs > 75,000 sf. and with AC.	**New Constr:** ONLY B-C Model Analysis	This is all we do for ECC (ex. Watts/ S.F for lighting and all other ECMs need to pass BCR)				
Custom Advanced Buildings		No formal program; suggest to customer when appropriate		**B-C Model analysis** – up to 90% of the incremental cost or 1 year payback (whichever is less)		This is all we do for ECC (ex. Watts/ S.F for lighting and all other ECMs need to pass BCR)				
Custom		35% installed cost, retrofit; 75% incremental, new				This is all we do for ECC (ex. Watts/ S.F for lighting and all other ECMs need to pass BCR)				

UTILITY PROGRAM MEASURE TECHNOLOGY/INCENTIVE TABLE, AS OF SEPTEMBER 27, 2006 *(NOTE: FG&E HAS NO PRESCRIPTIVE INCENTIVES – ALL CUSTOM MEASURES)*										
TECHNOLOGY	EM (small biz)	EM Biz	NJ Clean Energy Program	National Grid	NSTAR	WMECO	Cape Light Compact	NH Statewide	Efficiency Vermont	NYSERDA	LIPA

13.2 2008 Massachusetts EEPP Cross-Comparison Chart

EEPP Program Cross-Comparison Chart for 2008

Unitil/FG&E does not offer prescriptive programs – only Custom

TECHNOLOGY	National Grid	NSTAR	WMECO	Cape Light Compact
LED exit signs	**Retrofit only:** $10/ fixture	**Retrofit ONLY:** $10/ fixture (no retrofit kits)	**Retrofit:** $10/ fixture (Express Lighting Rebate – **ESLR**)	**Retrofit ONLY:** Can incorporate in Custom form for retrofit
Solid state exit signs	Same as above	Same as above	Same as above	Same as above
Hard Wired CFL	**Retrofit:** $20/ fixture $40/ fixture with dimmable ballast **New Construction:** $40/fixture with dimmable ballast ONLY	**Retrofit:** $20/ fixture $40/ fixture with dimmable ballast **New Construction:** $40/fixture with dimmable ballast ONLY for <200 kW only and no chains/ nat'l acct facilities in territory	**Retrofit** :(**ESLR**): $25/ fixture $40/ fixture with dimmable ballast **New Construction** & Major Renov. & Planned Remodel: Watts/S.F calculation is used (No Bonus Incentive)	**Retrofit:** Other than gut rehab, use Custom **New Construction**: Performance Lighting $0.40/S.F. for Tier1 and $0.80/Sq.' for Tier2.
Metal Halide Specialty Fixture		**Retrofit:** $70/ fixture limited to retail display lighting conversions ONLY.		
T-5/T-8 high bay	**Retrofit** (Industrial): $70/ fixture < 220 watts, $120/ fixture > = 220 watts **New Construction:** $30/ fixture < 220 watts, $40/ fixture > = 220 watts	**Retrofit** (Industrial): $70/ fixture < 200 watts, $120/ fixture > 220 watts **New Construction:** $30/ fixture < 220 watts, $40/ fixture >220 watts	**Retrofit** (ESLR): $30 for T5 & HO T5; $50 for Biax T5 **New Construction** & Major Renovation & Planned Remodel: Watts/ SF calculation is used	**Retrofit:** Other than gut rehab, use Custom Form **New Construction:** Performance Lighting $.40/ SF for Tier1 and $.80/ SF for Tier2.

EEPP Program Cross-Comparison Chart for 2008

Unitil/FG&E does not offer prescriptive programs – only Custom

TECHNOLOGY	National Grid	NSTAR	WMECO	Cape Light Compact
T-8 lamp/ballast	**Retrofit:** $10 for lamp/ballast retro $24/ pair of fixtures for tandem wired lamp/ballast All fixtures that specify a 4ft 32W T8 must meet CEE's High Performance T8 spec. 32W T8 to HPT8 conversions are not allowed. **New Construction:** $10/ fixture for < 50 kW only and no chains/ nat'l accts w/ 5 + facilities in territory	**None for Regular T8's**	**None for Regular T8's**	**None for Regular T8's**
Occupancy sensors	**Retrofit:** $75/ remote-mounted $25 for wall mounted (replace std wall switch) **New Construction:** $75/ remote-mounted $25 for wall mounted (replace std wall switch)	**Retrofit:** $25/ wall mount $75/ ceiling mount $40/ ballast High/Low HIF On/Off High-Bay $50/ control HID High/ Low $100/ control **New Construction:** $25/wall mount $75/ceiling mount $40/ballast High/Low HIF On/Off High-Bay $50/control HID High/Low $100/control	**Retrofit** (ESLR): $10/ wall or ceiling mount; hard-wired & 100 watts min control $30/ high bay fixture, hard-wired & 100 watts min control **New Construction:** ECC: $10/ fixture or $75/ fixture for High-Bay	$25/ wall mount $75/ ceiling mount High-Bay $50/control
Daylight dimming	**Retrofit:** $40 per ballast **New Construction:** $40 per ballast	**Retrofit:** $40 per ballast HID: $100/ ballast **New Construction:** $40 per ballast HID: $100/ ballast	**Retrofit** (ESLR): $30/ ballast $40/ CF fixture w/dimmable ballast ECC: $20/ fixture	**Use Custom Form**

EEPP Program Cross-Comparison Chart for 2008

Unitil/FG&E does not offer prescriptive programs – only Custom

TECHNOLOGY	National Grid	NSTAR	WMECO	Cape Light Compact
New pulse start metal halide fixture	**Retrofit only:** $45 for pulse start MH kit $70 for pulse start MH fixture. $100 per fixture for HPS **New Construction:** No prescriptive HID incentives Any applications for outdoor HID lighting must follow Custom	**Retrofit** (Industrial) **ONLY**: $60/ fixture Kit - $45/ fixture	**Retrofit** (**ESLR**): $25, ECC: Watts/ SF & will get $20/ fixture bonus	**Retrofit:** $20/ fixture < 75 kW $10/ fixture > 75 kW **New Construction:** $10/ Fixture
HP T8, **1-4 lamp 4 ft, existing fixture**	See "T8 lamp/ ballast" above	**Retrofit:** HPT8 $10/ fixture ** **Limited to existing T12 conversions ONLY** ** **New Construction:** HPT8 $10/ fixture	**Retrofit** (**ESLR**): $10/ fixture (1-2 lamps) $15/ fixture (3-4 lamps) $25/ fixture w/ Reflector	**Retrofit:** Other than gut rehab, use Custom Form **New Construction:** Performance Lighting $.80/ SF for Tier2.
HP T8, **1-4 lamp 4 ft, new fixture**	**Retrofit:** $40 for high efficient parabolic, prismatic or indirect/direct recessed/surface fixture $65 for high efficient deep cell (4" to 5" deep) parabolic $65 for "advanced fluorescent recessed/surface **New Construction:** $20 for high efficient parabolic, prismatic or indirect/direct recessed/surface fixture $35 for high efficient deep cell (4" to 5" deep) Fixtures using 32W 4ft T8 lamps must use eligible CEE HP T8 lamps and ballasts	**Retrofit:** $40 for high efficient parabolic, prismatic or indirect/direct recessed/surface fixture $65 for high efficient deep cell (4" to 5" deep) parabolic $65 for "advanced fluorescent recessed/surface **New Construction:** $20 for high efficient parabolic, prismatic or indirect/direct recessed/surface fixture $25 for high efficient deep cell (4" to 5" deep) Fixtures using 4ft T8 lamps must use eligible CEE HP/RW T8 lamps and ballasts	**New Construction:** $30/ fixture (1-4 lamps)	**Retrofit:** Other than gut rehab, use Custom Form **New Construction:** Performance Lighting $0.80/ SF for Tier2.

EEPP Program Cross-Comparison Chart for 2008

Unitil/FG&E does not offer prescriptive programs – only Custom

TECHNOLOGY	National Grid	NSTAR	WMECO	Cape Light Compact
Recessed fixture/ HP T8	Same as "HP T8, 1-4 lamp 4ft, new fixture" as above.	Same as "HP T8, 1-4 lamp 4 ft, new fixture" as above.	Same as above.	**Retrofit:** Other than gut rehab, use Custom Form **New Construction:** Performance Lighting $0.80/ SF for Tier2.
Pendant mounted HP T8	**New Construction only:** $35 per 4 ft section. Fixtures using 32W 4ft T8 lamps must use eligible CEE HP T8 lamps and ballasts unless dimming ballasts are specified.	**New Construction only:** $35 per 4 ft section. Fixtures using 4ft T8 lamps must use eligible CEE HP/RW T8 lamps and ballasts unless dimming ballasts are specified.	Same as above.	**Retrofit:** Other than gut rehab, use Custom Form **New Construction:** Performance Lighting $0.80/ SF for Tier2.
4' & 8' premium efficiency industrial fixture	**Retrofit:** 4' = $30 8' = $35 4ft Tandem wired = $20 8ft Tandem wired = $25 **New Construction:** 4' = $20 8' = $25 4ft Tandem wired = $10 8ft Tandem wired = $15 White reflectors not allowed under new construction Fixtures using 32W 4ft T8 lamps must use eligible CEE HP T8 lamps and ballasts	**Retrofit:** 4' = $30 8' = $35 **New Construction:** 4' = $20 8' = $25 White reflectors not allowed under new construction. Fixtures using 4ft T8 lamps must use eligible CEE HP/RW T8 lamps and ballasts	**Varies:** From $15 - $50 depending upon existing fixture (ex. T12 HO, T12 VHO, HID, etc)	**Retrofit:** Other than gut rehab, use Custom Form **New Construction:** Performance Lighting $0.80/ SF for Tier2.

EEPP Program Cross-Comparison Chart for 2008

Unitil/FG&E does not offer prescriptive programs – only Custom

TECHNOLOGY	National Grid	NSTAR	WMECO	Cape Light Compact
Advanced Lighting Design	**New Construction ONLY:** Performance Lighting for min 25% lower than Code watts/ SF Incentive is single Tier at $0.80 per watt saved over code.	**New Construction ONLY:** Performance Lighting for min 25% lower than Code watts / SF Incentive structure has two Tiers: Tier 1 at $0.40 per watt saved over code. Tier 2 at $0.80 per watt saved over code with high efficiency fixtures.	**New Construction ONLY**: Performance Lighting for min 25% lower than Code watts/ SF Incentive is 2-Tier Tier 1 => 25% reduction below Mass Code ; incentive = $0.15 per watt reduced Tier 2 => Tier 1 plus 75% of connected wattage from advanced technologies, incentive = $0.50 per watt reduced Incentive capped at $35/ fixture.	**Retrofit:** Other than gut rehab, use Custom Form **New Construction:** Performance Lighting for min 25% lower than Code watts/ SF Incentive is single Tier at $0.80 per watt saved over code
Motors	**New Construction ONLY:** MA MotorUp prescriptive incentive based upon 75% of incr. cost 1-200 HP $/motor depending on type, size, RPM	**New Construction ONLY:** MA MotorUp prescriptive incentive based upon 75% of incr. cost 1-200 HP $/motor depending on type, size, RPM	**New Construction ONLY:** MA MotorUp prescriptive incentive based upon 75% of incr. cost 1-200 HP $/motor depending on type, size, RPM	**New Construction ONLY:** MA MotorUp prescriptive incentive based upon 75% of incr. cost 1-200 HP $/motor depending on type, size, RPM
HVAC – Packaged 1-30 tons	**New Construction:** MA Cool Choice Unitary, Split, & Heat Pumps prescriptive incentive based upon incr. cost - $/ ton depending on equipment type and size **Prescriptive HVAC Controls:** Dual Enthalpy: $250/ Unit DCV: $200/ Unit ECM Fan Motors: $150 /Motor	**New Construction:** MA Cool Choice Unitary, Split, & Heat Pumps prescriptive incentive based upon incr. cost - $/ ton depending on equipment type and size **Prescriptive HVAC Controls**: Dual Enthalpy: $250/ Unit DCV: $200/ Unit ECM Fan Motors: $150/ Motor	**New Construction:** MA Cool Choice Unitary, Split, & Heat Pumps prescriptive incentive based upon incr. cost - $/ ton depending on equipment type and size **Prescriptive HVAC Controls**: Dual Enthalpy: $250/ Unit DCV: $200/ Unit ECM Fan Motors: $150/ Motor	**New Construction:** MA Cool Choice Unitary, Split, & Heat Pumps prescriptive incentive based upon incr. cost - $/ ton depending on equipment type and size **Prescriptive HVAC Controls:** Dual Enthalpy: $250/ Unit DCV: $200/ Unit ECM Fan Motors: $150/ Motor

EEPP Program Cross-Comparison Chart for 2008

Unitil/FG&E does not offer prescriptive programs – only Custom

TECHNOLOGY	National Grid	NSTAR	WMECO	Cape Light Compact
Chillers – Air & Water Cooled and Gas Absorbtion	**New Construction:** Incentives for Air and water cooled chillers from 150 to 1000 tons. Incentives are paid on $/ ton if certain EER thresholds are met or exceed and varies depending on type and size of chiller. .	**New Construction:** HVAC Chillers form: Air-cooled + Water-cooled chillers up to 1000 Tons. Base Incentive $/ ton depending on equipment type and size. Additional incentive possible based upon performance. Multi-Chiller Plant and Process Chillers reviewed under CUSTOM application.	**New Construction:** Basically it is $/ ton depending on equipment type and size. Incentive is performance based on Market conditions of sampling of actual Incremental Costs updated as of Aug-06 (by Dave Bebrin) Chiller Incentives are NOT MADE public All projects are case-specific.	**New Construction:** X$/ Ton based on type of unit + $5/ ton incremental based on 0.10 EER increase (This program is fairly complex and cannot be adequately described here.)
HVAC – EMS	**Retrofit ONLY:** Incentive paid on a $/ pt added bases. Three levels of incentives offered: $225/pt for buildings up to 40K SF - limit 16 points; $300/ pt for buildings > 40k up to 80K sqft. – limit 48 points; $200/ pt for buildings > 80K up to 200K SF – limit 128 points. Hotel occupancy sensors that control heat pump or PTAC units. $75 per sensor.	**Retrofit ONLY:** $/ pt based upon sqft up to point cap. Three levels of incentives offered: $225/ pt for buildings up to 40K SF - limit 16 points; $300/ pt for buildings > 40K up to 80K SF – limit 48 points; $200/ pt for buildings > 80K up to 200K SF – limit 128 points. Hotel occupancy sensor also offered at $40 per sensor.	**Retrofit:** $400/ pt or 50% installed cost, which ever is less. **New Construction:** ECC - Baseline	**Custom Only:** Dual Enthalpy: $250 (1 per unit) DCV: $200 (1 per unit) ECM: $150 (fan applications only) Hotel Occ. Sensors $75 Prog. Thermostats $50

EEPP Program Cross-Comparison Chart for 2008

Unitil/FG&E does not offer prescriptive programs – only Custom

TECHNOLOGY	National Grid	NSTAR	WMECO	Cape Light Compact
Variable frequency Drives	**Retrofit:** 9 prescriptive HVAC installation types from 5 hp - 100 hp **New Construction:** 9 prescriptive HVAC installation types from 5 hp – 50 hp. Code required NOT eligible .	**Retrofit:** VSD Only: 9 prescriptive HVAC installation types from 5 hp - 100 hp. Motor & VSD: Enhanced incentive for 9 prescriptive HVAC - VSD installation types from 5 hp - 100 hp with new NEMA Premium Motor. **New Constr:** 9 prescriptive HVAC installation types from 5hp-50hp. Code required NOT eligible.	**Retrofit:** 6 specific fan & pump installation types from 5hp-100hp **New Construction:** 6 specific fan & pump installation types from 5 hp - 20 hp. Code required NOT eligible Process is Custom - Incremental Cost - based or 50% of cost for Retrofit	**Retrofit:** 5 prescriptive HVAC installation 5 hp -100 hp. **New Construction:** 8 prescriptive HVAC installation 5 hp - 20 hp. Code required NOT eligible. All others use Custom Form
Air Compressors	**Retrofit:** 45% of cost 15 - 75 HP $ /HP varies depending on control type: L/NL, Vari-displacement, VFD **New Construction:** 60% of cost 15-75 HP $/ pending on control type: L/NL, Vari-displacement, VFD	**Retrofit :** – Custom ONLY **New Construction ONLY**: Prescriptive incentive based upon 45% of incremental cost 15-75 HP $/ HP varies depending on control type: L/NL, Vari-displacement, VFD Incentives also for cycling refrigerated dryers & storage ** Continue to offer Leak/ O&M Survey/ repairs based upon previous metric – CUSTOM Application **	**New Construction:** 75% of incremental cost 15 - 75 HP	**Custom ONLY:** Incentive limited to a max. of $75,000 per project.
Transformers		**NONE**	**NONE**	**NONE**

EEPP Program Cross-Comparison Chart for 2008

Unitil/FG&E does not offer prescriptive programs – only Custom

TECHNOLOGY	National Grid	NSTAR	WMECO	Cape Light Compact
Custom	**Retrofit:** Up to 50% of total installed cost **New Construction:** Up to 90% of incremental cost Project cap of $400,000; if > $100,000 capped at $30 per "unit" saved.	**Retrofit:** B-C Model Analysis - Up to 50% total cost **New Construction:** B-C Model Analysis - up to 90% incremental cost Customer cap of $500,000 per yr.	If the ECM qualifies, 100% of incremental cost for Custom Services or ECC. No Cap.	**Small C&I** 80% of Project cost **Retrofit & New Construction:** Lg. C&I - 50% of incremental or 1 ½ yr. payback whichever is less Government 100% of incremental (New Const.) or 100% of project cost (retrofit) All projects capped $75,000 per program/ year

EEPP Program Cross-Comparison Chart for 2008

Unitil/FG&E does not offer prescriptive programs – only Custom

TECHNOLOGY	National Grid	NSTAR	WMECO	Cape Light Compact
Custom CDA	**New Construction:** For buildings greater than 150,000 square feet with 75 tons of cooling, or greater, where substantial HVAC, architectural and lighting system improvements are possible. **Incentives consist of 2 tiers:** A lower tier will pay an incentive of up to 80% (CDA) of the incremental cost on qualifying electric efficiency measures that are part of comprehensive project that reduce energy use to at least 20% better than a code compliant design. For the higher tier, projects that are designed to be least 25% more efficient than the code compliant design and follow best sustainable practices in the design process will receive an additional 10% incentive. Carrying over from 2006; buildings used for industrial purposes, mfg, food processing or storage are excluded. For bldgs > 75,000 SF and with AC.	**New Construction:** For buildings greater than 100,000 square feet with 75 tons of cooling, or greater, where substantial HVAC, architectural and lighting system improvements are possible. Incentives offered for comprehensive solutions cover up to 80% of the incremental costs of installing the energy efficiency measures or to buy the cost of the project down to a one year payback, whichever is less based upon BC Model analysis Technical Assistance for Energy Modeling on a cost share basis.	This is all we do for ECC (ex. Watts/ SF for lighting and all other ECMs need to pass BCR)	

EEPP Program Cross-Comparison Chart for 2008

Unitil/FG&E does not offer prescriptive programs – only Custom

TECHNOLOGY	National Grid	NSTAR	WMECO	Cape Light Compact
Custom Advanced Buildings	**New Construction** or Extensive Renovation for Buildings 20,000 to 100,000 SF Buildings must be designed to be 25% more efficient than code in order to participate **B-C Model analysis** – up to 90% of the incremental cost or 1 year payback (whichever is less)	**New Construction** for Buildings 20,000 to 100,000 SF Prescriptive incentive structure in development for the documented implementation of all Advanced Buildings Core Performance Requirements (Section 2) Additional incentives available for the implementation of Enhanced Performance Strategies Design Charette and Technical Assistance offered. Prescriptive Incentive Levels based upon baseline Energy Modeling and BC Model analysis for three (3) Primary Bldg Types: Office, School, & Retail.	This is all we do for ECC (ex. Watts/ SF for lighting and all other ECMs need to pass BCR)	
Custom		**Retrofit:** B-C Model Analysis - Up to 50% total cost **New Construction:** B-C Model Analysis - up to 75% incremental cost	This is all we do for ECC (ex. Watts/ SF for lighting and all other ECMs need to pass BCR)	
Vending Machine and Cooler Sensor		**Retrofit:** $75/ per Refrigerated Beverage Vending Machine $30/ per Non-Refrigerated Snack Vending Machine $75/ per Refrigerated Glass Front Coolers		

14 Past Performance Tables for 2008 by EEPPs

- Cape Light Compact (CLC)
- National Grid
- NSTAR Electric (NSTAR)
- Unitil/Fitchburg Gas & Electric (Unitil/FG&E)
- Western Massachusetts Electric Company (WMECo)

14.1 CLC 2008 Past Performance Tables

CLC 2008 Past Performance Table - Lost Opportunity

Lost Opportunity PROGRAMS	PY	Units#	Rebates	kWh Annual Savings	Summer kW Savings	Winter kW Savings	Program Spending ^
Compressed Air	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	2	$ 12,696	31,806	6.0	8.3	$ 2,496.44
	2006	1	$ 7,879	32,014	23.0	23.0	$ 6,077
Lighting & Controls *	2004	646	$ 23,212	123,480	23.4	14.4	$ 13,848
	2005	1,097	$ 31,185	143,777	Not Available	Not Available	$ 11,285
	2006	1,763	$ 46,486	416,605	Incomplete Data	Incomplete Data	$ 79,081
HVAC - Unitary Pkg'd (Cool Choice)	2004	38	$ 26,870	46,668	Incomplete Data	Incomplete Data	$ 5,234
	2005	39	$ 26,679	25,940	31.2	8.8	$ 2,036
	2006	102	$ 38,587	80,753	123.3	-	$ 15,329
HVAC -Chillers	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	3	$ 1,445	1,359	2.0	-	$ 107
	2006	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
Premium-Efficiency Motors (MotorUp)	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	2	$ 189	2,636	0.5	0.5	$ 207
	2006	6	$ 606	6,672	1.0	1.0	$ 1,266
Variable Speed Drives	2004	1	$ 8,915	49,328	8.5	8.5	$ 5,532
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	4	$ 13,000	15,556	Not Available	Not Available	$ 2,953
Massachusetts Custom Programs - Lighting Measures *	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
Massachusetts Custom Programs - Non-Lighting Measures **	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	7	$ 33,596	24,300	Not Available	Not Available	$ 4,613
Adv. Bldgs & CDA - Lighting Measures	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
Adv. Bldgs & CDA - Non-Lighting Measures	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
Total Lost Opportunity	2004	5	$ 115,273	156,015		28.7	$ 24,614
	2005	10	$ 57,030	165,520		43.4	$ 16,131
	2006	68	$ 141,154	486,450		135.8	$ 109,319

CLC 2008 Past Performance Table – Retrofit

Retrofit PROGRAMS	PY	Units#	Rebates	kWh Annual Savings	Summer kW Savings	Winter kW Savings	Program Spending ^
Compressed Air	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
Lighting & Controls *	2004	1,727	$ 104,274	505,127	37.9	19.5	$ 89,113
	2005	2,271	$ 120,330	774,431	74.3	37.8	$ 140,586
	2006	9,294	$ 348,154	5,836,761	Incomplete Data	Incomplete Data	$ 241,278
HVAC - Unitary Pkg'd	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	16	$ 4,094	5,853	4.0	4.0	$ 1,063
	2006	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
HVAC EMS	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	1	$ 9,800	14,220	2.0	2.0	$ 588
Premium-Efficiency Motors	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	2	$ 15,983	Not Available	Not Available	Not Available	Not Available
Variable Speed Drives	2004	2	$ -	58,220	Not Available	Not Available	$ 10,271
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	16	$ 228,535	688,773	151.8	170.6	$ 28,472
Massachusetts Custom Programs - Lighting Measures *	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
Massachusetts Custom Programs - Non-Lighting Measures **	2004	5	$ 1,088	121,904	34.4	66.4	$ 21,506
	2005	92	$ 123,106	58,285	Incomplete Data	Incomplete Data	$ 10,581
	2006	265	$ 78,339	231,445	Incomplete Data	Incomplete Data	$ 9,567
Retro-Commissioning and O&M	2004	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2005	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
	2006	No Activity	No Activity	No Activity	No Activity	No Activity	No Activity
Total Large C&I	2004	6	$ 177,894	687,032		107.7	$ 120,890
	2005	61	$ 370,172	3,309,770		655.5	$ 152,229
	2006	19	$ 680,811	6,661,710		1,927.5	$ 279,906
Small C&I	2004	227	$2,673,568	3,662,243		648.0	$ 605,456
	2005	140	$ 710,748	1,396,590		221.2	$ 223,432
	2006	278	$1,244,988	3,225,940		621.9	$ 461,529

Definitions

Units are the number of measures as reported within the Cape Light Compact's measure database

Rebates refer to Customer Incentives

Program Spending includes Program Planning and Administration, Marketing, Sales/Technical Assistance/Training and Measurement and Evaluation.

Program Spending does not include Customer Incentives or Participant Costs.

No Activity indicates that there were no measures implemented within the measure grouping for that year.

Not Available indicates that no data appeared in the database. Not Available is not the same as zero; zeros are shown as reported.

Incomplete Data indicates that more than 75% of the data is not available.

Notes:

* Please note that custom and prescriptive measures cannot be separated within the current data structure.

As a result, all lighting & control measures are listed under Lighting and Controls, rather than under

Massachusetts Custom Programs - Lighting Measures.

** All remaining non-lighting results are listed under Massachusetts Custom Programs - Non-Lighting Measures.

This category includes both custom and prescriptive measures.

^ Program Spending is generally not available by measure.

However, Program Spending estimates were provided by allocating overall Program Spending by program to measure groupings

using the proportion of annual kWh savings that each measure grouping represented.

Data with an end use of IFEE is not included because it could not be associated with specific measures.

kWh Annual Savings Disclaimer: This metric may not be accurately reported for the measure groupings as requested as

this metric is sometimes reported and entered into the database in aggregate for a project (i.e., totals include benefits across end uses).

This explains any gaps in the detailed data below.

Summer and Winter kW Savings Disclaimer: This metric has been inconsistently reported over time.

In 2004, Max kW was more frequently reported. However, in 2005 and 2006, Sum and Win kW was more frequently reported.

Nonetheless, no matter which metric was the focus in any given year, kW reporting suffers from gaps in the data.

General Data Disclaimer: Detailed data breakouts by the groupings requested does not always tie out to overall data reported in Annual Report filings.

Data for this summary was extracted from the following databases:

2004 - CLC Measure Data 2004 05-06-16.xls

2005 - 2005-measure-data-base-2006-06-14-ann-rpt.xls

2006 - 2006-measure-data-base-2007-06-06.xls

14.2 National Grid 2008 Past Performance Tables

National Grid 2008 Past Performance Table - Lost Opportunity

Lost Opportunity PROGRAMS	PY	Units#	Rebates	kWh Annual Savings	Net Summer kW Savings	Net Winter kW Savings	Program Spending
Compressed Air	2004	108	$ 296,786	1,481,373	287	287	*see footnote 1*
	2005	95	$ 252,654	1,090,227	175	119	*see footnote 1*
	2006	107	$ 255,698	821,840	153	107	*see footnote 1*
Lighting & Controls	2004	20,731	$ 943,808	3,244,184	455	336	*see footnote 1*
	2005	24,670	$ 955,115	5,551,730	748	557	*see footnote 1*
	2006	18,614	$ 662,690	5,278,036	778	518	*see footnote 1*
HVAC - Unitary Pkg'd (Cool Choice)	2004	458	$ 431,880	927,490	474	-	*see footnote 1*
	2005	546	$ 516,870	1,230,652	612	-	*see footnote 1*
	2006	543	$ 451,826	1,015,716	505	-	*see footnote 1*
HVAC -Chillers	2004	5	$ 129,970	344,781	126	-	*see footnote 1*
	2005	5	$ 145,035	391,553	154	-	*see footnote 1*
	2006	4	$ 21,420	26,489	27	-	*see footnote 1*
Premium-Efficiency Motors (MotorUp)	2004	386	$ 44,360	166,106	31	24	*see footnote 1*
	2005	237	$ 26,475	120,204	17	14	*see footnote 1*
	2006	174	$ 26,023	109,873	18	15	*see footnote 1*
Variable Speed Drives	2004	19	$ 38,600	146,185	12	26	*see footnote 1*
	2005	5	$ 7,900	57,148	6	14	*see footnote 1*
	2006	15	$ 19,700	135,783	7	35	*see footnote 1*
Massachusetts Custom Programs - Lighting Measures	2004	4	$ 262,555	660,610	118	54	*see footnote 1*
	2005	6	$ 147,037	433,243	136	49	*see footnote 1*
	2006	7	$ 97,642	335,872	116	125	*see footnote 1*
Massachusetts Custom Programs - Non-Lighting Measures	2004	80	$ 3,083,092	9,622,004	1,611	1,021	*see footnote 1*
	2005	74	$ 3,292,875	8,250,074	1,275	987	*see footnote 1*
	2006	40	$ 1,942,523	6,515,927	1,081	662	*see footnote 1*
Adv. Bldgs & CDA - Lighting Measures	2004	N/A	N/A	N/A	N/A	N/A	N/A
	2005	N/A	N/A	N/A	N/A	N/A	N/A
	2006	N/A	N/A	N/A	N/A	N/A	N/A
Adv. Bldgs & CDA - Non-Lighting Measures	2004	N/A	N/A	N/A	N/A	N/A	N/A
	2005	4	$ 1,001,626	2,698,555	687	186	*see footnote 1*
	2006	5	$ 796,128	2,254,920	627	171	*see footnote 1*
Lost Opportunity[1]	2004						$ 2,551,554
	2005						$ 2,195,761
	2006						$ 2,271,692

National Grid 2008 Past Performance Table - Retrofit

Retrofit PROGRAMS	PY	Units#	Rebates	kWh Annual Savings	Net Summer kW Savings	Net Winter kW Savings	Program Spending
Compressed Air	2004	24	$ 339,933	886,482	170	170	*see footnote 1*
	2005	23	$ 297,140	602,618	110	74	*see footnote 1*
	2006	27	$ 313,278	767,387	110	77	*see footnote 1*
Lighting & Controls	2004	73,180	$ 3,278,822	23,362,817	3,960	2,806	*see footnote 1*
	2005	66,385	$ 3,617,844	28,458,473	3,998	2,922	*see footnote 1*
	2006	118,940	$ 6,464,800	47,290,904	7,449	4,914	*see footnote 1*
HVAC - Unitary Pkg'd	2004	N/A	N/A	N/A	N/A	N/A	N/A
	2005	N/A	N/A	N/A	N/A	N/A	N/A
	2006	N/A	N/A	N/A	N/A	N/A	N/A
HVAC EMS	2004	1,102	$ 118,700	4,400,753	146	189	*see footnote 1*
	2005	1,196	$ 263,161	1,422,497	31	43	*see footnote 1*
	2006	2,150	$ 253,200	1,605,869	160	440	*see footnote 1*
Premium-Efficiency Motors	2004	57	$ 31,280	125,143	19	15	*see footnote 1*
	2005	25	$ 19,860	63,788	9	7	*see footnote 1*
	2006	252	$ 68,580	138,403	23	18	*see footnote 1*
Variable Speed Drives	2004	7	$ 21,550	175,588	12	29	*see footnote 1*
	2005	23	$ 63,213	289,397	60	62	*see footnote 1*
	2006	81	$ 194,100	1,688,185	137	331	*see footnote 1*
Massachusetts Custom Programs - Lighting Measures	2004	59	$ 2,744,174	5,938,063	1,327	828	*see footnote 1*
	2005	25	$ 1,277,994	3,653,596	624	420	*see footnote 1*
	2006	18	$ 487,150	2,493,082	330	399	*see footnote 1*
Massachusetts Custom Programs - Non-Lighting Measures	2004	61	$ 1,441,594	7,839,432	1,348	1,226	*see footnote 1*
	2005	48	$ 1,742,788	10,255,157	1,228	944	*see footnote 1*
	2006	99	$ 1,527,632	11,294,935	1,337	1,443	*see footnote 1*
Retro-Commissioning and O&M	2004	2	$ 6,050	9,494	13	-	*see footnote 1*
	2005	3	$ 26,989	173,529	17	11	*see footnote 1*
	2006	5	$ 11,435	360,877	37	22	*see footnote 1*
Small C&I	2004	881	$ 3,392,104	7,393,064	2,189	1,216	$ 564,781
	2005	642	$ 3,729,238	14,082,282	1,869	1,375	$ 181,670
	2006	1,015	$ 4,461,446	13,574,099	3,213	1,624	$ 1,050,650
Large C&I[1]	2004						2,708,962
	2005						2,438,623
	2006						3,224,298

[1] National Grid tracks non rebate spending by Program.

EEPP:	National Grid
Reference for PY '04:	Units and Savings from Appendix 9, National Grid 2004 Energy Efficiency Annual Report, October 2005. Program Spending from Appendix 3, National Grid 2004 Energy Efficiency Annual Report, October 2005. Rebates from National Grid tracking system.
Reference for PY '05:	Units and Savings from Appendix 9, National Grid 2005 Energy Efficiency Annual Report Revisions, August 2006. Program Spending from Appendix 3, National Grid 2005 Energy Efficiency Annual Report Revisions, August 2006. Rebates from National Grid tracking system.
Reference for PY '06:	Units and Savings from Appendix 8, National Grid 2006 Energy Efficiency Annual Report, August 2007. Program Spending from Appendix 3, National Grid 2006 Energy Efficiency Annual Report, August 2007. Rebates from National Grid tracking system.
Link to Reference:	http://www.nationalgridus.com/non_html/06_ME_EEAR.pdf

14.3 NSTAR 2008 Past Performance Tables

NSTAR 2008 Past Performance Table – Lost Opportunity

Lost Opportunity INSTALLED MEASURES (By DOER End Use)	PY	Units#[1]	Rebates	Gross kWh Annual Savings	Net[2] Summer kW Savings	Net[2] Winter kW Savings	Program Spending
Compressed Air - Prescriptive	2004	-	$0	-	-	-	see footnote 3
	2005	16	$37,111	213,286	63	61	see footnote 3
	2006	35	$88,208	609,008	102	53	see footnote 3
Lighting & Controls - Prescriptive	2004	28,237	$2,000,865	15,976,781	2,251	1,580	see footnote 3
	2005	27,420	$2,261,831	13,029,857	2,616	1,599	see footnote 3
	2006	14,970	$895,394	5,553,266	774	295	see footnote 3
HVAC - Unitary Pkg'd (Cool Choice)	2004	214	$145,243	576,604	402	25	see footnote 3
	2005	32	$20,071	69,444	67	4	see footnote 3
	2006	9	$6,843	21,966	15	0	see footnote 3
HVAC - Prescriptive	2004	1,061	$1,868,388	10,838,796	2,042	136	see footnote 3
	2005	523	$815,731	5,728,838	2,343	190	see footnote 3
	2006	546	$611,333	4,722,122	838	36	see footnote 3
Process - Prescriptive	2004	12	$18,441	67,969	3	7	see footnote 3
	2005	-	$0	-	-	-	see footnote 3
	2006	-	$0	-	-	-	see footnote 3
Premium-Efficiency Motors (MotorUp)	2004	208	$22,318	198,226	29	30	see footnote 3
	2005	94	$11,306	88,095	14	15	see footnote 3
	2006	97	$11,574	95,752	9	6	see footnote 3
Variable Speed Drives/Motors - Prescriptive	2004	7	$10,974	92,852	16	16	see footnote 3
	2005	412	$51,291	372,567	64	67	see footnote 3
	2006	355	$39,737	486,454	37	24	see footnote 3
Refrigeration - Prescriptive	2004 - 2006	-	$0	-	-	-	see footnote 3
Massachusetts Custom Measures - Lighting Measures	2004	-	$43,505	197,775	66	3	see footnote 3
	2005	-	$125,845	570,961	76	66	see footnote 3
	2006	-	$192,187	1,244,815	142	66	see footnote 3
Massachusetts Custom Measures - Non-Lighting Measures (includes Compressed Air, HVAC, Process and Refrigeration)	2004	-	$4,122,795	19,585,521	3,299	2,228	see footnote 3
	2005	-	$2,781,481	11,458,368	2,155	1,467	see footnote 3
	2006	-	$3,804,951	20,792,072	3,081	1,197	see footnote 3
Lost Opportunity [3]	2004	-	$8,232,529	-	-	-	$2,759,058
	2005	-	$6,104,666	-	-	-	$3,482,133
	2006	-	$5,650,226	-	-	-	$3,847,672

NSTAR 2008 Past Performance Table – Retrofit

Retrofit INSTALLED MEASURES (by DOER End Use)	PY	Units#[1]	Rebates	Gross kWh Annual Savings	Net[2] Summer kW Savings	Net[2] Winter kW Savings	Program Spending
Compressed Air - Prescriptive	2004	-	$0	-	-	-	see footnote 3
	2005	-	$0	-	-	-	see footnote 3
	2006	-	$0	-	-	-	see footnote 3
Lighting & Controls - Prescriptive	2004	52,181	$2,406,269	16,665,521	2,301	1,557	see footnote 3
	2005	81,262	$3,455,525	28,204,631	5,138	4,061	see footnote 3
	2006	115,754	$4,279,156	36,484,006	6,722	5,835	see footnote 3
HVAC - Prescriptive	2004	167	$678,571	8,142,482	444	390	see footnote 3
	2005	190	$768,968	8,671,220	386	114	see footnote 3
	2006	322	$1,096,800	11,718,687	577	69	see footnote 3
Process - Prescriptive	2004	2	$7,600	286,574	7	0	see footnote 3
	2005	-	$0	-	-	-	see footnote 3
	2006	-	$0	-	-	-	see footnote 3
Variable Speed Drives/Motors - Prescriptive	2004	-	$0	-	-	-	see footnote 3
	2005	2	$7,000	62,192	4	0	see footnote 3
	2006	-	$0	-	-	-	see footnote 3
Refrigeration - Prescriptive	2004	146	$10,950	233,579	8	21	see footnote 3
	2005	55	$4,125	83,416	4	13	see footnote 3
	2006	47	$3,525	72,200	5	9	see footnote 3
Massachusetts Custom Measures- Lighting Measures	2004	-	$4,743,582	28,577,781	3,758	3,461	see footnote 3
	2005	-	$1,436,674	10,516,803	2,065	2,114	see footnote 3
	2006	-	$1,397,531	11,279,560	1,526	1,754	see footnote 3
Massachusetts Custom Measures- Non-Lighting Measures (includes Compressed Air, HVAC, Process and Refrigeration)	2004	-	$1,906,382	13,963,984	1,077	1,562	see footnote 3
	2005	-	$2,233,746	17,416,023	1,379	2,288	see footnote 3
	2006	-	$1,995,623	19,987,836	2,989	4,452	see footnote 3
Large Retrofit [3]	2004	-	$9,753,354	-	-	-	$3,547,621
	2005	-	$7,906,038	-	-	-	$3,587,143
	2006	-	$8,772,635	-	-	-	$5,209,284
Small C&I Lighting - Prescriptive	2004	138,625	$6,383,452	23,517,777	5,149	3,265	see footnote 3
	2005	129,099	$5,768,530	21,356,283	4,660	2,956	see footnote 3
	2006	128,237	$5,788,981	21,230,144	4,735	2,897	see footnote 3
Small C&I Refrigeration - Prescriptive	2004	204	$577,492	2,474,438	68	188	see footnote 3
	2005	232	$542,745	1,968,914	60	159	see footnote 3
	2006	139	$530,290	2,238,912	58	152	see footnote 3

Retrofit INSTALLED MEASURES (by DOER End Use)	PY	Units#[1]	Rebates	Gross kWh Annual Savings	Net[2] Summer kW Savings	Net[2] Winter kW Savings	Program Spending
Small C&I Other - Prescriptive (includes HVAC and Process related)	**2004**	28	$47,498	143,769	22	6	see footnote 3
	2005	40	$48,669	173,770	32	2	see footnote 3
	2006	77	$19,126	90,369	22	2	see footnote 3
Small Retrofit [3]	**2004**	-	$7,008,442	-	-	-	$3,509,805
	2005	-	$6,359,944	-	-	-	$3,760,220
	2006	-	$6,338,396	-	-	-	$2,677,121

[1] Unit# not applicable of custom projects

[2] Net values incorporate Realization Rates, Free Riders and Spillover

[3] NSTAR tracks spending by Program, not measure. The source for program spending is the applicable NSTAR Electric EE Annual Report, Appendix 3, Table 2 (Reported) minus rebates.

EEPP: NSTAR

Reference for PY '04: NSTAR NEEDS Tracking System - Dataset of Record for 2004 Annual Report

Reference for PY '05: NSTAR NEEDS Tracking System - Dataset of Record for 2005 Annual Report

Reference for PY '06: ETRAC (for Retrofit) and NEEDS (for Small C&I) Tracking System Extracts - Datasets of Record for 2006 Annual Report.

14.4 Unitil/FG&E 2008 Past Performance Tables

Unitil/FG&E 2008 Past Performance Table – Lost Opportunity

Lost Opportunity PROGRAMS	PY	Units# (3)	Rebates	kWh Annual Savings	Net Summer kW Savings	Net Winter kW Savings	Program Spending (1,2)
Compressed Air	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	2.00	$2,985	23664.00	4.08	3.34	$12,837
	2006	0.00	$0	0.00	0.00	0.00	$0
Lighting & Controls	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	1.00	$11,450	130979.00	34.83	28.56	$71,053
	2006	0.00	$0	0.00	0.00	0.00	$0
HVAC - Unitary Pkg'd (Cool Choice)	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	1.00	$1,748	6349.00	2.44	2.00	$3,444
	2006	1.00	$1,266	627.00	0.79	0.65	$0
HVAC -Chillers	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	0.00	$0	0.00	0.00	0.00	$0
	2006	0.00	$0	0.00	0.00	0.00	$0
Premium-Efficiency Motors (MotorUp)	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	0.00	$0	0.00	0.00	0.00	$0
	2006	0.00	$0	0.00	0.00	0.00	$0
Variable Speed Drives	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	0.00	$0	0.00	0.00	0.00	$0
	2006	0.00	$0	0.00	0.00	0.00	$0
Massachusetts Custom Programs - Lighting Measures	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	n/a	n/a	n/a	n/a	n/a	n/a
	2006	n/a	n/a	n/a	n/a	n/a	n/a
Massachusetts Custom Programs - Non-Lighting Measures	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	n/a	n/a	n/a	n/a	n/a	n/a
	2006	n/a	n/a	n/a	n/a	n/a	n/a
Adv. Bldgs & CDA - Lighting Measures	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	n/a	n/a	n/a	n/a	n/a	n/a
	2006	n/a	n/a	n/a	n/a	n/a	n/a
Adv. Bldgs & CDA - Non-Lighting Measures	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	n/a	n/a	n/a	n/a	n/a	n/a
	2006	n/a	n/a	n/a	n/a	n/a	n/a

Unitil/FG&E 2008 Past Performance Table – Retrofit

Retrofit PROGRAMS	PY	Units# (3)	Rebates	kWh Annual Savings	Net Summer kW Savings	Net Winter kW Savings	Program Spending (1,2)
Compressed Air	2004	4	$47,005	172692.00	28.92	23.72	$15,734
	2005	3	$52,800	212560.00	32.41	26.58	$24,497
	2006	1	$20,000	103136.00	14.04	11.51	$7,486
Lighting & Controls	2004	2	$5,544	36595.00	9.37	7.68	$3,334
	2005	3	$94,886	1015940.00	134.65	110.41	$117,083
	2006	7	$136,768	863843.00	133.62	109.57	$62,700
HVAC - Unitary Pkg'd	2004	0	$0	0.00	0.00	0.00	$0
	2005	0	$0	0.00	0.00	0.00	$0
	2006	1	$5,990	43798.00	21.90	17.96	$3,179
Chillers	2004	1	$8,050	55531.00	14.33	17.48	$5,060
	2005	1	$3,200	14824.00	1.79	2.18	$1,708
	2006	0	$0	0.00	0.00	0.00	$0
HVAC EMS	2004	0	$0	0.00	0.00	0.00	$0
	2005	1	$21,363	187340.00	18.80	15.42	$21,590
	2006	0	$0	0.00	0.00	0.00	$0
Premium-Efficiency Motors	2004	1	$60	1753.00	0.29	0.23	$160
	2005	1	$350	6585.00	0.75	0.62	$759
	2006	2	$940	9432.00	2.76	2.26	$685
Variable Speed Drives	2004	3	$73,415	1443825.00	123.77	101.50	$131,550
	2005	0	$0	0.00	0.00	0.00	$0
	2006	0	$0	0.00	0.00	0.00	$0
Massachusetts Custom Programs - Lighting Measures	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	n/a	n/a	n/a	n/a	n/a	n/a
	2006	n/a	n/a	n/a	n/a	n/a	n/a
Massachusetts Custom Programs - Non-Lighting Measures	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	n/a	n/a	n/a	n/a	n/a	n/a
	2006	n/a	n/a	n/a	n/a	n/a	n/a
Retro-Commissioning and O&M	2004	n/a	n/a	n/a	n/a	n/a	n/a
	2005	n/a	n/a	n/a	n/a	n/a	n/a
	2006	n/a	n/a	n/a	n/a	n/a	n/a
Small C&I	2004	23	$192,531	846366.00	259.63	194.71	$104,376
	2005	37	$248,640	917735.60	268.53	201.37	$184,995
	2006	15	$68,204	185483.36	67.27	50.43	$75,192

(1) Program Spending = PP&A + MKTING + STAT + EVAL
(2) General program expenditures are not reported by end-use. Costs have been allocated based on kWh savings.
(3) Reflects number of projects completed.
(4) Provided by D. Jarvis - 10/16/07

EEPP: Fitchburg Gas and Electric Light Company d/b/a Unitil (4)

Reference for PY '04: Internal Tracking System / 2004 Annual Report

Reference for PY '05: Internal Tracking System / 2005 Annual Report

Reference for PY '06: Internal Tracking System / 2006 Annual Report

14.5 WMECo 2008 Past Performance Tables

WMECo 2008 Past Performance Table – Lost Opportunity

Lost Opportunity PROGRAMS	PY	Units#	Rebates	kWh Annual Savings	Net Summer kW Savings	Net Winter kW Savings	Program Spending
Compressed Air	2004	Data is not explicitly available, dollars and saving are included in Custom Projects Non-Lighting Measures below					
	2005						
	2006						
Lighting & Controls	2004	Data is not explicitly available, dollars and saving are included in Custom Projects Lighting Measures below and Retrofit Lighting and Controls					
	2005						
	2006						
HVAC - Unitary Pkg'd (Cool Choice)	2004	19	$47,692	210,212	175	0.00	
	2005	9	$36,796	171,892	105	0.00	
	2006	30	$43,217	174,135	78	0.00	
HVAC -Chillers	2004	Data is not explicitly available, dollars and saving are included in Custom Projects Non-Lighting Measures below					
	2005						
	2006						
Premium-Efficiency Motors (MotorUp)	2004	14	$6,999	59,134	2		
	2005	24	$15,557	128,460	8.6		
	2006	11	$795	5,484	0.81		
Variable Speed Drives	2004	Data is not explicitly available, dollars and saving are included in Custom Projects Non-Lighting Measures below					
	2005						
	2006						
Massachusetts Custom Programs - Lighting Measures *	2004	19	$118,888	1,346,234	80	69.50	$143,115
	2005	11	$70,992	2,228,972	413	358.81	
	2006	10	$64,227	1,430,394	285	254.39	
Massachusetts Custom Programs - Non-Lighting Measures *	2004	13	$360,237	905,091	50	50.20	$433,648
	2005	8	$158,658	314,121	41	16.76	
	2006	10	$522,501	903,889	217	27.74	
Adv. Bldgs & CDA - Lighting Measures	2004	Program not offered by WMECO					
	2005						
	2006						
Adv. Bldgs & CDA - Non-Lighting Measures	2004	Program not offered by WMECO					
	2005						
	2006						

*Lost Opportunity Custom Projects shown above is the MWECO New Construction Program.

WMECo 2008 Past Performance Table – Retrofit

Retrofit PROGRAMS	PY	Units#	Rebates	kWh Annual Savings	Net Summer kW Savings	Net Winter kW Savings	Program Spending
Compressed Air	2004	Data is not explicitly available, dollars and saving are included in Custom Projects Non-Lighting Measures					
	2005						
	2006						
Lighting & Controls	2004	25	$ 34,648	3,420,516	609.55	n/a	
	2005	29	$ 23,373	445,855	121.37	n/a	
	2006	22	$ 58,245	1581607	245	245	
HVAC - Unitary Pkg'd	2004	8	$ 11,365	52,193	38.32		
	2005	11	$ 81,914	25,542	27		
	2006	23	$ 124,492	138,711	58.08	0.00	
HVAC EMS	2004	Data is not explicitly available, dollars and saving are included in Custom Projects Non-Lighting Measures					
	2005						
	2006						
Premium-Efficiency Motors	2004	22	$ 2,735	23,609	4.81		
	2005	29	$ 3,299	35,502	6		
	2006	9	$ 2,970	58420.00	4		
Variable Speed Drives	2004	Data is not explicitly available, dollars and saving are included in Custom Projects Non-Lighting Measures					
	2005						
	2006						
Massachusetts Custom Programs - Lighting Measures **	2004	**20**	$ 163,819	5,781,955	313.20	275.20	
	2005	50	$ 1,505,186	11,279,787	2536.59	2359.78	
	2006	65	$ 3,079,192	16,674,465	2547.83	2483.88	
Massachusetts Custom Programs - Non-Lighting Measures **	2004	**40**	$ 968,799	6,034,568	170.90	174.60	
	2005	60	$ 2,113,388	9,295,156	660.41	370.70	
	2006	58	$ 1,966,379	10,792,556	1392.03	1350.33	
Retro-Commissioning and O&M	2004	0	0	0	0	0	$21,132
	2005	3	$ 21,021	361,123	0.00	0.00	$77,154
	2006	5	$ 78,246	606,249	14.99	0.00	$173,999
Small C&I	2004	113	$ 727,838	4,998,096	985.18	728.15	$906,504
	2005	97	$ 1,019,584	6,645,561	1474.10	1474.10	$1,301,181
	2006	90	$ 791,756	4,269,685	900.09	900.09	$1,001,590

* Custom project listed above include WMECO Custom, RFP Municipal Program totals

EEPP: WMECO

Reference for PY '04: Multiple WMECO Internal Documents

Reference for PY '05: Multiple WMECO Internal Documents

Reference for PY '06: Multiple WMECO Internal Documents

15 Massachusetts Performance Metrics for 2008

- **Cape Light Compact (CLC)** – N/A
- **National Grid** – *see chart on next page for ALL companies*
- **NSTAR Electric (NSTAR)** – *see chart*
- **Fitchburg Gas & Electric Company d/b/a Unitil (Unitil/FG&E)** – N/A
- **Western Massachusetts Electric Company (WMECo)** – *see chart*

2008 Performance Metrics
Commercial & Industrial

Commercial & Industrial

C&I Program/Initiative	Performance Metric Description	Threshold		Design		Exemplary	
		Units	Dollars	Units	Dollars	Units	Dollars
Performance Lighting Information supporting results will be provided to the NUP advisors by April 1, 2009 NGrid, NSTAR, WMECO	15 percent of 2008 new construction and major renovation projects that include lighting projects commit to go through the performance lighting path and achieve a collective average of 30% savings beyond the Mass. energy code in effect on 1/1/08. Projects that qualify under this program must be new construction projects or renovation projects that involve the installation of new fixtures throughout the building or renovated spaces (in greater than 75% of the space). (Incentive results are scalable)	see description	75% of Design Value				
	20 percent of 2008 new construction and major renovation projects that include lighting projects commit to go through the performance lighting path and achieve a collective average of 35% savings beyond the Mass. energy code in effect on 1/1/08. Projects that qualify under this program must be new construction projects or renovation projects that involve the installation of new fixtures throughout the building or renovated spaces (in greater than 75% of the space). (Incentive results are scalable)			see description	To Be Calculated (see Note)		
	25 percent of 2008 new construction and major renovation projects that include lighting projects commit to go through the performance lighting path and achieve a collective average of 40% savings beyond the Mass. energy code in effect on 1/1/08. Projects that qualify under this program must be new construction projects or renovation projects that involve the installation of new fixtures throughout the building or renovated spaces (in greater than 75% of the space). (Incentive results are scalable)					see description	110% of Design Value

C&I Program/Initiative	Performance Metric Description	Threshold		Design		Exemplary	
		Units	Dollars	Units	Dollars	Units	Dollars
Advanced Buildings NGrid, NSTAR, WMECO Information supporting results will be provided to the NUP advisors by April 1, 2009	X non-CDA/non-comprehensive path new construction projects between 10,000 and 100,000 square feet follow the practices established in the Advanced Buildings Core Performance Guide. The metric will be documented through submissions of signed MOUs identifying participation in the Advanced Buildings Core Performance process, commitment to these design and construction standards, and anticipated completion date. (Incentive results are scalable)	NGrid = 6 NSTAR = 6 WMECO = 1	75% of Design Value				
				NGrid = 8 NSTAR = 8 WMECO = 2	To Be Calculated (see Note)		
						NGrid = 10 NSTAR = 10 WMECO = 3	110% of Design Value

Note: Performance incentive dollars are calculated by each individual Program Administrator based on their 2008 C&I budget and the calculation mechanism specified in their Energy Efficiency Plan, Appendix B.

APPENDIX (provided in a separate volume)

The Appendix is provided as a separate volume in Adobe PDF format **"***Appendix: Massachusetts Program Administrators (PA) 2008 C&I Program Planning Manual, April 30, 2008".* The Appendix provides pdf's of EEPP program available on-line applications for 2008 such as outlined below.

Massachusetts EEPPs 2008 Lost Opportunity Program Applications:

- Compressed Air
- Lighting & Controls
- HVAC Systems
- Cool Choice - Unitary Packaged HVAC
- Chillers
- Premium-Efficiency Motors
- Variable Speed Drives
- Massachusetts Custom Programs

EEPP Lost Opportunity Program Names:

- CLC: C&I Lost Opportunity
- National Grid: Design 2000*plus*
- NSTAR: Construction Solutions
- Unitil/FG&E: Large Business Services
- WMECo: Lost Opportunity and Major Renovations Energy Solutions

Massachusetts EEPPs 2008 Retrofit Program Applications:

- Compressed Air
- Lighting & Controls
- HVAC Systems
- Unitary Packaged HVAC
- EMS
- Premium-Efficiency Motors
- Variable Speed Drives
- Massachusetts Custom Programs
- Retro-Commissioning – O&M

EEPP Retrofit Program Names:

- CLC: Medium & Large C&I Retrofit (> 100 kW)
- National Grid: Energy Initiative (> 200 kW)
- NSTAR: Business Solutions (> 200 kW)
- Unitil/FG&E: Large Business Solutions (> 100 kW)
- WMECo: Express Service