Cape Light Compact

Annual Report on Energy Efficiency Activities in 2006

Submitted to the
Massachusetts Department of Public Utilities
and the Massachusetts Division of Energy Resources

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Table of Contents

I. Executive Summary

A. Introduction

Since July 2001, the Cape Light Compact has delivered energy efficiency programs to electric consumers in all member towns on Cape Cod and Martha's Vineyard. This Annual Report provides detailed information on the Compact's energy efficiency activities and savings during the course of calendar year 2006.

In 2006, the Compact implemented the following set of efficiency programs:

- The Residential ENERGY STAR® New Construction Program, which provides home buyers, home builders, and construction trade allies with technical assistance and financial incentives to increase the efficiency of homes that are newly built or undergo major renovations. Results of this program are shown in the Residential Lost Opportunity row of Table 2 and in Section III.
- The Residential MassSAVE Program, which provides all interested residential customers with energy savings education, the opportunity for a home energy audit and financial incentives for numerous electric and non-electric efficiency measures, including financial support to switch electric space heating systems to more efficient systems that use alternative fuels. Results of this program are shown in the Residential Retrofit 1-4 row of Table 2 and in Section III.
- The Residential ENERGY STAR Products and Services Program, which seeks to increase the availability and use of ENERGY STAR qualified lighting and appliances, including: clothes washers, room air conditioners, dehumidifiers and refrigerators. This program is used to implement the Northeast Energy Efficiency Partnership ("NEEP") initiatives and other regional market transformation efforts. Results of this program are divided appropriately between the Residential Lighting and Residential Appliances rows of Table 2 and in Section III.
- Residential High Efficiency Central Air Conditioning Program ("MA COOL SMART" with ENERGY STAR), was introduced in the Spring of 2004, promotes the purchase and installation of ENERGY STAR qualified central air conditioning systems in new construction and market conversion of older heating, ventilation and air conditioning ("HVAC") units. The program also is designed to increase the number of trained technicians in the state and to improve the quality of installations. In March 2006, the Compact closed participation in this standalone program due to budget constraints; however, significant rebate and other program costs and related energy savings are reported in 2006 due to prior commitments. Results of this program are shown in the Residential HVAC row of Table 2 and in Section III.
- The Low-Income Single Family Program, which provides low-income customers in single-family dwellings with assistance in purchasing and installing efficient lighting, appliances, and weatherization measures. These services are similar to,

but more extensive in ability to leverage program benefits and offer higher incentives to eligible customers, than in the MassSAVE program. Results of this program are shown in the Low Income Retrofit 1-4 row of Table 3 and in Section III.

- The Low-Income Multi-Family Program, which provides owners and managers of low-income multi-family dwellings with assistance in purchasing and installing efficient lighting, appliances and space heating measures, similar to those offered under the Low-Income Single Family Program on a facility-wide basis. Results of this program are shown in the Low Income Retrofit Multifamily row of Table 3 and in Section III.
- The Low-Income New Construction Program, which provides low-income housing development agencies, weatherization assistance program ("WAP") providers, and residential construction trade allies with incentives to increase the home energy rating of new low-income housing. Results of this program are shown in the Low Income Lost Opportunity row of Table 3 and in Section III.
- The Commercial and Industrial New Construction Program, which provides technical assistance and financial incentives to increase the efficiency in the construction, renovation, and/or remodeling of all commercial, industrial, government and multi-family housing facilities. Results of this program are included in the C&I Lost Opportunity row of Table 4 and in Section III.
- The Medium and Large Commercial and Industrial Retrofit Program, which provides technical and financial assistance to medium and large commercial and industrial ("C&I") customers seeking to do discretionary replacements of existing operating equipment and processes in their facilities with high-efficiency alternatives. Results of this program are included in the C&I Large Retrofit row of Table 4 and in Section III.
- The Small Commercial and Industrial Retrofit Program, which provides technical assistance, financial incentives and direct installation to small C&I customers to replace existing operating equipment and systems with high-efficiency equipment. Results of this program are included in the C&I Small Retrofit row of Table 4 and in Section III.
- The Government Agencies Program, which provides technical assistance and financial incentives[1] to all government facilities, including municipal, state and federal facilities. For the purposes of reporting the results of this program in this Annual Report, in Table 4 and in Section III, the results of efficiency activities with small government customers are included in the C&I Small Retrofit row, while the results of efficiency activities with large government customers are included in the C&I Large Retrofit row. The results of government new construction activities are included in the C&I Lost Opportunity row.

[1] Unlike the Compact's other C&I Programs, where a customer co-pay is required, the Government program covers the entire cost of energy efficiency services resulting from an audit up to a cap of $75,000 per project.

- The Commercial and Industrial Products and Services Program, which seeks to increase the availability and use of more efficient motors, lighting designs, and HVAC systems. This program is used to implement NEEP and other regional market transformation initiatives. The results of this program are included in the C&I Lost Opportunity row of Table 4 and in Section III.

B. Report Organization

This Executive Summary provides an overview of the Compact's energy efficiency programs' (referred to as BCR Activities) benefits and costs. For each sector there are tables summarizing the lifetime energy savings, lifetime capacity savings, the non-energy benefits ("NEBs"), the dollar values of the total benefits[2] and the total costs.

The savings data are presented in terms of both "preliminary" and "evaluated" data.

- The preliminary data refers to savings estimates that are based on the evaluation impact factors that were used in the 2005 – 2007 Energy Efficiency Plan ("EEP"). Using this data allows for a direct comparison with the estimated savings from the EEP.
- The evaluated data refers to savings results that are based on evaluation impact factors from all of the program evaluations that have been prepared since the EEP was filed. Thus, the evaluated data presents our best estimate of the efficiency savings, based on all the evaluation information available at this time. Appendix 2 presents the impact factors that were used to prepare the evaluated results.

Section II of this Annual Report provides a discussion of the methodology that is used for program monitoring and evaluation. It presents a brief summary of the types of evaluations that are used, and a description of the methodology for estimated net energy savings. It also includes a list of the evaluation studies that were used to prepare the 2006 evaluated efficiency savings results. These evaluation studies are also used to inform program design and delivery.

Section III of this Annual Report provides more detailed results of the program activities. The tables in this section include information regarding the number of program participants, the annual efficiency savings and non-electric benefits, the benefit-cost ratio of the program, and the savings impacts by type of end-use (lighting, HVAC, motors, refrigeration, hot water, and end-user behavior). This section also summarizes recent evaluation report findings where relevant. Finally, the appendices provide more detail regarding the monitoring and evaluation results and the program savings. Of particular interest in this Annual Report, Appendix 3 provides greater detail of program budgets (by category) and savings (by type).

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[2] The Compact is submitting, consistent with other Program Administrators practice and statewide guidance from the Department of Energy Resources, its benefit-cost ratios for its 2006 energy efficiency programs with the additional capacity benefit in the form of a demand reduction induced price effect ("DRIPE"). The Compact notes that the BCRs prior to incorporating DRIPE would all be cost-effective with a value greater than one.

C. Summary of Results

Table 1a provides a summary of the program expenses and savings. It also presents the percent change between the final evaluated results and (a) the preliminary evaluated results, and (b) the estimates of expenses and savings targets in the Compact's EEP. The values in the "Amount" column are the 2006 results, based on all evaluations available at this time.

TABLE 1a - w/ DRIPE SAVINGS AND EXPENSES FOR 2006				
Measurement	Amount	Units	Percent Change Comparison	
			Preliminary	Filed Target
Prorgram Implementation Expenses	$5	$ - Millions	0%	6%
Total Expenses	$6	$ - Millions	0%	-22%
Annual Energy Savings	17	GWh	-1%	40%
Annual Summer Demand Savings	3.49	MW	-1%	52%
Annual Winter Demand Savings	4.23	MW	-1%	42%
Lifetime Energy Savings	213	GWh	-1%	50%
Lifetime Demand Savings	44.95	MW-Years	-1%	56%
Total Resource Cost Test	5.82	Benefit / Cost	-1%	41%
Performance Incentive - After Taxes	$0.00	$ - Millions	0%	0%

Program implementation expenses include all of the costs incurred by the Compact, except for monitoring and verification costs. Total expenses include program implementation costs, monitoring and verification costs, and customer contributions.

The Compact's 2006 program implementation expenses were roughly 6% higher than the 2006 budgets in the EEP. This was due primarily to lower administrative costs allowing for greater funding of energy efficiency measures.

The 2006 program results include the use of supplemental funding of approximately $65,000 made available to support energy efficiency activities from Barnstable County appropriations and the Compact's competitive power supplier, ConEdison *Solutions*.

The annual energy savings achieved in 2006 were roughly 40% higher than those estimated in the 2006 EEP. This difference is primarily due to relatively high savings in the Residential Lighting and Appliances, Residential MassSAVE, and the C&I Large Retrofit Programs.

The demand savings achieved in 2006 were significantly higher than those estimated in the 2006 EEP. This increase is primarily because the 2006 actual results are based on (a) much better data regarding demand savings, and (b) better coincidence factors used to estimate summer and winter demand from total maximum demand.

The benefit-cost ratio of the 2006 programs in total was 5.82, a marked increase over the 2005 program benefit-cost ratio of 2.36. This indicates that the Compact's programs in total are highly cost-effective, where every $1.00 spent reduces the net cost of electricity by $5.82.

All of the evaluated savings results are slightly lower than the preliminary savings results. This is primarily because most of the updates to impact factors used in creating the evaluated results (i.e., free-ridership and realization rates) reduced the energy savings estimates. The difference between evaluated and preliminary lifetime energy and

demand savings is also partly due to using improved measure life assumptions for the evaluated results.

Table 1b, Savings and Expenses for 2006 without DRIPE, is included for reference purposes only.

TABLE 1b - w/o DRIPE				
SAVINGS AND EXPENSES FOR 2006				
Measurement	Amount	Units	Percent Change Comparison	
			Preliminary	Filed Target
Prorgram Implementation Expenses	$5	$ - Millions	0%	NA
Total Expenses	$6	$ - Millions	0%	NA
Annual Energy Savings	17	GWh	-1%	NA
Annual Summer Demand Savings	3.49	MW	-1%	NA
Annual Winter Demand Savings	4.23	MW	-1%	NA
Lifetime Energy Savings	213	GWh	-1%	NA
Lifetime Demand Savings	44.95	MW-Years	-1%	NA
Total Resource Cost Test	3.78	Benefit / Cost	-1%	NA
Performance Incentive - After Taxes	$0.00	$ - Millions	0%	NA

D. Summary of Results by Sector

1. Residential Programs

Table 2 presents the lifetime energy savings, lifetime capacity savings, and lifetime non-electric benefits for each of the residential programs. It also presents the total cumulative benefits and costs, in 2006 present value dollars. These total benefits and costs are used to determine whether each program is cost-effective, based on the total resource cost (TRC) test.

TABLE 2
SUMMARY OF RESIDENTIAL BCR ACTIVITIES

Benefit-Cost Ratio Activity	Lifetime MWH		Lifetime kW		Lifetime $ NEB		TRC Values	
	Preliminary	Report	Preliminary	Report	Preliminary	Report	$-Benefits	$-Costs
A02a Residential Lost Opportunity	2,051	2,051	527	527	$410,237	$410,237	$766,821	$217,018
A02b Residential HVAC	1,952	1,952	3,123	3,123	$0	$0	$1,668,968	$123,381
A03a Residential Retrofit 1-4	43,824	43,824	1,066	1,066	$538,971	$538,971	$3,621,778	$1,289,735
A03b Residential Retrofit Multifamily	NA	NA	NA	NA	NA	NA	NA	NA
A03c Residential Load Response	NA	NA	NA	NA	NA	NA	NA	NA
A04a Residential Lighting	17,790	17,790	1,066	1,066	$150,577	$150,577	$1,968,503	$257,823
A04b Residential Appliances	6,201	6,201	2,816	2,816	$2,962,155	$2,962,155	$4,756,867	$443,735
Total	71,818	71,818	8,598	8,598	$4,061,940	$4,061,940	$12,782,937	$2,331,692

Figures 1 through 4 present the same information as Table 2. They indicate that most of the residential energy savings are obtained from the Residential Retrofit 1-4 and Residential Lighting programs; that most of the capacity savings come from the Residential Appliance and Residential HVAC programs; that most of the non-electric benefits come from the Residential Appliances program, primarily from clothes washer benefits; and that all residential programs are cost effective.

FIGURE 1
RESIDENTIAL LIFETIME MWH

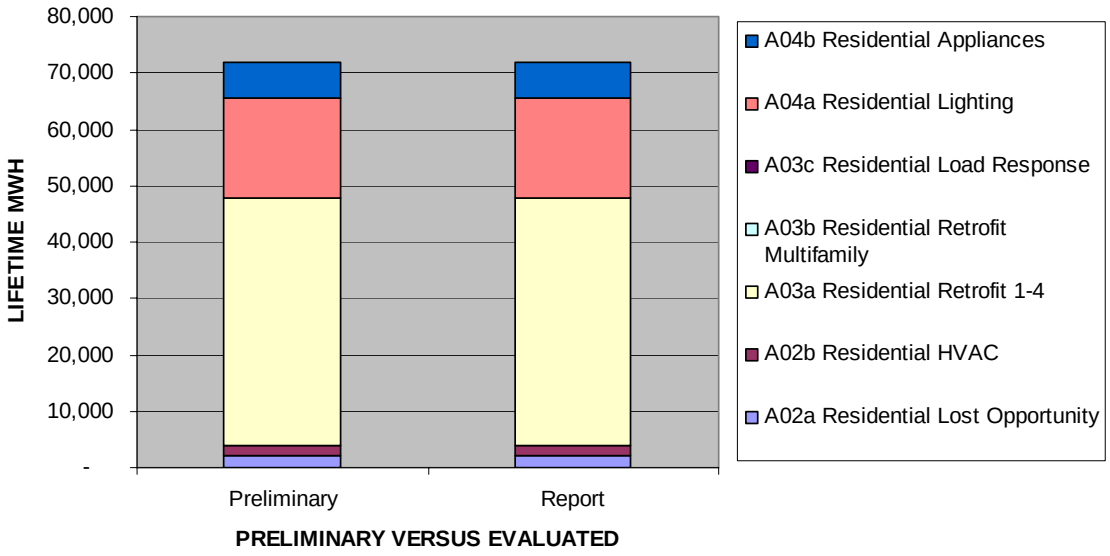


FIGURE 2
RESIDENTIAL LIFETIME kW

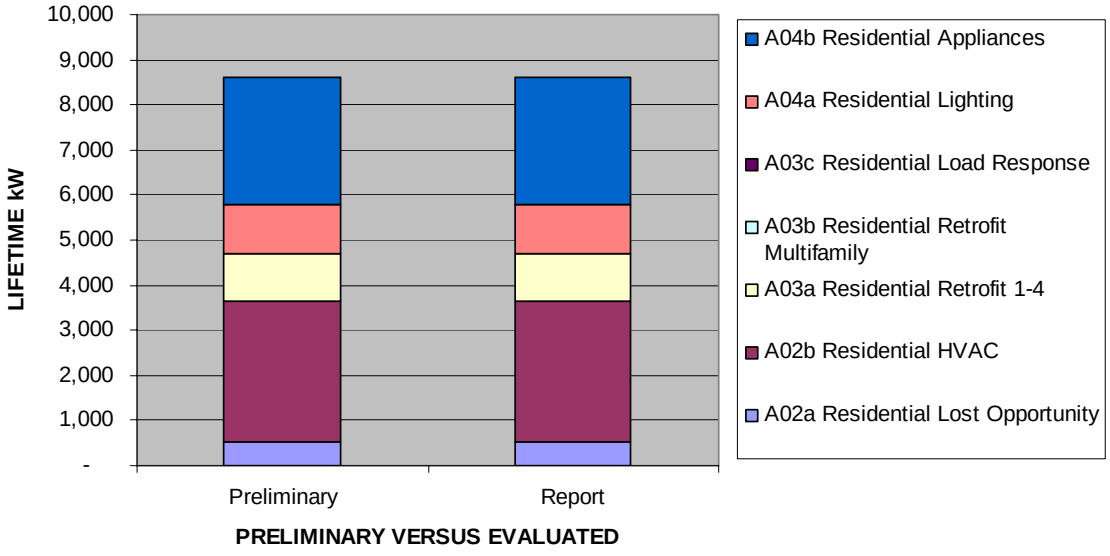


FIGURE 3
RESIDENTIAL LIFETIME $ NEB

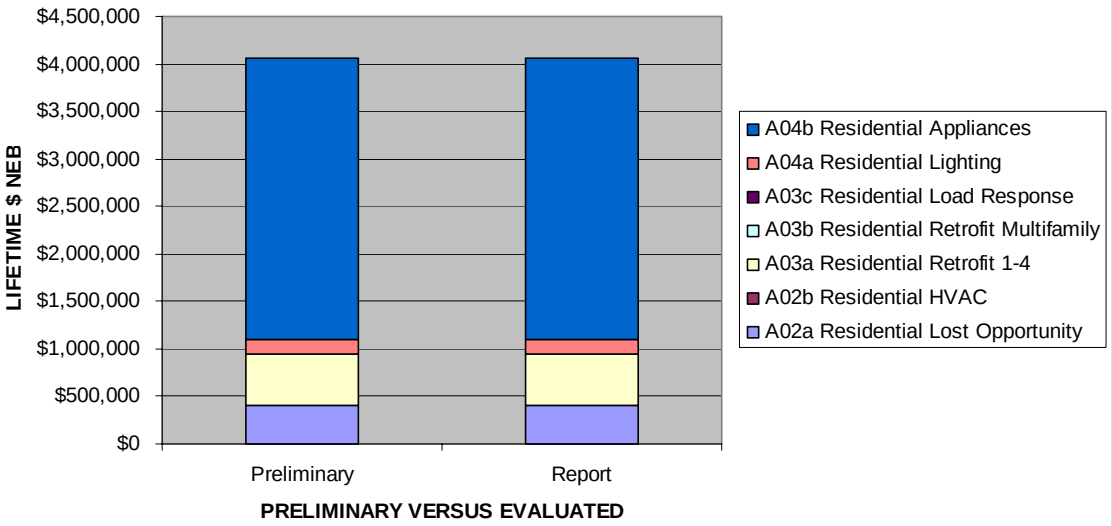
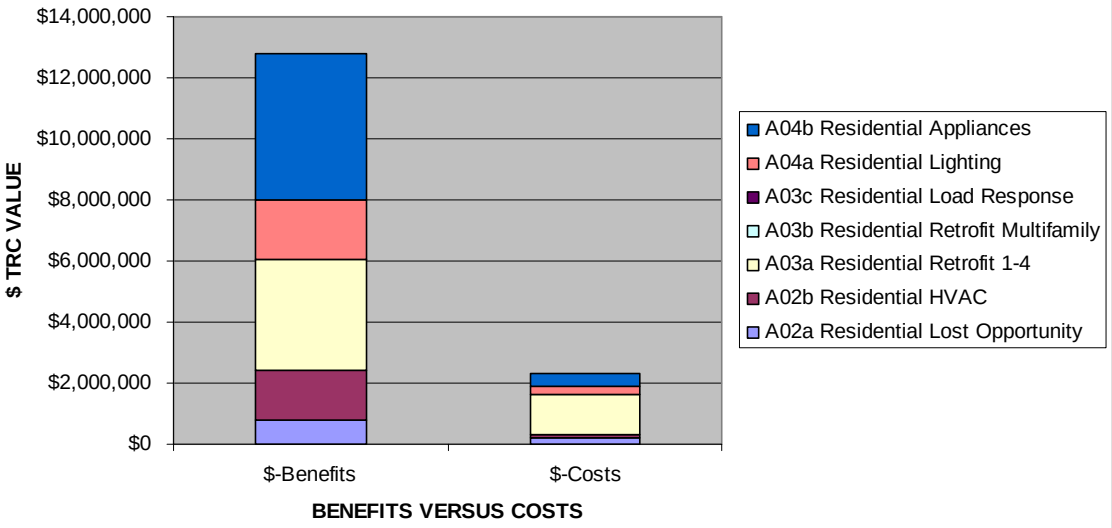


FIGURE 4
RESIDENTIAL TRC VALUES



2. Low-Income Programs

Table 3 presents the lifetime energy savings, lifetime capacity savings, and lifetime non-electric benefits for each of the low-income programs. It also presents the total cumulative benefits and costs, in 2006 present value dollars. These total benefits and costs are used to determine whether each program is cost-effective, based on the total resource cost test.

TABLE 3
SUMMARY OF LOW-INCOME BCR ACTIVITIES

Benefit-Cost Ratio	Lifetime MWH		Lifetime kW		Lifetime $ NEB		TRC Values	
Activity	Preliminary	Report	Preliminary	Report	Preliminary	Report	$-Benefits	$-Costs
B02a Low-Income Lost Opportunity	2,129	2,129	53	53	$184,116	$184,116	$333,485	$214,864
B03a Low-Income Retrofit 1-4	2,153	2,153	219	219	$280,706	$280,706	$506,540	$247,955
B03b Low-Income Retrofit Multifamily	1,871	1,871	60	60	$1,644,599	$1,644,599	$1,787,136	$203,292
Total	**6,153**	**6,153**	**332**	**332**	**$2,109,421**	**$2,109,421**	**$2,627,161**	**$666,112**

Figures 5 through 8 present the same information graphically as listed in Table 3. They indicate that all of the programs are cost-effective. Most of the low-income energy and capacity savings are obtained from the Low Income Lost Opportunity and Retrofit 1-4 programs. Most NEB savings are obtained from the Low Income Retrofit Multifamily programs, for which NEB impacts, including fossil fuel savings, were added in 2006.

FIGURE 5
LOW-INCOME LIFETIME MWH

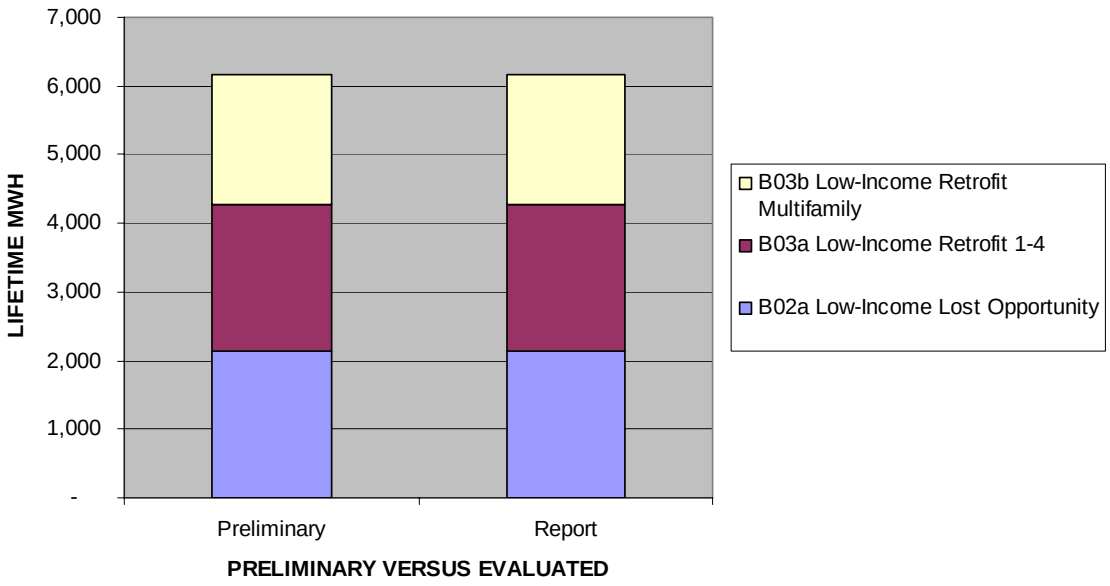


FIGURE 6
LOW-INCOME LIFETIME kW

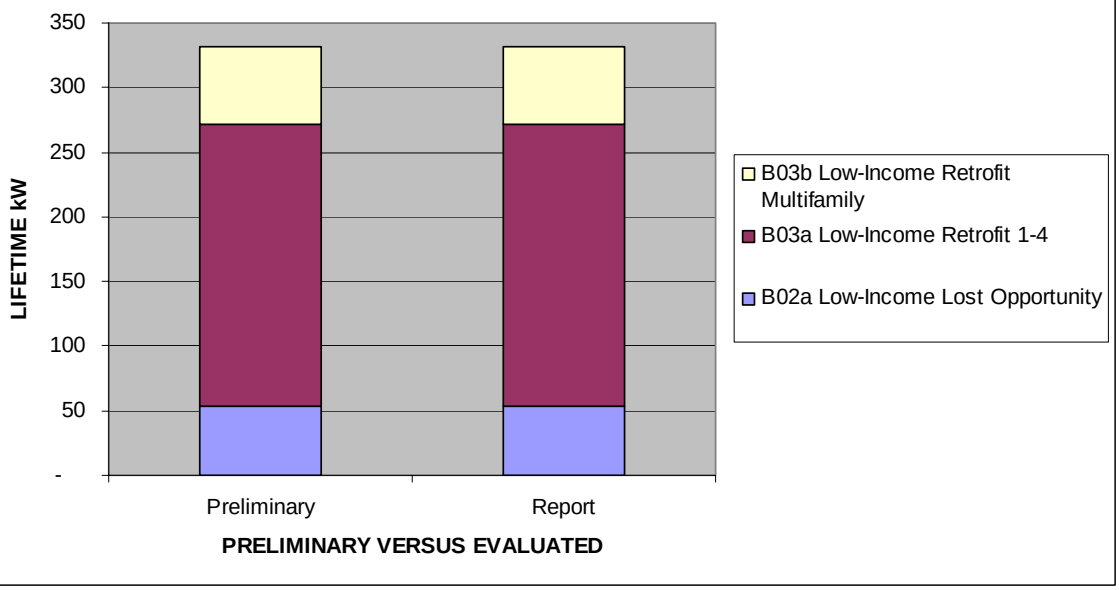


FIGURE 7
LOW-INCOME LIFETIME $ NEB

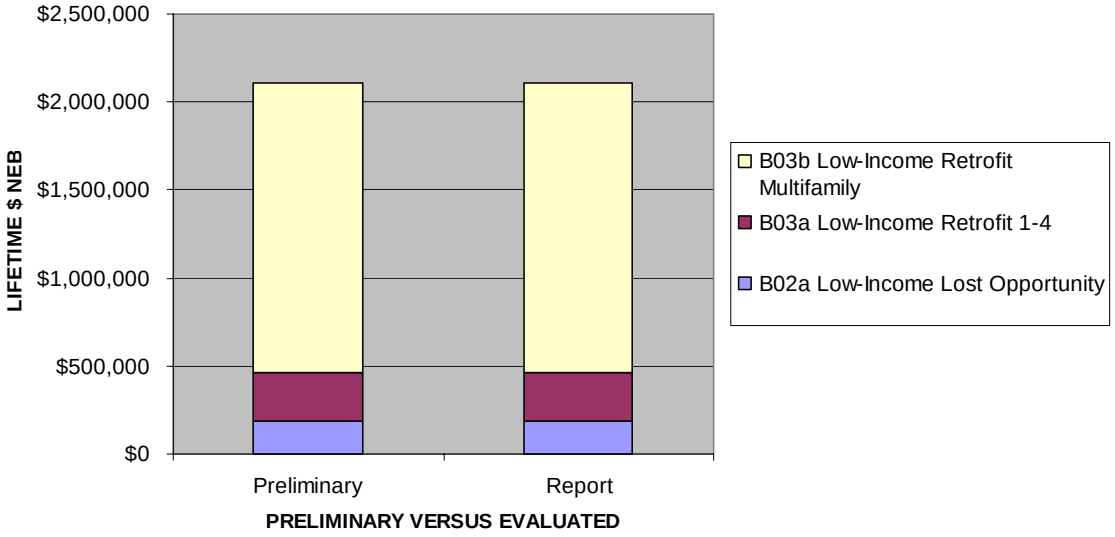
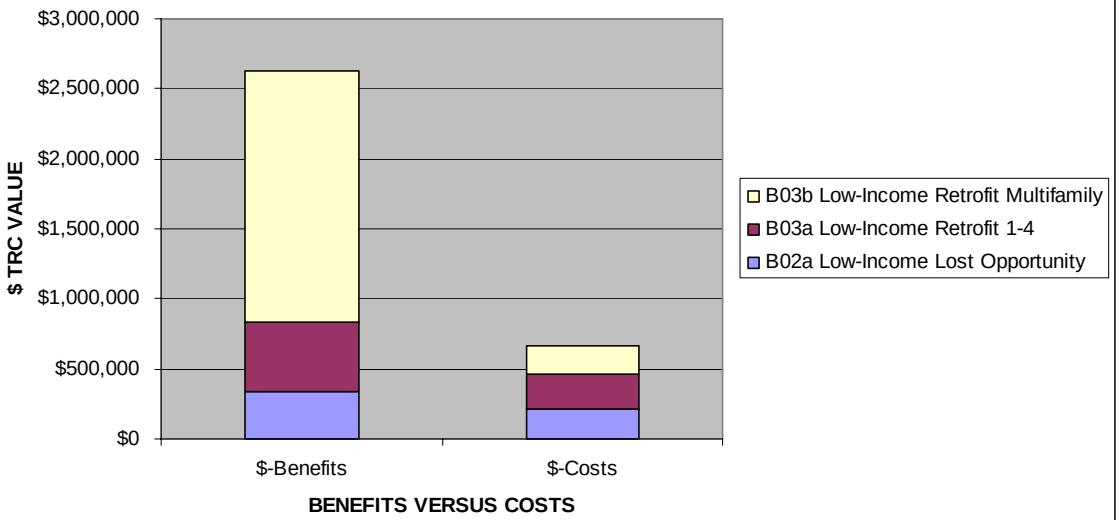


FIGURE 8
LOW-INCOME TRC VALUES



3. Commercial & Industrial Programs

Table 4 presents the lifetime energy savings, lifetime capacity savings, and lifetime non-electric benefits for each of the Commercial & Industrial programs. It also presents the total cumulative benefits and costs, in 2006 present value dollars. These total benefits and costs are used to determine whether each program is cost-effective, based on the total resource cost test.

TABLE 4
SUMMARY OF C&I BCR ACTIVITIES

Benefit-Cost Ratio Activity	Lifetime MWH		Lifetime kW		Lifetime $ NEB		TRC Values	
	Preliminary	Report	Preliminary	Report	Preliminary	Report	$-Benefits	$-Costs
C02a C&I Lost Opportunity	7,313	7,313	2,026	2,026	$11	$11	$1,331,335	$340,675
C03a Large C&I Retrofit	88,736	87,808	25,757	25,504	$640	$635	$16,859,931	$1,560,390
C03b Small C&I Retrofit	40,658	39,718	8,703	8,486	$10,918	$10,301	$6,172,596	$1,936,191
Total	**136,706**	**134,839**	**36,486**	**36,016**	**$11,569**	**$10,947**	**$24,363,862**	**$3,837,256**

Figures 9 through 12 present the same information as Table 4. They indicate that most of the Compact's C&I savings are obtained from the two Retrofit programs.

FIGURE 9
C&I LIFETIME MWH

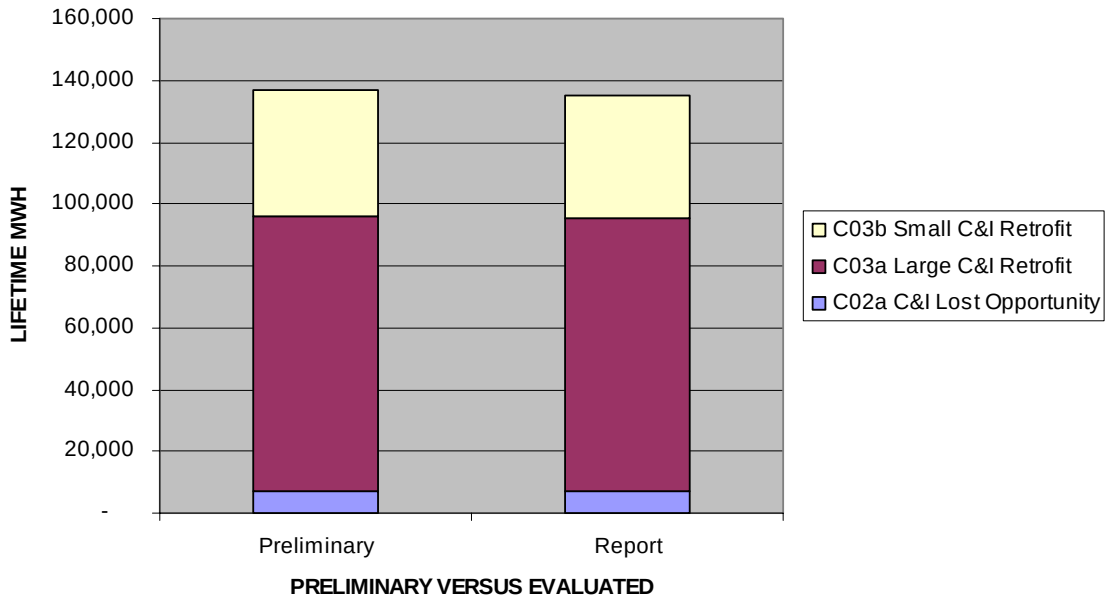


FIGURE 10
C&I LIFETIME kW

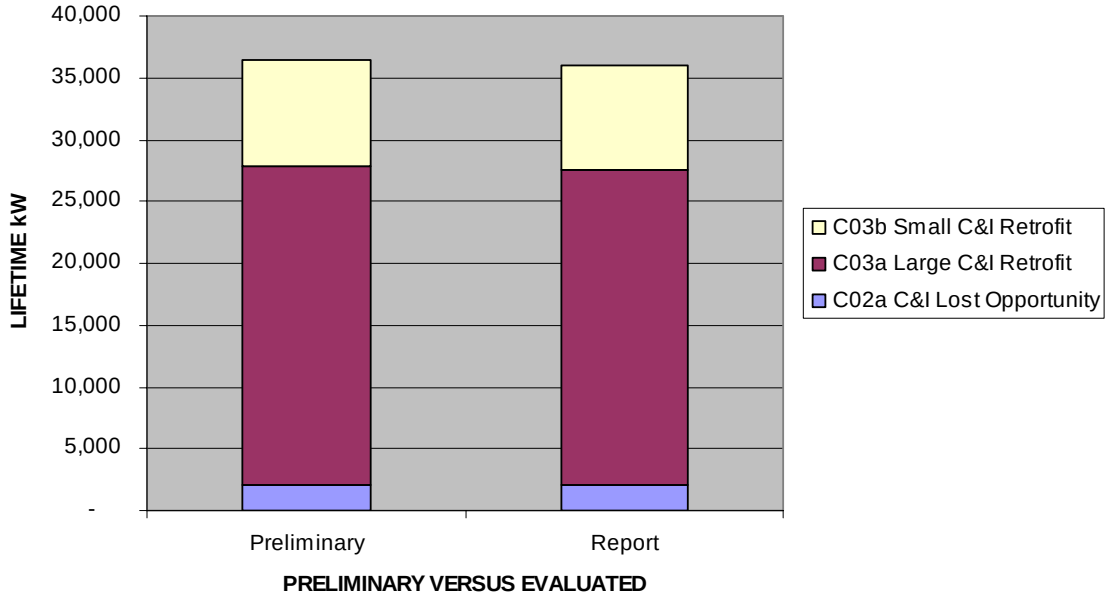


FIGURE 11
C&I LIFETIME $ NEB

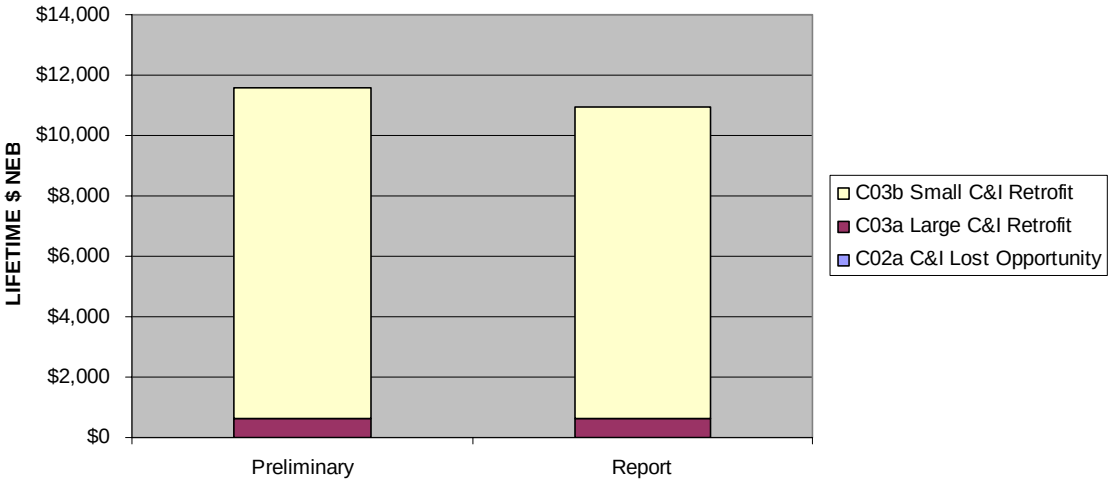
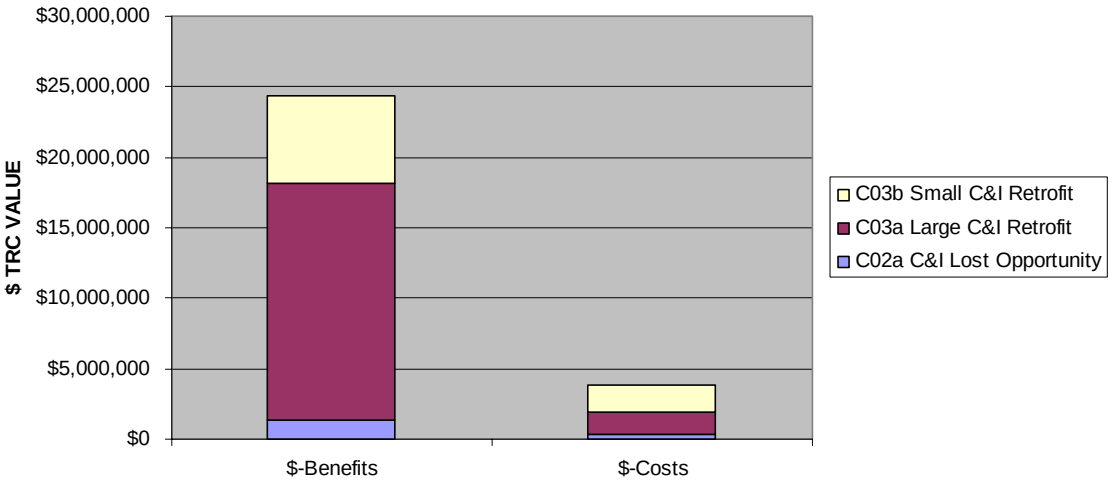


FIGURE 12
C&I TRC VALUES



II. Overview of Evaluation Methodology

Preliminary Versus Evaluated Results

As noted above, the savings data in this report are presented in terms of both "preliminary" and "evaluated" data.

- The preliminary data refers to savings estimates that are based on the evaluation impact factors that were used in the 2006 Energy Efficiency Plan.[3] Using this data allows for a direct comparison with the estimated savings from the 2006 EEP.
- The evaluated data refers to savings results that are based on evaluation impact factors from all of the program evaluations that have been prepared since the 2006 EEP was filed. Thus, the evaluated data presents our best estimate of the efficiency savings, based on all the evaluation information available at this time. Appendix 2 presents the impact factors that were used to prepare the evaluated results.

Evaluation Studies Used in Preparing 2006 Evaluated Results

Since its inception in July 2001, the Compact has participated in many state-wide and regional monitoring and evaluation studies, along with other energy efficiency Program Administrators. The Compact has also conducted several evaluation studies specific to its own programs.

The evaluation studies completed in 2006 or near completion and used to update impact factors or to inform the process of program delivery are listed below. In 2005 many program impact parameters were updated based on evaluation studies. By comparison, in 2006, the majority of studies focused on process evaluation. It is common for energy efficiency program evaluators to update parameters on a multi-year cycle, unless significant program changes warrant more frequent study. The executive summaries of these reports are included in Appendix 5.

- *The Cape Light Compact Small Government Retrofit Program – Evaluation Report - Final*, by PA Consulting Group, May 31, 2007[4].
- *Evaluation of the Massachusetts ENERGY STAR® Homes Program: Findings and Analysis*, by NMR and Dorothy Conant, May 2007.
- *MEMORANDUM RE: Results of the Appliance Model Availability Analysis*, from: Lynn Hoefgen and Tim Pettit, Nexus Market Research, April 20, 2007

[3] The primary evaluation impact factors that are relevant here are free-ridership rates, spillover rates, realization rates, persistence rates, and measure lives.

[4] Results of this report were used in updating the estimate of government lighting free-ridership, spillover, and in-service rates for the Compact.

- *MEMORANDUM RE: Final Evaluation of 2006 HEAT Loan Program*, from: Dorothy Conant, Consultant and Tom Ledyard, RLW Analytics, January 15, 2007

- *2006 Massachusetts and Rhode Island CoolSmart Evaluation Report*, by Wirtshafter Associates, Inc., Kreitler Research and Consulting, Performance Systems Development, Inc. and International Communications Research, Inc., April 17, 2007

In addition, some program evaluation studies are currently in development. Final reports from the following studies are expected in summer 2007. These draft materials have also been included in Appendix 5.

- *MEMORANDUM Re: Memorandum on Energy-efficient Room Air Conditioner Promotion Effectiveness*, From: Betty Tolkin, Tom Mauldin, and Lynn Hoefgen, NMR, June 4, 2007

- *MEMORANDUM RE: Estimates of Net Impact of the 2006 Massachusetts ENERGY STAR Appliances Program, Clothes Washer component*, FROM: Lynn Hoefgen, Lisa Wilson-Wright, Thomas Mauldin, and Tim Pettit, NMR, June 25, 2007

- *Market Progress and Evaluation Report (MPER) For the 2006 Massachusetts ENERGY STAR® Lighting Program DRAFT* by: Nexus Market Research, Inc., RLW Analytics, Inc., Shel Feldman Management Consulting and Dorothy Conant, June 22, 2007

Types of Evaluations

The evaluation of 2006 energy efficiency program impacts reflects the Compact's efforts to apply appropriate methodologies and adjust them for individual program characteristics. The diverse nature of the programs, including the magnitude of preliminary kW and kWh impacts, the number of customers served, and the end uses affected, calls for the adoption of different evaluation approaches. Evaluations of some programs use several methodologies to develop overall impact results and provide meaningful feedback on program delivery and direction. Some of these methodologies are briefly described below.

Survey-Based Impact Parameter Studies. Survey-based impact parameter studies focus on the analysis of information collected through customer surveys. They are generally used to measure free-ridership and spillover. These studies provide timely feedback to program managers as well as input to the impact evaluations.

- In 2006, the Cape Light Compact commissioned a survey- based and field verification study to assess impacts from its Small Government Retrofit Program. The results of the study are included in Appendix 5

Billing Analyses. Billing analyses involve the analysis of billing data, combined in some cases with survey data, to determine impacts for programs where a large number of participants install similar measures. Since billing data are available for all customers, billing analysis techniques may include representative samples of both participants and non-participants in an evaluation.

Site Specific Measurement Analysis. Impact evaluations for many of the end uses and programs covered in this report rely on engineering estimates that are based on site-specific metering and on-site telephone assessments of measure performance and persistence.

Process and Market Progress Evaluation Studies. Process evaluations review energy efficiency program design and implementation, and recommend modifications to program delivery. The scope of these evaluations includes all aspects of the program including administrative efficiency, the quality of service provided, and the databases used for program tracking and reporting. Process evaluations assess the early stages of energy efficiency programs. They specifically provide an assessment of (a) whether actual operations resemble the intended program design and operation plan, and (b) whether real-world experience shows that the original program design and implementation plan are appropriate given the existing field conditions.

Appendix 5 includes summaries of several studies that characterize current market conditions or report on market progress and aid in informing implementation of market-oriented energy efficiency programs implemented by the Compact, such as the residential new construction program, residential lighting, appliance, and HVAC programs.

Economic Modeling and Analysis Studies. The benefits and cost-effectiveness of energy efficiency programs are based on modeling and analysis that values energy efficiency in relation to the avoided costs of energy supply projected over the life of the programs and measures installed. Avoided costs are typically projected based on forecasting models.

The cost-effectiveness results presented in this report – both preliminary and evaluated – are all based on the avoided cost estimates that were used in preparing the 2006 EEP. This approach allows for a more direct comparison of the economic results between the 2006 EEP and the 2006 Annual Report. The avoided cost estimates used for both of these studies are taken from the following report: ICF Consulting, *Avoided Energy Supply Costs in New England*, prepared for the Avoided Energy Supply Component (AESC) Study Group, December 23, 2005.

Generic Impact Equations

The general form of the impact equation for most of the measures installed is:

Net Impacts = Gross Impacts * Realization Rate*(1-Free-Ridership + Spillover) * Persistence Factor.

Realization Rates are study- specific parameters, which typically compare the energy or demand performance of installed equipment to initial estimates of performance. They are typically based on engineering or billing analysis.

Free-ridership includes both partial and pure free-ridership, where such information is available, as required by D.T.E 98-100.

Free-ridership, spillover rates and in-service rates for lighting measures in the Compact's Government Retrofit Program were determined as part of the study conducted by the Compact and summarized in Appendix 5. Unlike its other Commercial and Industrial programs, the Compact covers total project costs up to $75,000 per project per year. The study was commissioned in order to assess energy savings from this program. The impacts were assessed through a survey of a sample of program participants. The number of survey completions for non-lighting measures was very low because these measures, such as custom, variable speed drives and refrigeration, had relatively few installations in 2004-2005. Thus, although a high percentage of the program customers were sampled, the results for non-lighting measures were used to verify savings estimates rather than to update impact parameters.

In energy efficiency programs, spillover may occur among both participants and non-participants. Both participant and non-participant spillover were used in the calculation of savings for these programs, consistent with D.T.E. 98-100. The non-participant spillover impact used in this report is based on the combined results of National Grid and Compact surveys.

Persistence indicates the continued presence of savings over time as indicated by follow-up surveys that confirm the measure remains installed, and verify it is operating as intended. As defined by the 2005 Measure Life Study[5], "Savings persistence is the percent change in expected savings due to changed operating hours, changed process operation, and/or degradation in equipment efficiency relative to the baseline efficiency option".

Measure lives are applied to net annual kW and kWh to calculate lifetime kW and kWh. As defined by the 2005 Measure Life Study, measure life is

> "The median number of years that a measure is installed and operational. This definition implicitly includes equipment life and measure persistence, but not savings persistence….In addition, this definition conforms in letter or in spirit with the definition of measure life used by most national utilities."

Performance Metrics

As a not-for-profit inter-governmental organization, the Compact does not require shareholder performance incentives, and thus does not need to monitor or track any form of performance metrics.

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[5] *Measure Life Study Report* prepared for the Massachusetts Joint Utilities by Energy Resource Solutions (ers), October 10, 2005.

III. Impacts by BCR Activity

A. Residential

1. By BCR Activity

Table 5 presents a summary of the number of customers served, the annual savings, the lifetime savings, and the costs incurred for the residential programs. It also presents the benefit-cost ratio, based on the total resource cost test. The costs and benefits used to derive this ratio are the same as those presented in Table 2. Because residential impact factors were not updated, there are no differences between preliminary and reported results. Please note that some updates to the clothes washer impacts (Appliances Program) are pending finalized evaluation results.

The HVAC, Lighting and Appliances Programs are particularly cost-effective. The Residential Lost Opportunity Program cost-effectiveness is much improved over prior years due to the introduction of more options for participation. This program is important because of the long-term lost opportunities that it addresses. The Residential Retrofit 1-4 (MassSAVE) program cost-effectiveness is also higher than prior years.

TABLE 5
IMPACT BY RESIDENTIAL BCR ACTIVITIES

Benefit-Cost Ratio / Activity	Participant	Annual				Lifetime			Cost		Benefit-Cost
		kWh	kWh per Cust	kW	$-NEB	MWH	kW	$-NEB	Activity	per Cust	TRC
A02a Residential Lost Opportunity	122	179,450	1,471	26.94	$17,351	2,051	527	$410,237	$217,018	$1,779	3.53
A02b Residential HVAC	170	130,130	765	208.21	$0	1,952	3,123	$0	$123,381	$726	13.53
A03a Residential Retrofit 1-4	1,999	3,037,000	1,519	79.16	$33,105	43,824	1,066	$538,971	$1,289,735	$645	2.81
A03b Residential Retrofit Multifamily	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
A03c Residential Load Response	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
A04a Residential Lighting	3,234	2,903,260	898	174.00	$24,873	17,790	1,066	$150,577	$257,823	$80	7.64
A04b Residential Appliances	2,974	486,850	164	254.03	$247,482	6,201	2,816	$2,962,155	$443,735	$149	10.72
Total	8,499	6,736,690	793	742.34	$322,811	71,818	8,598	$4,061,940	$2,331,692	$274	5.48

2. By End Uses

Table 6 presents a summary of the lifetime energy savings, capacity savings, and non-electric benefits, by the different end-uses addressed in the residential programs. Lighting and HVAC provide the majority of energy savings from the residential programs.

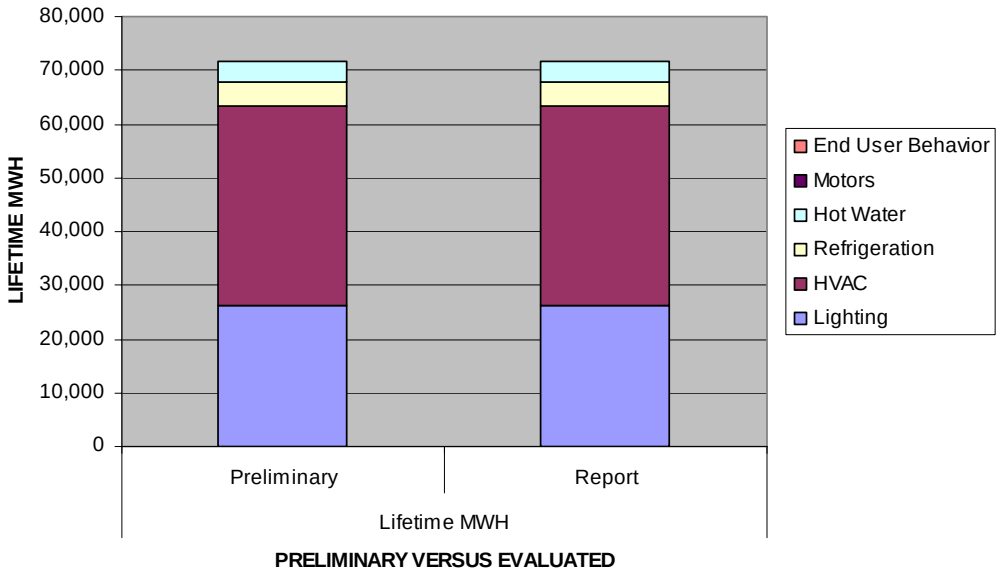
TABLE 6
IMPACT BY RESIDENTIAL END-USES

End Use	Lifetime MWH		Lifetime kW		Lifetime $ NEB	
	Preliminary	Report	Preliminary	Report	Preliminary	Report
Lighting	26,248	26,248	1,573	1,573	$193,808	$193,808
HVAC	37,137	37,137	3,914	3,914	$1,395,956	$1,395,956
Refrigeration	4,512	4,512	618	618	$0	$0
Hot Water	3,922	3,922	2,493	2,493	$2,472,176	$2,472,176
Motors	0	0	0	0	$0	$0
End User Behavior	NA	NA	NA	NA	NA	NA
Total	**71,818**	**71,818**	**8,598**	**8,598**	**$4,061,940**	**$4,061,940**

Figures 13 through 15 present the same information as Table 6.

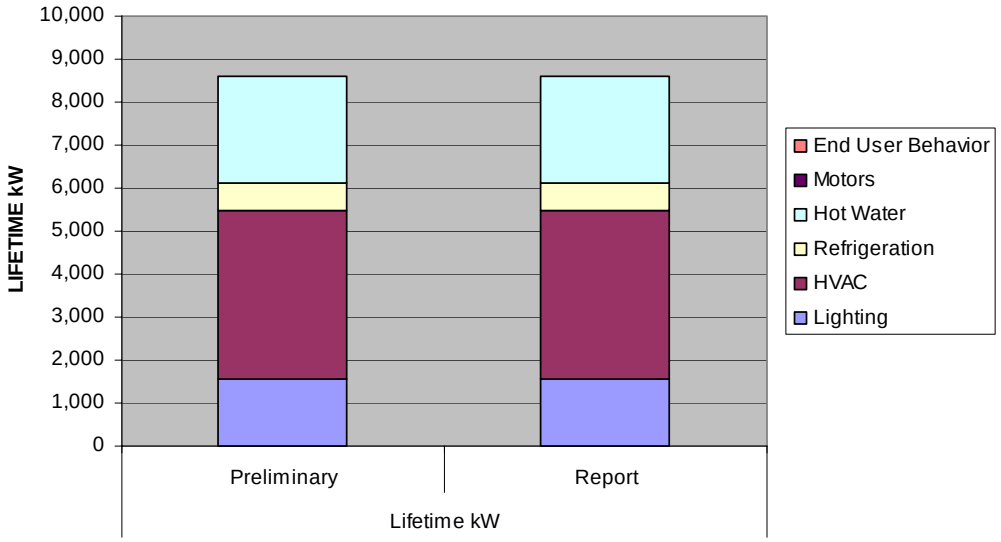
The residential demand savings come primarily from HVAC and hot water. Lighting savings make up a relatively small portion of the demand savings, because only a small portion of the lighting measures are assumed to be operational during the peak demand period. Many of the residential non-electric benefits are from hot water savings, as a result of the saved water from ENERGY STAR qualified clothes washers.

FIGURE 13
RESIDENTIAL LIFETIME MWH - END-USE



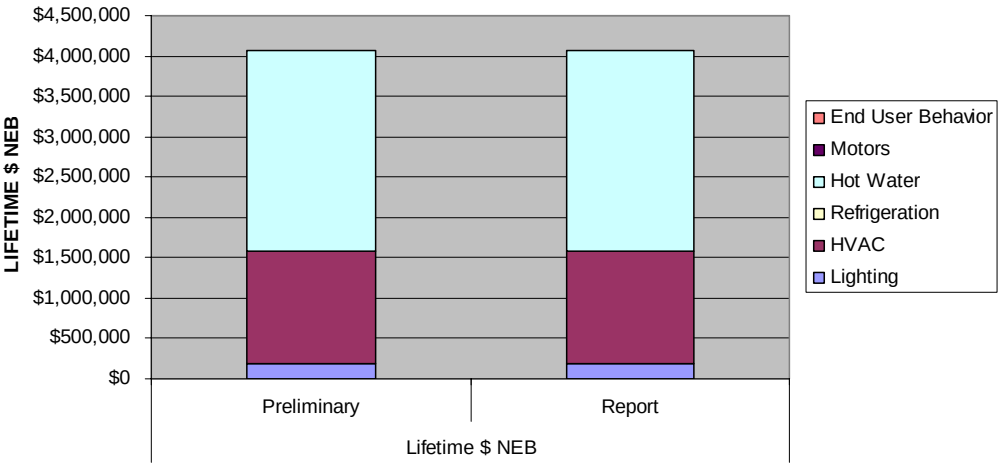
PRELIMINARY VERSUS EVALUATED

FIGURE 14
RESIDENTIAL LIFETIME kW - END-USE



PRELIMINARY VERSUS EVALUATED

FIGURE 15
RESIDENTIAL LIFETIME $ NEB - END- USE



BENEFITS VERSUS COSTS

3. Program Evaluation

The Residential ENERGY STAR® New Construction Program

In May 2007, the Joint Management Committee ("JMC") completed a market progress report on evaluation work conducted in 2006. The evaluation included: a survey of new home-buyers; interviews with builders; a process evaluation of efforts to address EPA ENERGY STAR® Homes duct leakage standards; an assessment of opportunities for program expansion; and interviews to assess the Program's multifamily component. None of these studies generated changes to impact assumptions.

Conclusions from the market progress report found that indicators show that the market as a whole has "regressed or stalled" and that this is tied to a shift to a resource acquisition program focus.

The baseline study is one of several evaluation activities of the JMC relating to the Multi-Year Program Evaluation and Market Progress Reporting Plan ("MPER") beginning in 2005. A homeowner survey was also conducted to obtain additional information such as awareness and interest in energy efficiency from the owners of the 150 homes inspected in the 2005 Baseline Study.

MassSAVE

In January 2007, the Final Evaluation of the 2006 HEAT Loan Program was released as a memo (Appendix 5). This study assessed the current statewide HEAT Loan program so that a Sponsor that might want to continue to provide financing for energy efficiency can learn from experiences in this program.

Key findings included:

- Include a consistent subsidized loan program to finance recommended energy-efficient measures as part of a portfolio of residential program offerings.
- Minimize delays in loan approval.
- Improve marketing.
- Simplify the program and increase consistency of what is offered.

The Residential ENERGY STAR Products and Services Program

In 2006 an analysis of energy-efficient room air conditioner promotion effectiveness was conducted, based on interviews with industry stakeholders. Key conclusions include:

- Different pros and cons are associated with turn-ins and rebates; turn-ins are most effective in saving energy, but sponsors often need help to finance these. Rebates are also easier to track.
- Timing is a critical issue for promotion of room air conditioners.
- Incremental costs of energy efficient products are a barrier for many consumers.

In 2007, results of an analysis of ENERGY STAR qualified clothes washer product availability were reported. The objective of this research was to assess the availability of clothes washer models at different Consortium for Energy Efficiency ("CEE") Tier levels and to use availability as a proxy for market share by CEE Tier, since data from contractor D&R based on national retailers does not distinguish between CEE Tier levels. Findings from this study show that the availability of clothes washer models in Massachusetts is similar to Connecticut and Virginia (30%). Further, the data do not show any clear relationship by retailer.

In June 2007, draft results of an analysis of net impacts from clothes washers were provided. This study compares results of consumer and retailer estimates of free ridership and spillover with market-level estimates of net impacts. While the methods all generate different estimates of net impacts, they all support the finding that the program has influenced the market. When results of this study are finalized (expected in July 2007), we expect that impact parameters to adjust the clothes washer savings estimates will become available.

In June 2007, a draft report on the evaluation activities was completed as part of the 2006 Market Progress and Evaluation Report for the ENERGY STAR Lighting Program. Key findings include:

- The multiple program components – catalog, retail coupons, and Negotiated Cooperative Promotions ("NCPs") – appear to provide complementary opportunities for retailers and consumers.
- The program appears to be highly cost-effective.
- NCPs dominate the distribution of lighting products through this program.
- Product quality appears relatively high, particularly for the standard compact fluorescent lamps ("CFLs"); independent testing is contributing to quality assurance.
- The residential lighting market, particularly with respect to CFL bulbs, is changing rapidly, nationwide as well as in Massachusetts.
- The market for CFL fixtures is dependent on program support for survival.

Residential HVAC

In 2006, an evaluation of the CoolSmart Program was completed. The Compact sponsored this study along with other program administrators, although it did not offer rebates in 2006. This study analyzed the tracking and quality installation verification ("QIV") databases, the on-site data collected from a sample of 34 homes, and simulations of energy and demand savings from various energy efficiency practices. Key findings from this study include:

- In New England the net effective capacity of many systems is undersized for peak conditions. Because of this, the efficiency measures that are strongly supported in CoolSmart may not produce many peak reduction benefits. While this study does

not provide definitive proof of this, it recommends further study to further explore this finding.

- Participation in this program helps program administrators develop the infrastructure needed to take advantage of benefits of the Forward Capacity Market that will incent peak savings delivered through energy efficiency programs. In addition, it avoids lost opportunities of the energy and demand benefits from relatively long term (15 year) efficient measures.

B. Low-Income

1. By BCR Activity

Table 7 presents a summary of the number of customers served, the annual savings, the lifetime savings, and the costs incurred for the low-income programs. It also presents the benefit-cost ratio, based on the total resource cost test. The costs and benefits used to derive this ratio are the same as those presented in Table 3.

While the Low Income Retrofit 1-4 (Single Family) and Multi-Family Retrofit Programs are clearly cost-effective, the Lost Opportunity Program (New Construction) is less so. We believe that the benefit-cost ratio for the Lost Opportunity Program is especially low this year as a result of relatively low activity in 2006.

TABLE 7
IMPACT BY LOW-INCOME BCR ACTIVITIES

Benefit-Cost Ratio / Activity	Participant	Annual				Lifetime			Cost		Benefit-Cost
		kWh	kWh per Cust	kW	$-NEB	MWH	kW	$-NEB	Activity	per Cust	TRC
B02a Low-Income Lost Opportunity	45	133,730	2,972	4.93	$13,811	2,129	53	$184,116	$214,864	$4,775	1.55
B03a Low-Income Retrofit 1-4	279	150,010	538	14.07	$15,763	2,153	219	$280,706	$247,955	$889	2.04
B03b Low-Income Retrofit Multifamily	193	153,220	794	7.11	$82,497	1,871	60	$1,644,599	$203,292	$1,053	8.79
TOTAL	517	436,960	845	26.11	$112,071	6,153	332	$2,109,421	$666,112	$1,288	3.94

2. By End Uses

Table 8 presents a summary of the lifetime energy savings, capacity savings, and non-electric benefits, by the different end-uses addressed in the low-income programs.

TABLE 8						
IMPACT BY LOW-INCOME END-USES						
End Use	**Lifetime MWH**		**Lifetime kW**		**Lifetime $ NEB**	
	Preliminary	**Report**	**Preliminary**	**Report**	**Preliminary**	**Report**
Lighting	1,971	1,971	118	118	$57,637	$57,637
HVAC	2,692	2,692	7	7	$1,936,201	$1,936,201
Refrigeration	1,346	1,346	184	184	$43,483	$43,483
Hot Water	68	68	23	23	$70,304	$70,304
Motors	76	76	0	0	$1,797	$1,797
End User Behavior	NA	NA	NA	NA	NA	NA
Total	**6,153**	**6,153**	**332**	**332**	**$2,109,421**	**$2,109,421**

Figures 16 through 18 present the same information as Table 8. They indicate that most of the energy and demand savings are from the refrigeration and HVAC end uses.

Most of the low-income non-electric benefits come from the HVAC measures. This is because the home energy audits result in benefits associated with (a) improved property values, (b) reduced fire, illness and moving costs, and (c) fossil-fuel savings. All of the low-income programs also have non-electric benefits as a result of reduced usage of the low-income discount rate. The low income programs also have non-electric benefits that are experienced by non-low-income residential customers, such as lighting operations and maintenance ("O&M") savings and reduced water usage.

FIGURE 16
LOW-INCOME LIFETIME MWH - END-USE

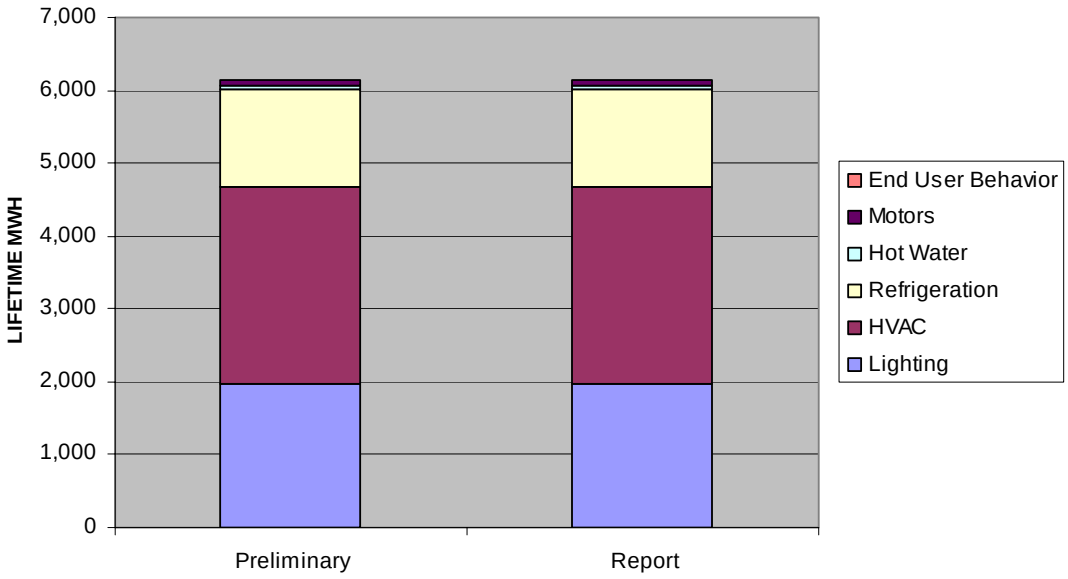


FIGURE 17
LOW-INCOME LIFETIME kW - END-USE

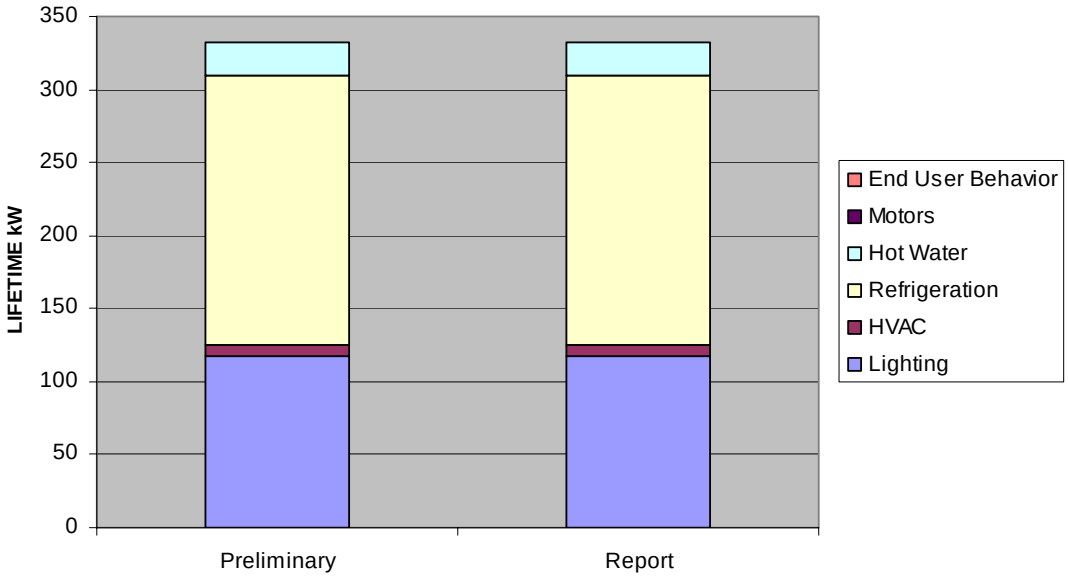
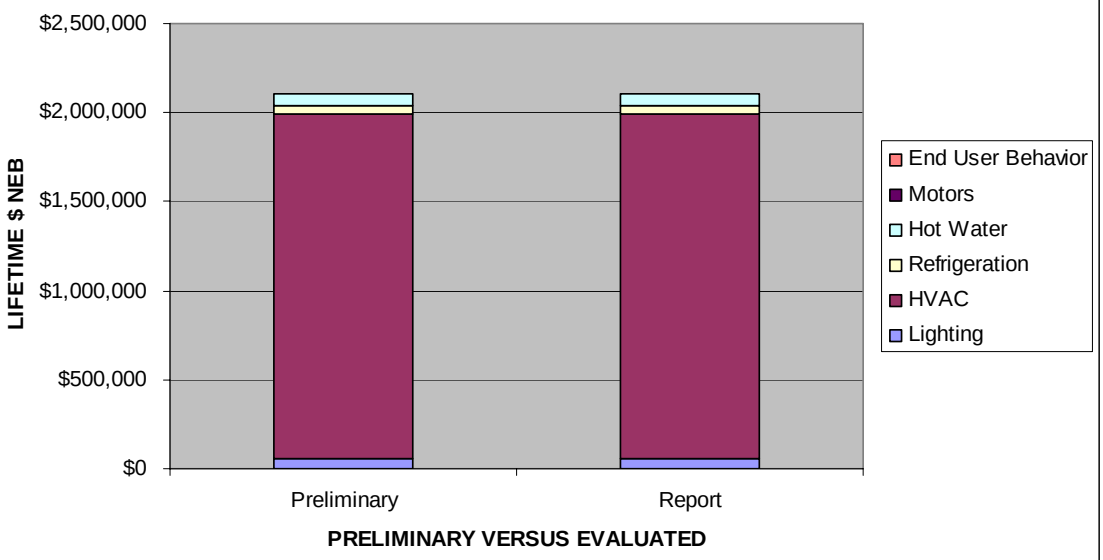


FIGURE 18
LOW-INCOME LIFETIME $ NEB - END-USE



3. Program Evaluation

The Compact conducted no new evaluation activities since the 2004 process evaluation of the low income program. In 2006, the Compact added low-income non-electric benefits to the estimates of low-income multifamily program impacts. The NEBs are the same as are applied to the low-income single-family retrofit program.

C. Commercial & Industrial

1. By BCR Activity

Table 9 presents a summary of the number of customers served, the annual savings, the lifetime savings, and the costs incurred for the commercial & industrial programs. It also presents the benefit-cost ratio, based on the total resource cost test. The costs and benefits used to derive this ratio are the same as those presented in Table 4.

TABLE 9											
IMPACT BY C&I BCR ACTIVITIES											
Benefit-Cost Ratio		Annual				Lifetime			Cost		Benefit-Cost
Activity	Participant	kWh	kWh per Customer	kW	$-NEB	MWH	kW	$-NEB	Activity	per Customer	TRC
C02a C&I Lost Opportunity	68	486,450	7,154	135.76	$1	7,313	2,026	$11	$340,675	$5,010	3.91
C03a Large C&I Retrofit	19	6,661,710	350,616	1,927.50	$48	87,808	25,504	$635	$1,560,390	$82,126	10.80
C03b Small C&I Retrofit	278	3,142,740	11,305	662.52	$816	39,718	8,486	$10,301	$1,936,191	$6,965	3.19
TOTAL	365	10,290,900	28,194	2,725.78	$865	134,839	36,016	$10,947	$3,837,256	$10,513	6.35

2. By End Uses

Table 10 presents a summary of the lifetime energy savings, capacity savings, and non-electric benefits, by the different end-uses addressed in the commercial & industrial programs.

TABLE 10						
IMPACT BY C&I END-USES						
End Use	**Lifetime MWH**		**Lifetime kW**		**Lifetime $ NEB**	
	Preliminary	**Report**	**Preliminary**	**Report**	**Preliminary**	**Report**
Lighting	106,807	104,940	27,955	27,485	$9,693	$9,071
HVAC	3,773	3,773	1,874	1,874	$343	$343
Motors / Drives	18,391	18,391	5,685	5,685	$487	$487
Refrigeration	6,706	6,706	737	737	$928	$928
Hot Water	0	0	0	0	$58	$58
Compressed Air	1,030	1,030	235	235	$60	$60
Process	NA	NA	NA	NA	NA	NA
End User Behavior	NA	NA	NA	NA	NA	NA
Total	**136,706**	**134,839**	**36,486**	**36,016**	**$11,569**	**$10,947**

Figures 19 through 21 present the same information as Table 10. They indicate that the energy and capacity savings are obtained primarily from lighting measures and, to a lesser extent, from motors/drives and refrigeration measures.

The slight decrease in lighting savings is from updated free-ridership, spillover and in-service rates for the Compact's Government Retrofit program evaluation. Other commercial and industrial programs were not evaluated in 2006, since many evaluations were completed in 2005 and there have been no significant changes in program design in this year.

The non-energy benefits in the C&I sector are primarily from reduced O&M costs as a result of efficient light bulbs with longer operating lives.

FIGURE 19
C&I LIFETIME MWH - END-USE

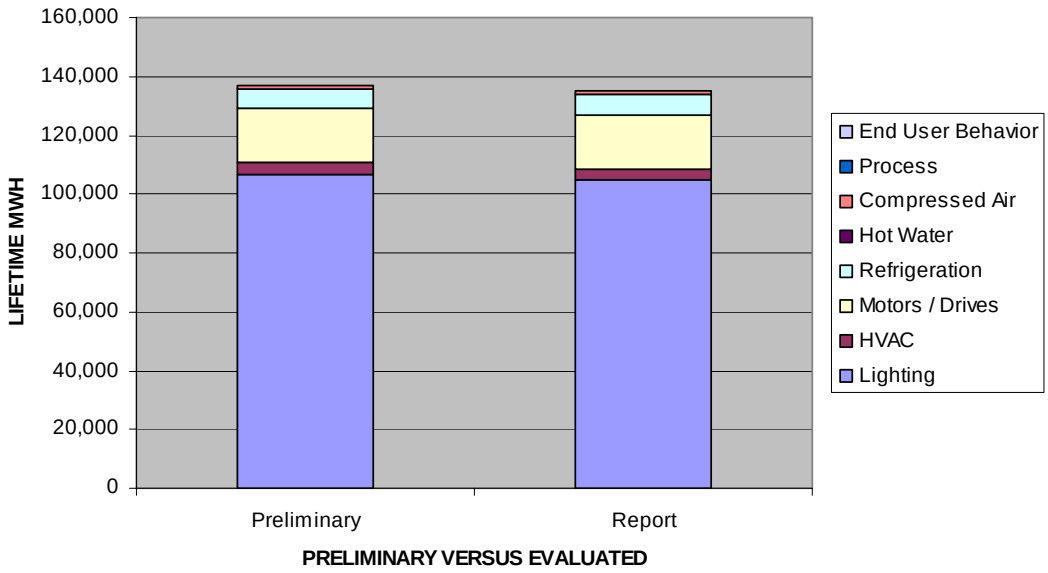
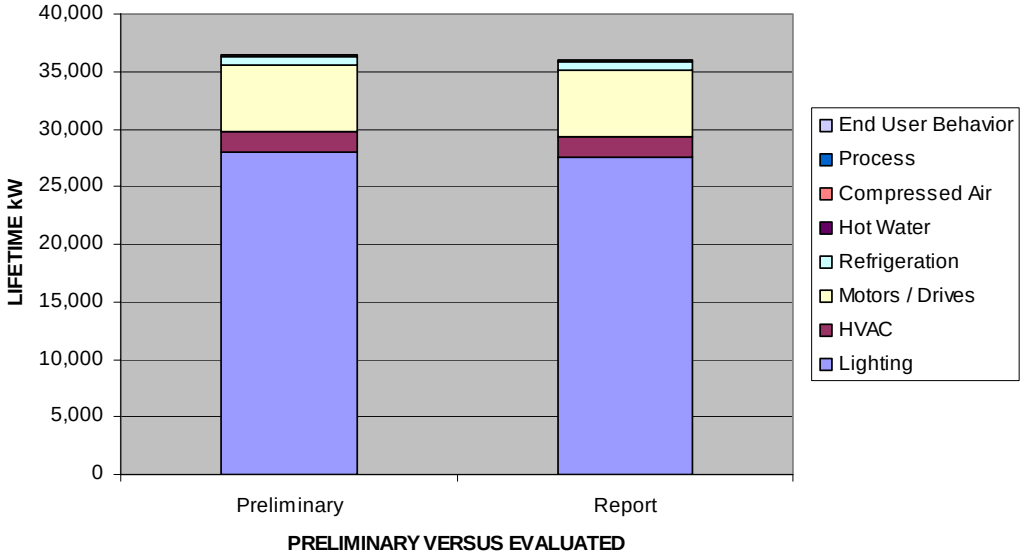
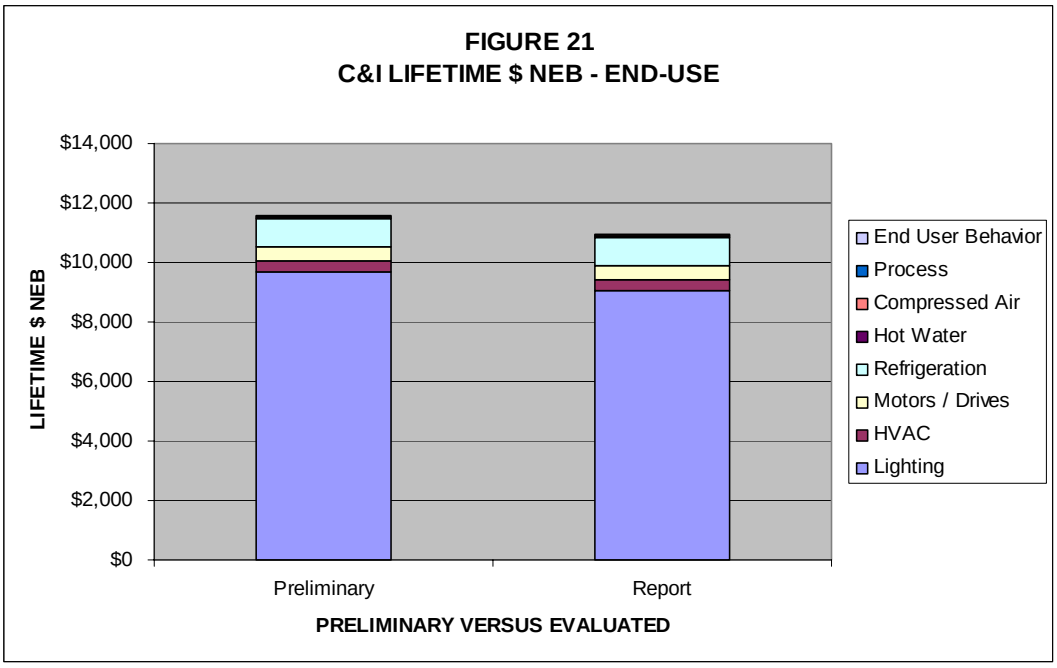


FIGURE 20
C&I LIFETIME kW - END USE





3. Program Evaluation

In 2006, the Cape Light Compact commissioned an evaluation of its Small Government Retrofit Program. This was based on several sources of data, including survey results from the population of 2004 and 2005 program participants. This was accomplished by combining relevant results from participants included in the Compact's sample of the previous, 2005, free-ridership and spillover study with a 2006 survey of the remaining set of participants. In addition, database review and on-site inspections of a sample of 20 projects were conducted. Results pertaining to the lighting measures in this sample were used in updating free-ridership, participant spillover and in-service rate parameters for government retrofit program impacts.

Key findings included:

- The program appears to be effective in meeting government customer needs for energy-efficient measures offered by the Program.
- The vast majority of participants are quite satisfied.
- The measure information and baseline assumptions used in the savings calculations are reasonable.
- For 2004-2005, net savings were 82 percent of those reported in the Program tracking data. Most of the reduction was due to changes in engineering inputs identified based on file reviews and on-site data collection. These results are not directly transferable to 2006 program impacts, due to the very small number of participants in the study that make statistical data difficult to report.
- Participant spillover more than offset the very low levels of free-ridership identified in this study.

Appendices

Appendix 1. Glossary of Terms and Abbreviations

Annual kWh Reduction	Expected net annual energy savings after all impact factors have been taken into consideration.
AMP	Appliance Management Program
BBRS	Board of Building Regulations and Standards
CAP	Community Action Program
CEE	Consortium for Energy Efficiency
CFL	Compact Fluorescent Lamps
Coincident Peak Demand	Demand for electricity at the time of the Company's peak demand.
Delta Watts	The difference in the wattage between pre-existing or baseline lighting equipment and energy efficient lighting equipment.
Demand	The amount of electric energy used by a customer or a piece of equipment at a specific time, expressed in kilowatts.
Demand Adjustment Factor	This factor is a combination of one or more evaluation impact parameters applied to gross demand savings in the calculation of net demand savings.
Diversity	That characteristic of a variety of electric loads whereby individual maximum demands usually occur at different times.
Diversity Factor	Percent of savings available at the time of the Company's peak demand.
DOE	Department of Energy
DOER	Massachusetts Division of Energy Resources
D&R	D&R International, the contractor to DOE and EPA that monitors sales of ENERGY STAR® appliances.
DSM	Demand Side Management
DPU	Massachusetts Department of Public Utilities (formerly Department of Telecommunications and Energy)
EFLH	Equivalent Full Load Hours
Energy Adjustment Factor	A factor made up of one or more evaluation impact parameters applied to gross kWh savings in the calculation of net kWh savings.
EPA	Environmental Protection Agency
EPACT	Energy Policy Act

ENERGY STAR®	Brand name for the voluntary energy efficiency labeling initiative sponsored by the U.S. Environmental Protection Agency and Department of Energy.
Free Riders	Customers who participate in an energy efficiency program but would have installed the same measure(s) on their own if the program had not been available.
Free-Ridership Rate	The percent of savings attributable to Free Riders.
Gross kW	Expected demand reduction based on a comparison of standard or replaced equipment, and equipment installed through an energy efficiency program.
Gross kWh	Expected kWh reduction based on a comparison of standard or replaced equipment, and equipment installed through an energy efficiency program.
GWh	Gigawatt-hour – a measure of electricity usage over time equal to 1,000 megawatt-hours or 1,000,000 kilowatt-hours.
HEAT Loan	No-interest or low-interest financing offer under the Residential MassSAVE program to help consumers install measures to increase the energy efficiency of their homes.
Hours of Use	The estimated number of hours per year that a measure operates.
Hours of Use Realization Rate	Ratio of actual metered hours of use data to estimated hours of use data.
HP	Horsepower
HVAC	Heating Ventilation and Air Conditioning
Impact Factor	Generic term for persistence, realization rates, in-service rates, non-coincident connected demand factors, etc., developed during the evaluation of energy efficiency programs and used to calculate net savings.
JMC	The Joint Management Committee of utility and non-utility parties that manages the ENERGY STAR® Homes Program.
kWh	Kilowatt-hour – The basic unit of electric energy usage over time. One kWh is equal to one kW of power supplied to a circuit for a period of one hour.
kW	Kilowatt – A measure of electric demand – 1000 watts
kW – Years	See: Lifetime kW
Lifetime	The expected length of time, in years, that an installed measure will be in service and producing savings.
Lifetime kW	The expected demand savings over the lifetime of an installed measure, calculated by multiplying the annual peak kW reduction associated with a measure by the expected lifetime of that measure. It is expressed in units of kW-

	years.
Lifetime MWh	The expected energy savings over the lifetime of an installed measure, calculated by multiplying the annual MWh reduction associated with a measure by the expected lifetime of that measure.
LIHEAP	Low Income Heating Assistance Program
Maximum Annual kW Savings	Peak annual demand savings of a measure. At the program level, this equals the sum of the annual peak demand savings across all measures.
Measure	Specific technology or practice that produces energy and/or demand savings for which the company provides financial incentives.
MPER	Multi-Year Program Evaluation and Market Progress Reporting, or Market Progress and Evaluation Report, developed for various residential programs.
MW	Megawatt – a measure of electric demand equal to 1,000 kilowatts.
MWh	Megawatt-hour – a measure of energy use over time equal to 1,000 kilowatt-hours.
NATE	North American Technician Excellence Program
NEEP	Northeast Energy Efficiency Partnerships
O&M	Operation and Maintenance
Off-Peak energy kWh	The kWh reduction that occurs during the Company's off-peak hours for energy. (Monday-Friday 9 p.m. to 8 a.m. and all day of weekends and holidays)
On-Peak Energy kWh	The kWh reduction that occurs during the Company's on-peak hours for energy. (Monday-Friday 8 a.m. to 9 p.m., except holidays)
Persistence Rate	Percentage of first year energy or demand savings expected to persist over the life of the installed energy efficiency equipment; developed by conducting surveys of installed equipment several years after installation to determine presence and operational capability of the equipment.
RCS	Residential Conservation Services. Formerly Energy Conservation Services or ECS
Seasonal (Winter/Summer) kW	The net demand reduction during either the Winter or Summer seasons.
Spillover	Additional energy efficient equipment installed by customers that were influenced by the Company's sponsored program, but without direct financial or technical assistance from the program. Spillover is separated into Participant and Non-

	participant factors. Non-participating customers may be influenced by product availability, publicity, education, and other factors that are affected by the program.
Spillover Rate	Estimate of energy savings attributable to spillover effects expressed as a percent of savings installed by participants through an energy efficiency program.
VSD	Variable Speed Drive
WAP	Weatherization Assistance Program
Watt	The basic electrical unit of power.

Appendix 2. 2006 Evaluation Impact Parameters

The table below presents the impact factors that were used to calculate the evaluated savings for the commercial and industrial programs in 2006. Impact parameters for the Compact's Government Large and Small Retrofit programs were updated based on the evaluation study completed by the Compact in 2006. Other impact factors were not evaluated in 2006.

Table A2.1 Commercial & Industrial Program Evaluation Impact Factors

BCR Activity	Program	End Use	Free-Ridership Rate	Spillover [Participant] Rate	Spillover [Non-Participant] Rate	In-Service Rate	kWh Realization Rate
C02a C&I Lost Opportunity	CO2a C&I New Construction	ALght	31%	6%	3%	100%	100%
C02a C&I Lost Opportunity	C02a C&I New Construction	BHVAC	33%	9%	3%	100%	100%
C02a C&I Lost Opportunity	C02a C&I New Construction	FComA	29%	2%	3%	100%	100%
C02a C&I Lost Opportunity	C02b C&I Govt New Construction	ALght	0%	0%	3%	100%	100%
C02a C&I Lost Opportunity	C02b C&I Govt New Construction	BHVAC	0%	0%	3%	100%	100%
C02a C&I Lost Opportunity	C02b C&I Govt New Construction	CMoDr	0%	0%	3%	100%	100%
C02a C&I Lost Opportunity	C02b C&I Govt New Construction	DRefr	0%	0%	3%	100%	100%
C03a Large C&I Retrofit	C03a C&I Large Retrofit	ALght	6%	3%	3%	100%	100%
C03a Large C&I Retrofit	C03a C&I Large Retrofit	BHVAC	43%	0%	3%	100%	100%
C03a Large C&I Retrofit	C03a C&I Large Retrofit	CMoDr	26%	10%	3%	100%	100%
C03a Large C&I Retrofit	C03a C&I Large Retrofit	DRefr	4%	0%	3%	100%	100%
C03b Small C&I Retrofit	C03b C&I Small Retrofit	ALght	6%	3%	3%	100%	86%
C03b Small C&I Retrofit	C03b C&I Small Retrofit	BHVAC	43%	0%	3%	100%	100%
C03b Small C&I Retrofit	C03b C&I Small Retrofit	DRefr	4%	0%	3%	100%	100%
C03a Large C&I Retrofit	C03c C&I Govt Large	ALght	0.60%	3.40%	3%	89%	100%
C03a Large C&I Retrofit	C03c C&I Govt Large	BHVAC	0%	0%	3%	100%	100%
C03a Large C&I Retrofit	C03c C&I Govt Large	CMoDr	0%	0%	3%	100%	100%
C03a Large C&I Retrofit	C03c C&I Govt Large	DRefr	0%	0%	3%	100%	100%
C03b Small C&I Retrofit	C03d C&I Govt Small	ALght	0.60%	3.40%	3%	89%	86%
C03b Small C&I Retrofit	C03d C&I Govt Small	BHVAC	0%	0%	3%	100%	100%
C03b Small C&I Retrofit	C03d C&I Govt Small	CMoDr	0%	0%	3%	100%	100%
C03b Small C&I Retrofit	C03d C&I Govt Small	DRefr	0%	0%	3%	100%	100%
C03b Small C&I Retrofit	C03d C&I Govt Small	EHoWa	0%	0%	3%	100%	100%
C03b Small C&I Retrofit	C03d C&I Govt Small	FComA	0%	0%	3%	100%	100%
C02a C&I Lost Opportunity	C04c C&I Products & Services	ALght	31%	6%	3%	100%	100%
C02a C&I Lost Opportunity	C04c C&I Products & Services	BHVAC	68%	2%	3%	100%	100%
C02a C&I Lost Opportunity	C04c C&I Products & Services	CMoDr	8%	0%	3%	100%	100%

Note: Shaded cells indicate impact factors that are neither 100% nor 0%.

The table below presents the impact factors that were used to calculate the evaluated savings for residential programs offered by the Cape Light Compact in 2006. Impact factors shown below for most programs represent the common assumptions developed by Massachusetts program administrators, based on a review of best available information on measures in statewide programs. The Compact's Residential and Low Income program impact factors were not updated in 2006.

Table A2.2 Residential Program Evaluation Impact Factors

BCR Activity	Measure	Free-Ridership Rate	Spillover [Participant] Rate	Spillover [Non-Participant] Rate	In-Service Rate	kWh Persistence
A02a Residential Lost Opportunity	CFL	2%	0%	0%	90%	100%
A02a Residential Lost Opportunity	HERS	0%	0%	0%	100%	100%
A02a Residential Lost Opportunity	HERSC	0%	0%	0%	100%	100%
A02a Residential Lost Opportunity	HERSD	0%	0%	0%	100%	100%
A02a Residential Lost Opportunity	HERSS	0%	0%	0%	100%	100%
A02b Residential HVAC	HVAC	0%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	BOILRWATER	0%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	CFL	0%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	FIXTUREIN	0%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	HOTWATER	0%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	INDIRECTDH	0%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	REFRIG	10%	36%	0%	100%	100%
A03a Residential Retrofit 1-4	SWITCH	0%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	TORCHIERE	0%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	T-STAT	2%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	AIRSEAL - electric	2%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	AIRSEAL - oil	2%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	AIRSEAL - gas	2%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	AIRSEAL - other	2%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	INSULATION - electric	2%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	INSULATION - other	2%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	INSULATION - gas	2%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	INSULATION - oil	2%	0%	0%	100%	100%
A03a Residential Retrofit 1-4	FURNACE	0%	0%	0%	100%	100%
A04a Residential Lighting	CFL	6%	25%	0%	84%	100%
A04a Residential Lighting	FIXTUREIN	8%	4%	0%	95%	100%
A04a Residential Lighting	FIXTUREOUT	12%	7%	0%	87%	100%
A04a Residential Lighting	TORCHIERE	6%	3%	0%	83%	100%
A04b Residential Appliances	CLOTHESWAS	0%	0%	0%	100%	100%
A04b Residential Appliances	DEHUMIDIFI	0%	0%	0%	100%	100%
A04b Residential Appliances	ECMHEAT	0%	0%	0%	100%	100%
A04b Residential Appliances	ROOMAC	0%	0%	0%	100%	100%

Note: Shaded cells indicate impact factors that are neither 100% nor 0%

Table A2.3 Low Income Program Evaluation Impact Factors

Sector	BCR Activity	Measure	Free-Ridership Rate	Spillover [Participant] Rate	Spillover [Non-Participant] Rate	In-Service Rate
Low Income	B02a Low-Income Lost Opportunity	AIRSEAL	0%	0%	0%	100%
Low Income	B02a Low-Income Lost Opportunity	CFL	0%	0%	0%	100%
Low Income	B02a Low-Income Lost Opportunity	FIXTUREOUT	0%	0%	0%	100%
Low Income	B02a Low-Income Lost Opportunity	HEATSYSTEM	0%	0%	0%	100%
Low Income	B02a Low-Income Lost Opportunity	HOTWATER	0%	0%	0%	100%
Low Income	B02a Low-Income Lost Opportunity	INDIRECTDH	0%	0%	0%	100%
Low Income	B02a Low-Income Lost Opportunity	INSULATION	0%	0%	0%	100%
Low Income	B02a Low-Income Lost Opportunity	REFRIG	0%	0%	0%	100%
Low Income	B02a Low-Income Lost Opportunity	T-STAT	0%	0%	0%	100%
Low Income	B03a Low-Income Retrofit 1-4	AIRSEAL	0%	0%	0%	100%
Low Income	B03a Low-Income Retrofit 1-4	CFL	0%	0%	0%	100%
Low Income	B03a Low-Income Retrofit 1-4	DEHUMIDIFI	0%	0%	0%	100%
Low Income	B03a Low-Income Retrofit 1-4	HEATSYSTEM	0%	0%	0%	100%
Low Income	B03a Low-Income Retrofit 1-4	HOTWATER	0%	0%	0%	100%
Low Income	B03a Low-Income Retrofit 1-4	INSULATION	0%	0%	0%	100%
Low Income	B03a Low-Income Retrofit 1-4	REFRIG	0%	0%	0%	100%
Low Income	B03b Low-Income Retrofit Multifamily	AIRSEAL	0%	0%	0%	100%
Low Income	B03b Low-Income Retrofit Multifamily	CFL	0%	0%	0%	100%
Low Income	B03b Low-Income Retrofit Multifamily	FIXTUREIN	0%	0%	0%	100%
Low Income	B03b Low-Income Retrofit Multifamily	HOTWATER	0%	0%	0%	100%
Low Income	B03b Low-Income Retrofit Multifamily	HVAC	0%	0%	0%	100%
Low Income	B03b Low-Income Retrofit Multifamily	INSULATION	0%	0%	0%	100%

Appendix 3. Post Program Savings Attributed to Selected 2006 Market Transformation Initiatives

The Compact has not developed estimates of post program savings associated with market transformation initiatives. It is our understanding that this issue has not been considered a high priority for DOER or other Program Administrators. To the extent that such savings exist, the actual savings and benefits of the 2006 activities will be greater than those reported here.

Appendix 4. Calculation of Shareholder Incentive

The Cape Light Compact does not require shareholder incentives to implement its energy efficiency programs. Therefore, this section is not relevant to the Compact.

Appendix 5. Summary of 2006 Energy Efficiency Evaluation Reports

The following studies were used in preparing the evaluated results presented in this Annual Report. The executive summaries of these reports are attached. The full copies of these reports are available from the Compact upon request.

- ***Appendix 5-1*** *The Cape Light Compact Small Government Retrofit Program – Evaluation Report - Final*, by PA Consulting Group, May 31, 2007.

- ***Appendix 5-2*** *Evaluation of the Massachusetts ENERGY STAR® Homes Program: Findings and Analysis*, by NMR and Dorothy Conant, May 2007.

- ***Appendix 5-3*** *MEMORANDUM RE: Results of the Appliance Model Availability Analysis*, from: Lynn Hoefgen and Tim Pettit, Nexus Market Research, April 20, 2007

- ***Appendix 5-4*** *MEMORANDUM RE: Final Evaluation of 2006 HEAT Loan Program*, from: Dorothy Conant, Consultant and Tom Ledyard, RLW Analytics, January 15, 2007

- ***Appendix 5-5*** *2006 Massachusetts and Rhode Island CoolSmart Evaluation Report*, by Wirtshafter Associates, Inc., Kreitler Research and Consulting, Performance Systems Development, Inc. and International Communications Research, Inc., April 17, 2007

- ***Appendix 5-6*** *MEMORANDUM Re: Memorandum on Energy-efficient Room Air Conditioner Promotion Effectiveness, DRAFT*, From: Betty Tolkin, Tom Mauldin, and Lynn Hoefgen, NMR, June 4, 2007

- ***Appendix 5-7*** *MEMORANDUM RE: Estimates of Net Impact of the 2006 Massachusetts ENERGY STAR Appliances Program, Clothes Washer component, DRAFT*, FROM: Lynn Hoefgen, Lisa Wilson-Wright, Thomas Mauldin, and Tim Pettit, NMR, June 25, 2007

- ***Appendix 5-8*** *Market Progress and Evaluation Report (MPER) For the 2006 Massachusetts ENERGY STAR® Lighting Program DRAFT* by: Nexus Market Research, Inc., RLW Analytics, Inc., Shel Feldman Management Consulting and Dorothy Conant, June 22, 2007.