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**The Cape Light Compact  
Energy Efficiency Plan  
Phase III: 2005-2007**

**Providing Comprehensive Energy Efficiency Services  
to Cape Cod and Martha's Vineyard  
Through Municipal Aggregation**

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**April, 2005**

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Tim Woolf of Synapse Energy Economics was the primary author of and project manager for the Energy Efficiency Plan update. He also developed the budgets and conducted the program screening and cost-benefit analyses.

Compact staff members including Maggie Downey, Debbie Fitton, Kevin Galligan, Margaret Song and John Burns contributed to program design, provided feedback from customers and trade allies, and assisted with updating and editing the Energy Efficiency Plan.

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The authors would like to thank several people who commented on drafts or portions of this plan, including Larry Masland of the Division of Energy Resources, Glenn Reed and other Northeast Energy Efficiency Partnerships (NEEP) staff, Jerry Oppenheim of the Low-Income Energy Affordability Network (LEAN), Bill Concannon of Honeywell Utility Services, and Wendy Northcross of the Cape Cod Chamber of Commerce.

Also, in developing this plan, the authors have built upon the energy efficiency programs provided by Massachusetts electric utilities and other energy efficiency providers in the Northeast. These energy efficiency programs have been developed through collaborative processes that include a variety of stakeholders, and are themselves the product of years of experience in providing energy efficiency programs to electricity customers in Massachusetts.

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# Forward

Dear Residential and Business Electric Consumers of Cape Cod and Martha's Vineyard:

I am pleased to present, on behalf of the Cape Light Compact, this innovative Energy Efficiency Plan: Phase III. Over many months the Compact worked with consumers, elected officials, state agencies and many energy efficiency experts to enhance our existing programs so we may bring increased benefits to all customers within the Compact's territory.

Though energy markets remained volatile in 2004, the Compact continued to set new precedents and expand savings for consumers. A number of projects delivered on promises to reduce costs to consumers, improve service, protect the environment, and ensure that small electricity consumers would not be ignored in an evolving competitive market.

In a landmark Pilot Project, the Compact negotiated a favorably priced power supply contract for the period May 2002 through December 2004, for the 52,000 Cape and Martha's Vineyard default service customers, with a savings to consumers of approximately \$4.3 million.

The Compact has negotiated a competitive power supply contract for all electric customers in 2005. The Compact now provides power supply to approximately 175,000 customers. Compact customers will receive stable pricing and cost savings under this program. Customers being served under the Compact's basic service power supply program are supporting renewable energy through the Compact's compliance with the Massachusetts Renewable Portfolio Standards. The Compact also offers customers an opportunity to participate in a clean energy option called Cape Light Compact Green. By choosing to participate in this option, customers are supporting the development of cleaner renewable energy sources located on the Cape and Vineyard, and throughout New England.

Looking ahead to 2006 and beyond, the Compact intends to continue its efforts in delivering stable lower cost power supply programs to Cape and Vineyard customers. The Compact looks forward to partnering with the towns on the Cape and Vineyard as they pursue and develop land based wind turbines. Working to ensure that the renewable energy produced through these facilities stays on the Cape and Vineyard is part of the Compact's power supply program.

Since July 2001, the Cape Light Compact has been administering the energy efficiency program on the Cape and Vineyard. During this three and a half year program, the Compact has returned approximately \$16.8 million or 100% of the funds collected from electric ratepayers in the form of energy efficiency services. In 2004, these services included the following highlights:

- Retrofit of over 900 town and state owned and operated traffic signals from incandescent to light emitting diode (LED) illumination, saving the towns and state over \$37,000 in annual electricity costs.
  - Comprehensive upgrades totaling over \$175,000 at the Barnstable Housing Authority Sea Street Ext. multi-family housing are estimated to save the Authority more than \$20,000 annually. The work was done by the Compact's vendor Housing Assistance Corporation which oversaw the installation of new sliders and windows, water conservation devices, efficient lighting and thermostats and window air conditioner covers. In addition, each residential unit received air-sealing, weather striping and door sweeps. The project also included an automatic laundry with new energy-efficient washing machines in the laundry center.
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- Lighting retrofits and the installation of a state of the art energy management system at Cape Cod Regional Technical High School totaling over \$760,000 with an estimated annual energy savings in excess of \$85,000.

The Compact delivered these essential energy efficiency services with minimal overhead and at the highest professional standards. Coupled with the Cape Light Compact's power supply program, we look forward to continuing to serve consumers through reduced electric bills and lower kWh consumption in 2005 and beyond.

Sincerely,

Bob Mahoney,  
Chairman, Cape Light Compact

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# 1. Introduction and Summary

## **The Cape Light Compact Energy Efficiency Plan: 2005-2007**

The Massachusetts Electric Utility Restructuring Act of 1997 allows municipalities that aggregate electricity customers to: (1) formulate an Energy Efficiency Plan, (2) submit the plan to town meetings for approval, (3) submit the plan to the Massachusetts Department of Telecommunications and Energy (the Department) for review and certification; and (4) recover the energy efficiency funds raised from consumers for use in implementing local energy efficiency programs. The Cape Light Compact (the Compact), as the municipal aggregator of electricity customers for twenty-one towns on Cape Cod and Martha's Vineyard, developed its Energy Efficiency Plan in compliance with state law and consistent with state energy goals.

The Compact hereby submits an amendment to its original Energy Efficiency Plan, entitled "The Cape Light Compact Energy Efficiency Plan, Phase III: 2005-2007" (hereinafter referred to alternatively as the "EEP" or "Phase III") and states that it is also consistent with state energy goals.

The Cape Light Compact was formed in 1997 following two years of study and votes of town meeting, boards of selectmen, and town council. It is organized through a formal intergovernmental agreement signed by the towns and Barnstable and Dukes counties. The Compact's Aggregation Plan was approved by the Department in DTE 00-47 (August 10, 2000). The purpose of the Compact, among other things, is to advance the interests of consumers in a competitive electric supply market, including the promotion of energy efficiency. Each participating municipality has a representative on the Compact Governing Board, which sets policy and works with technical and legal support to put the Compact programs in place.

The programs included in this EEP are designed to advance consumer awareness and adoption of a wide variety of energy efficiency measures. Energy efficiency initiatives at the community level present opportunities for extensive local involvement, and help develop an energy efficiency ethic that can support market transformation beyond the implementation of individual technologies or practices, resulting in long-term, sustained energy efficiency savings.

The Compact's Energy Efficiency Plan has evolved in three phases. Phase I began in July 2001 when the Compact replaced Commonwealth Electric Company d/b/a NSTAR Electric ("NSTAR") as the program administrator of ratepayer-funded efficiency programs on Cape Cod and Martha's Vineyard. The Phase I efficiency programs were primarily a continuation and extension of those offered by electric utilities in Massachusetts and the region.

Phase II of the Compact's efficiency programs began in 2003, and offered a more comprehensive and integrated approach to the Compact's efficiency programs. Phase III begins in 2005, and represents a further evolution of the Compact's programs, as described in this Energy Efficiency Plan. The goal of Phase III will be to go beyond what

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has been achieved to date by the Compact, and to maximize the efficiency and societal benefits available from the Compact's efficiency initiatives.

The Compact Governing Board unanimously approved this Energy Efficiency Plan on March 9, 2005.

### **Overview of the Energy Efficiency Programs**

The Compact's programs are designed to comply with state energy efficiency goals and policies. In general, the programs are structured according to customer types, as well as the types of electricity end-uses utilized by customers. In this way, the marketing and delivery of the programs can address the unique interests and market barriers of each customer type, as well as the unique opportunities and challenges of each end-use type.

The programs are broadly divided into three areas: (a) residential customers, (b) low-income customers, and (c) commercial and industrial customers (including municipal and government customers). In addition, there is a core public education and marketing program that underlies the delivery of each of the Compact's programs.

The Energy Efficiency Plan includes the following programs:

- The Residential ENERGY STAR<sup>®</sup> 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.
- The Residential Massachusetts Home Energy Services Program ("MassSAVE"), which provides interested residential customers with a home energy audit and financial incentives for numerous electric and non-electric efficiency measures.
- The Residential ENERGY STAR Products and Services Program, which seeks to increase the availability and use of efficient lighting and appliances. This program is used to implement the Northeast Energy Efficiency Partnership ("NEEP") initiatives and other regional market transformation efforts.
- 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 efficient 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.
- 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.
- 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.

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- 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.
  - 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.
  - The 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.
  - The Small Commercial and Industrial Retrofit Program, which provides technical assistance, financial incentives and direct installation to C&I customers whose peak demands are less than 100 kW to replace existing operating equipment and systems with high-efficiency equipment.
  - The Government Agencies Program, which provides technical and financial energy efficiency assistance to all government facilities, including municipal, state and federal facilities.
  - 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.

In addition, the public education and marketing program is designed to utilize the extensive network and opportunities that the Compact has at the community and local government level. Public education and marketing support are designed to help overcome common barriers of energy efficiency awareness and facilitate participation in the Compact’s programs.

### **Summary of Recent Awards**

- NEED Award - June, 2004 – National Energy Education Development (“NEED”) Project Region of the Year. Cape Light Compact, in conjunction with Barnstable County Cooperative Extension, was the first program administrator in Massachusetts to offer programs from the NEED Project in the fall of 2003 with a focus on energy education programs for third, fourth, and fifth grades. The NEED program satisfies the Massachusetts State Standard Science Education for the targeted grade levels. Working with teachers and students, the Compact plans to develop an energy efficiency ethic that expands beyond the classroom and into the homes of Cape and Vineyard residents.
- AESP Award – December, 2004 - Association for Energy Professionals (“AESP”) International Award of Merit. The awards program recognizes organizations for

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their work in energy efficiency practices and innovative marketing that supports energy efficiency programs. The Compact was recognized for its energy fairs.

- ENERGY STAR Awards from EPA, DOE - March 2, 2004 – EPA and DOE’s Award for Leadership in Energy Efficiency Award and Excellence in Energy Efficient New Construction. Cape Light Compact won an award for participation in Northeast initiatives by the U.S. Environmental Protection Agency (“EPA”) and the Department of Energy (“DOE”). The Cape Light Compact has been an active sponsor of eight NEEP Initiatives including the Northeast ENERGY STAR® Appliance and Lighting Initiative as well as the ENERGY STAR® Homes Program since 2001. NEEP facilitates the Lighting and Appliance Initiative’s efforts as part of NEEP’s larger regional ENERGY STAR® Products Initiative. The Appliance and Lighting Initiative was the recipient of the Leadership in Energy Efficiency Award for Excellence in Energy Efficiency and Environmental Education. The ENERGY STAR Homes program received recognition for Excellence in Energy Efficient New Construction.
- American Council for an Energy Efficient Economy (“ACEEE”) recognized the Northeast ENERGY STAR® Lighting and Appliance Initiatives as leading national programs.
- Light-Emitting Diode (“LED”) Traffic Signal Project – In late 2003 and early 2004, over 900 traffic signals were replaced in Cape Cod member towns with more efficient LEDs through a contract with Republic Electric East. The energy savings are approximately 300,000 kWh annually, equivalent to \$37,000. With the rebates from Cape Light Compact, the measures and retrofit costs totaling over \$114,000 were fully paid for by the Compact. The total energy savings over the lifetime of the fixtures is estimated to be approximately \$260,000. In addition, the towns see the benefits of reduced maintenance cost as LEDs have a lifetime of over 7 years and are rated at 100,000 hours.

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## 2. Summary of Key Plan Components

### 2.1 Background on the Cape Light Compact

The Cape Light Compact was formed in 1997 as an inter-governmental organization authorized by votes of town meeting, boards of selectmen, town council, and county commissioners. It consists of all twenty-one Cape and Vineyard towns and Barnstable and Dukes counties.

The Compact's articles of organization include a formal Intergovernmental Agreement signed by each participating town or county member. Membership provides voting rights and inclusion for planning, analysis, and participation in Compact programs. The organization relies on the existing structure of local and county government, cooperation between government agencies, and the professional expertise provided by staff and contractors.

The purpose of the Compact, among other things, is to advance the interests of consumers in a competitive electric power supply market. This purpose includes development and implementation of energy efficiency plans and programs.

Administration and implementation of the Compact's energy efficiency programs involves a combination of several different actors and stakeholders. The organizational structure is briefly summarized below.

Consumers/Town Members. The consumers in each Compact member town had the opportunity at town meeting, or through town council, as the case may be, to approve the original Energy Efficiency Plan and to work with Boards of Selectmen, Town Council and town departments to guide the Compact Governing Board on plan adjustments over time. As final recipients of service, in their oversight and responsive role, and as part of the Compact's local network, consumers, town departments, and social, civic and religious organizations in the member towns play an important part in the overall development and implementation of the EEP.

The Compact Governing Board. The Compact Governing Board includes one appointed representative and an alternate from each member town, and provides on-going policy and budget oversight for the energy efficiency program. The Governing Board decisions include input from the towns and consumers, legal and technical advisors, the program administrators, and reports and recommendations of the Energy Efficiency Subcommittee. The Governing Board provides policy guidance to the Compact staff and the Compact Management Contractors. The Governing Board has approved this Phase III Plan.

Barnstable County Administrative Personnel. Barnstable County provides fiscal and administrative support services for the Compact. For fiscal matters this includes receipt of energy efficiency funds on behalf of the Compact; accounting and disbursement; and financial reporting. For administrative support this includes issuance of Requests For

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Proposals (“RFPs”), contract formation with bidders recommended by the Compact, contract management and professional staff for oversight of efficiency programs.

Compact Administrative Staff. The Compact staff is responsible for many aspects of efficiency program management, including coordination with the Governing Board; oversight of the Management Contractor; management of the technical consultants; representation of the Compact at regional meetings and events; making presentations to local boards, civic and environmental advocacy organizations; and responding to customer requests and concerns.

Compact Management Contractor. The Compact Management Contractor is responsible for the day-to-day management of the energy efficiency programs. The Management Contractor has the primary responsibility for ensuring that the programs are delivered as planned in an effective and efficient manner. The Management Contractor assists the Compact in conducting competitive bidding processes to select vendors and review vendor claims for payment to the Compact. The Management Contractor also oversees the work of all the program vendors, provides guidance on program design, and ensures quality performance from each vendor. The Management Contractor is also responsible for maintaining a database on all efficiency program activities, costs and savings. The Management Contractor is hired through a periodic, competitive bidding process in compliance with applicable law.

The Program Vendors. The vendors will deliver the energy efficiency services and products to participating customers, as outlined in the descriptions below for each energy efficiency program. These services will include marketing and outreach, providing energy audits and offering technical assistance, installing efficiency measures, customer education, working with trade allies to increase the availability of efficiency products and services, and other services that may be required of each program. The program vendors are hired through periodic, competitive bidding processes in compliance with applicable law.

## **2.2 Overview of Efficiency Programs**

### **Structure of Programs**

During Phase I, the Compact’s energy efficiency program designs were based primarily upon the programs offered by electric utilities in Massachusetts and the region. During Phase II, the Compact continued with the general structure of the Phase I programs, but made several important changes to expand the efficiency opportunities provided to customers and improve the delivery of efficiency programs. During Phase III, the Compact will continue with the same general structure of the efficiency programs, and will make modifications based on the lessons learned from our customers, our vendors, our community contacts, and our trade allies.

In general, the Compact’s programs are designed to overcome the many market barriers that prevent customers from adopting cost-effective energy efficiency measures. The programs are structured according to markets, such as residential new construction, low-income retrofit, small C&I retrofit, large C&I retrofit, C&I new construction and

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government agencies. By structuring the programs in this way, the marketing and delivery of the programs can be designed to take account of the unique interests and needs of each market, and can be most effective in overcoming market barriers to improved energy efficiency for the Cape and Vineyard.

Residential customers face many market barriers to energy efficiency, including: high transaction costs, lack of awareness of efficiency measures, lack of awareness of efficiency benefits, limited access to financing, uncertainty about the performance of new and different measures, limited product or service availability, lack of financial incentive for landlords that do not pay electricity bills, and lack of ability of tenants to install efficiency measures in rented buildings.

Commercial and industrial customers face many of the same barriers as residential customers, and sometimes have additional barriers, including: lack of supply-chain and distribution support, spending budgets that limit up-front investments, budgeting systems that offer no incentive to reduce electricity bills, and lack of procedures, staff or funding to evaluate energy consumption and energy efficiency opportunities.

### **Equitable Distribution of Program Funds**

The Compact will maintain an equitable distribution of program funds across each of its member towns to the extent reasonably possible. Each town will be allocated a target budget for those programs that are flexible enough to be distributed evenly across the territory, including: the Low-Income Single and Multi-Family Programs, the Residential New Construction Program, the MassSAVE (formerly RCS/Massachusetts Home Energy Services) Program, and the Small C&I Retrofit Program. These target budgets will be based upon electricity sales to each town, and thus will reflect each town's contribution to the Compact's efficiency funds.

Vendors for these town-by-town programs will be informed of the target budgets and will attempt to reach these targets each year through modifications to their marketing efforts. Those towns that are under-spending their budgets will be informed about the opportunities for increased efficiency spending, while those towns that are likely to overspend their budgets may be asked to postpone some efficiency investments until the other towns have had full opportunity to access their funds. Provisions will be made to account for the unique conditions in each town, such as the number of low-income customers, the number of commercial or industrial customers, and the opportunities for energy efficiency investments in general.

The Compact recognizes that equitable distribution of program funds in some programs may require a long-term outlook. For example, in the case of the Commercial & Industrial sector, since the Compact began administering the energy efficiency funds in July, 2001, the government agency participants have received a proportionally larger share of energy efficiency funds, primarily due to prior years of being underserved and cost-share barriers that prevented the installation of energy efficiency measures in these facilities. The Compact believes that new government electric accounts, as measured by electricity sales, will grow at a slower rate than existing and new business commercial accounts and that once the pent-up demand for energy efficiency services has been met,

that government energy efficiency spending will decline. Over time, business commercial program expenditures will grow as awareness grows about the benefits and ability of the Compact to deliver greater energy efficiency improvements. In addition, the Compact has increased its working relationship with the Cape Cod Chamber of Commerce (see attached support letter, Attachment C) to ensure that the business community takes full advantage of the energy efficiency program services.

## 2.3 Program Budgets

Table 2.1 presents a summary of the Compact's actual energy efficiency budgets for 2003 and 2004, and the projected budgets for 2005 through 2007. The electricity sales to Compact customers are applied to the energy efficiency charge to determine the amount of efficiency funds collected in each year. The electricity sales in 2005 and beyond are estimated by assuming a conservative annual growth rate of 0.5 percent. Based on these assumptions, the Compact's annual energy efficiency collections are expected to be roughly \$5.1 million in 2005.

**Table 2.1 Compact Budget Summary: 2003 Through 2007**

	2003	2004	2005	2006	2007
<b>Total Estimated Collections</b>					
Forecasted MWh Sales					
Residential	1,047,313	1,096,275	1,106,884	1,112,418	1,117,980
Commercial and Industrial	884,999	933,864	942,901	947,615	952,354
Total Forecasted Sales (MWh)	1,932,311	2,030,138	2,049,785	2,060,034	2,070,334
Efficiency charge (mills/kWh)	2.5	2.5	2.5	2.5	2.5
Total Estimated Collections (\$)	4,830,778	5,075,346	5,124,462	5,150,084	5,175,834
<b>Adjustments to Total Estimated Collections</b>					
Forecasted vs. Actual Collections from Prior Year	55,682	0	0	0	0
Estimated Carryover from Prior Year	1,339,553	1,764,310	-434,657	0	0
Interest on Carryover from Prior Year	36,886	36,886	20,162	0	0
Other Adjustments (IRM leftover, 2003)	498,622	0	0	0	0
Committed Funds	-307,847	0	0	0	0
Total Adjustments	1,622,896	1,801,196	-414,495	0	0
<b>Total EEP Budget</b>	<b>6,453,674</b>	<b>6,876,542</b>	<b>4,709,967</b>	<b>5,150,084</b>	<b>5,175,834</b>

Table 2.1 also presents two adjustments to the energy efficiency collections. The Compact over-committed 2004 efficiency program funds by \$434,657, due to a very successful year where customer demand for the Compact's services was especially high. The Compact also earned \$20,162 in interest on the funds used during 2004. Once these two adjustments are accounted for, the Compact's total EEP budget for 2005 is \$4.7 million.



**Table 2.2 Contributions of Customer Classes to the Low-Income Budget in 2005**

2005 Budget Items	Residential	Low-Income	C&I	Total		
2005 MWh Sales	881,407	225,476	942,901	2,049,785		
Percent of Total Sales	43.0%	11.0%	46.0%	100.0%		
Total EE Budget	2,049,784,612 kWh, times	2.50	mills/kWh	5,124,462		
Low-Income Budget Floor I	2,049,784,612 kWh, times	0.25	mills/kWh	512,446		
Low-Income Budget Floor II	20% of residential budget	20%		440,704		
Low-Income Budget Floor III	LI sales percent of total sales	11%		563,691		
EE Budget	2,203,518	563,691	2,357,252	5,124,462		
Percent of Total Budget	43.0%	11%	46.0%	100.0%		
<b>Contribution by Residential and C&amp;I Classes to Low-Income Class:</b>						
MWh Sales	881,407	0	942,901	1,824,308		
Percent of Total Sales	48.3%	0.0%	51.7%	100.0%		
<b>Low-Income Budget Above Proportional Allocation:</b>						
	563,691	less	11%	times	5,124,462	0
<b>Contribution by Class:</b>						
Residential	48.3%	times	0	0		
Commercial & Industrial	51.7%	times	0	0		

The calculations used to determine the low-income program budgets are detailed in Table 2.2. As described in Section 4.1, the portion of electricity sales to the low-income customers is roughly 11% of total electricity sales. If low-income customers were to be allocated efficiency program funds on the basis of their contribution to the total collections, the low-income program budget would be \$563,691. The Massachusetts Restructuring Act requires that low-income customers should receive at least 20% of residential efficiency budget, and in no event less than the amount funded by a charge of 2.5 mills/kWh. G. L. c. 25, §19. As shown in Table 2.2, both of these funding “floors” are lower than the amount based on the low-income customers’ contribution to total collections. Therefore, the low-income programs have been allocated \$563,691 on this basis.<sup>1</sup>

Table 2.3 presents the details of the Compact’s efficiency budget, by program. The program costs are broken out by planning and administration; marketing; financial incentives to customers; sales, technical assistance and training; and evaluation and market research. The Compact does not require shareholder performance incentives; thus these are not included in the budget.

The “program planning and administration” column includes the costs of the Management Contractor, technical support consultants, legal support, Compact in-house staff members, and program-specific costs such as membership dues to the LEAN and NEEP.

<sup>1</sup> This figure represents the low-income program’s total budget *prior* to the various adjustments to collections, such as carryover and interest.

**Table 2.3 Detailed Projected Program Budgets for 2005**

	Program Planning & Admin	Program Marketing	Customer Incentives	Sales, Tech Assist & Training	Evaluation and Market Research	Total Program
<b>Residential Programs</b>						
LI Single Family	29,042	18,705	155,429	65,553	3,380	272,109
LI Multi-Family	14,830	9,552	79,368	33,474	1,726	138,949
LI New Construction	17,919	11,541	95,903	40,448	2,085	167,897
LI Special Projects	11,686	8,847	100,068	6,500	1,599	128,700
<u>Total Low-Income</u>	<u>73,477</u>	<u>48,645</u>	<u>430,769</u>	<u>139,475</u>	<u>8,789</u>	<u>707,656</u>
New Construction	24,248	13,263	118,441	86,081	25,023	267,056
P&S - Lighting	36,145	16,708	155,759	100,862	26,941	336,414
P&S - Appliances	46,144	21,330	202,018	130,471	29,515	429,477
P&S - HVAC	16,147	7,464	69,928	45,244	11,505	150,288
MassSAVE	100,222	47,243	573,583	194,547	35,659	951,254
<u>Total Non Low-Income</u>	<u>222,907</u>	<u>106,008</u>	<u>1,119,728</u>	<u>557,205</u>	<u>128,642</u>	<u>2,134,490</u>
<u>Total Residential</u>	<u>296,384</u>	<u>154,653</u>	<u>1,550,496</u>	<u>696,680</u>	<u>137,432</u>	<u>2,842,146</u>
<b>Commercial &amp; Industrial Programs</b>						
Large New Construction	4,363	2,387	31,556	8,773	975	48,054
Large Retrofit	4,363	2,387	31,556	8,773	975	48,054
Small Customers	50,272	27,498	348,451	99,910	27,542	553,673
Government Agencies	103,867	56,813	728,803	191,788	62,667	1,143,937
Products and Services	24,728	3,680	10,256	20,934	14,504	74,102
<u>Total Commercial &amp; Industrial</u>	<u>187,594</u>	<u>92,764</u>	<u>1,150,623</u>	<u>330,178</u>	<u>106,662</u>	<u>1,867,821</u>
<b>Total Compact</b>	483,977	247,417	2,701,119	1,026,858	244,094	4,709,967
Percent of Total Program	10%	5%	57%	22%	5%	100%

The “program marketing” column includes all the costs incurred by the Compact to conduct its program marketing and education campaign, which is described in Chapter 8. This column does not include any of the marketing expenses incurred by the program vendors.

The “customer incentives” column includes the costs that are used to provide direct financial support to customers for the installation of efficiency measures. The “sales, technical assistance and training” budgets include the costs incurred by the program vendors to market, deliver, and provide technical assessments of efficiency measures. It also includes the costs of the Compact’s quality control initiatives. The combination of these two budgets provides an indication of the portion of funds that are used directly to install energy efficiency measures. These budgets combined represent 79% of the total energy efficiency budgets.

The low-income program budgets include a line item referred to as “Low-Income Special Projects.” This line item includes a special initiative – a rehabilitation of the Pocasset Assisted Living Facility – that is targeted to low-income customers but is not delivered through one of the other three low-income programs. The Compact has worked from the early design stage through completion of the Pocasset Assisted Living Facility to ensure as many energy efficiency upgrades as possible have been included. This 84 unit affordable independent and assisted living facility is accepting local seniors whose incomes are at or below 60% of the area median income and eligible for the Compact’s low-income energy efficiency programs. The Compact, along with KeySpan Energy Delivery, will upon completion of all upgrades, be pleased to be a part of the installation of high efficiency heating and air conditioning, improved wall and attic insulation, ENERGY STAR windows, lighting, and refrigerators. This regional project is a

redevelopment of the former Barnstable County Hospital, County Road in Bourne, Massachusetts.

## 2.4 Program Cost-Effectiveness

The costs and benefits of the Compact's efficiency programs are summarized in Table 2.4. These costs and benefits include the impacts of the Compact's efficiency activities over the 2005-2007 program period.

The costs and benefits are calculated according to the total resource cost ("TRC") test, as required by the Department of Telecommunications and Energy (the "DTE" or the "Department") in Docket No. DTE 98-100. The TRC test requires that the cost of each efficiency measure includes the cost to the Compact, the cost to the participating customer, and any other costs associated with installing the measure. The TRC test also requires that the program benefits include certain non-electric benefits, such as non-electric resource savings (e.g., oil, gas, water), and customer benefits (e.g. reduced operation and maintenance ("O&M") costs), and several societal benefits associated with low-income programs. Where possible, these costs and benefits have been included in the results presented below.

As indicated in Table 2.4, the Compact's energy efficiency programs are very cost-effective. On average, all of the Compact's energy efficiency programs combined are estimated to have a benefit-cost ratio of roughly 2.6.

**Table 2.4 Projected Cost-Effectiveness: Impacts of Activities from 2005-2007**

	Benefits	Costs	Net Benefits	BCR
<b>Low-Income Programs</b>				
LI Single Family	2,341,858	1,148,655	1,193,202	2.04
LI Multi-Family	1,737,440	519,921	1,217,519	3.34
LI New Construction	1,129,081	499,953	629,128	2.26
<u>Total Low-Income</u>	<u>5,208,380</u>	<u>2,168,530</u>	<u>3,039,850</u>	<u>2.40</u>
<b>Residential Programs</b>				
New Construction	1,353,580	872,663	480,917	1.55
P&S - Lighting	5,974,973	1,018,994	4,955,979	5.86
P&S - Appliances	10,189,471	2,100,951	8,088,520	4.85
P&S - HVAC	2,436,435	722,148	1,714,287	3.37
MassSAVE	9,297,937	5,174,123	4,123,814	1.80
<u>Total Non Low-Income</u>	<u>29,252,396</u>	<u>9,888,879</u>	<u>19,363,517</u>	<u>2.96</u>
<u>Total Residential</u>	<u>34,460,775</u>	<u>12,057,409</u>	<u>22,403,367</u>	<u>2.86</u>
<b>C&amp;I Programs</b>				
Large New Construction	621,447	219,747	401,700	2.83
Large Retrofit	742,892	398,849	344,043	1.86
Small Customers	4,500,866	2,030,373	2,470,493	2.22
Government - Large	2,581,253	1,361,139	1,220,114	1.90
Government - Small	4,447,715	2,041,709	2,406,007	2.18
Products and Services	****	****	****	****
<u>Total Commercial &amp; Industrial</u>	<u>12,894,173</u>	<u>6,051,817</u>	<u>6,842,356</u>	<u>2.13</u>
<b>Total Compact</b>	<b>47,354,949</b>	<b>18,109,226</b>	<b>29,245,723</b>	<b>2.61</b>

*All costs and benefits are presented as 2005 present value dollars.*

The direct economic benefits of the efficiency programs are substantial. With a three-year investment of roughly \$18 million (from both the Compact's funds and the participants' contributions), these programs will result in roughly \$47 million in reduced energy costs for Cape Cod and Martha's Vineyard. This means that the *net* benefits of these programs will be roughly \$29 million. No other investment in electricity resources and infrastructure offers this type of return for the investment.

In addition, these results do not account for the indirect economic benefits that occur when lower electric bills result in increased disposable income and increased comfort for households and improved productivity for businesses and industries. Furthermore, all of the Compact's energy efficiency programs result in significant environmental benefits that are not accounted for in the cost-benefit results above. By helping to avoid the construction and operation of power plants within New England, these programs can help mitigate some of the gravest environmental threats facing our society today, including global warming, ground-level ozone, acid rain, and health impacts from fine particulate matter and air toxics such as mercury.

## 2.5 Summary of Program Savings and Impacts

Table 2.5 presents a summary of the energy savings associated with all efficiency measures to be installed by the Compact in 2005. The first column presents the amount of energy savings experienced in the year of installation, while the second column indicates the amount of savings achieved over the full lifetime of the efficiency measures. In total, the Compact's 2005 efficiency program activities are expected to save nearly 10 GWh of energy per year.

**Table 2.5 Projected Program Impacts From Efficiency Activities in 2005**

	Annual Electricity Savings (MWh)	Lifetime Electricity Savings (MWh)	Cost of Saved Electricity (\$/MWh)	Annual Fossil Savings (MMBtu)	Lifetime Fossil Savings (MMBtu)	Lifetime Energy Savings (MMBtu)	Cost of Saved Energy (\$/MMBtu)
<b>Low-Income Programs</b>							
LI Single Family	373	5,754	47.1	199	5,096	24,730	11.0
LI Multi-Family	233	2,985	46.9	172	4,301	14,486	9.7
LI New Construction	34	319	527.4	559	13,979	15,067	11.2
<b>Total Low-Income</b>	<b>640</b>	<b>9,058</b>	<b>49.1</b>	<b>830</b>	<b>23,376</b>	<b>54,283</b>	<b>10.8</b>
<b>Residential Programs</b>							
New Construction	140	1,513	175.5	1,273	31,828	36,991	7.2
P&S - Lighting	2,488	16,130	20.8	0	0	55,036	6.1
P&S - Appliances	893	11,342	37.9	2,504	35,056	73,757	5.8
P&S - HVAC	248	3,727	40.1	0	0	12,715	11.7
MassSAVE	1,451	19,535	48.6	12,342	233,082	299,734	3.2
<b>Total Non Low-Income</b>	<b>5,221</b>	<b>52,247</b>	<b>40.8</b>	<b>16,120</b>	<b>299,966</b>	<b>478,233</b>	<b>4.5</b>
<b>Total Residential</b>	<b>6,023</b>	<b>62,642</b>	<b>43.3</b>	<b>17,050</b>	<b>323,342</b>	<b>537,077</b>	<b>5.0</b>
<b>Commercial &amp; Industrial</b>							
Large New Construction	136	2,177	22.1	0	0	7,428	6.5
Large Retrofit	294	3,284	37.2	0	0	11,206	10.9
Small Customers	1,398	20,270	27.3	0	0	69,162	8.0
Government - Large	694	9,716	47.1	0	0	33,150	13.8
Government - Small	1,281	18,570	37.0	0	0	63,359	10.8
Products and Services	***	***	***	***	***	***	***
<b>Total Commercial &amp; Industrial</b>	<b>3,803</b>	<b>54,017</b>	<b>34.6</b>	<b>0</b>	<b>0</b>	<b>184,305</b>	<b>10.1</b>
<b>Total Compact</b>	<b>9,826</b>	<b>116,659</b>	<b>39.2</b>	<b>17,050</b>	<b>323,342</b>	<b>721,382</b>	<b>6.3</b>

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The lifetime energy savings provide an indication of which programs offer the greatest total electricity savings over the long-term. For example, the Small C&I program offers the greatest amount of electricity savings of all programs, representing roughly 17 percent of the total lifetime energy savings. The Residential MassSAVE program provides the second-largest electricity savings, with over 16 percent of the total lifetime energy savings.

Table 2.5 also provides a summary of the costs to achieve the energy savings. The cost of saved electricity provides an indication of how the programs compare in terms of annual cost to the Compact per unit of lifetime electricity savings. The Residential Products and Services Programs and most of the C&I programs have especially low costs of saved electricity. The Low-Income Programs and the Residential New Construction Program have particularly high costs of saved energy from this perspective, because these programs save a relatively small amount of electricity, while they save relatively greater amounts of fossil fuels.

Table 2.5 also provides a summary of fossil fuel savings. The low-income programs, the new construction programs, and the MassSAVE program are expected to save oil and gas consumption through the “fuel-blind” measures. The Lifetime Energy Savings (MMBtu) and the Cost of Saved Energy (\$/MMBtu) include the effects of both the electricity and gas savings.

Table 2.6 presents the cumulative energy and capacity savings over the total three-year program period. The cumulative annual savings represents the amount of savings that will be experienced in each future year, as a result of program activities in the previous years. By the end of the three-year program period, the Compact expects to save roughly 29 GWh of energy and almost nine MW of capacity per year.

**Table 2.6 Projected Cumulative Annual Savings Over the Three-Year Program**

	Energy Savings (MWh)			Capacity Savings (kW)		
	2005	2006	2007	2005	2006	2007
<b>Low-Income Programs</b>						
LI Single Family	373	747	1,120	68	137	205
LI Multi-Family	233	465	698	57	115	172
LI New Construction	34	68	102	11	22	33
<u>Total Low-Income</u>	<u>802</u>	<u>1,605</u>	<u>2,407</u>	<u>190</u>	<u>381</u>	<u>571</u>
<b>Residential Programs</b>						
New Construction	140	281	421	54	108	161
P&S - Lighting	2,488	4,975	7,463	835	1,669	2,504
P&S - Appliances	893	1,786	2,680	689	1,378	2,067
P&S - HVAC	248	497	745	230	461	691
MassSAVE	1,451	2,903	4,354	302	604	907
<u>Total Non Low-Income</u>	<u>5,221</u>	<u>10,442</u>	<u>15,664</u>	<u>2,110</u>	<u>4,220</u>	<u>6,330</u>
<u>Total Residential</u>	<u>6,023</u>	<u>12,047</u>	<u>18,070</u>	<u>2,300</u>	<u>4,600</u>	<u>6,901</u>
<b>C&amp;I Programs</b>						
Large New Construction	136	272	408	36	72	108
Large Retrofit	294	588	882	46	92	137
Small Customers	1,398	2,796	4,194	195	391	586
Government - Large	694	1,388	2,082	135	270	405
Government - Small	1,281	2,561	3,842	179	358	537
Products and Services	***	***	***	***	***	***
<u>Total Commercial &amp; Industrial</u>	<u>3,803</u>	<u>7,605</u>	<u>11,408</u>	<u>591</u>	<u>1,182</u>	<u>1,773</u>
<b>Total Compact</b>	<b>9,826</b>	<b>19,652</b>	<b>29,478</b>	<b>2,891</b>	<b>5,783</b>	<b>8,674</b>

*The capacity savings represent capacity saved at the time of the New England summer peak demand.*

For the sake of simplicity, the program period savings presented in Table 2.6 assume that the 2005 programs will continue unchanged through the remaining two years. In practice, the Compact may modify its program designs during the five-year amended program period and thus achieve different amounts of savings than presented here.

Note that the two tables above do not include other benefits of these programs that can be substantial, including avoided transmission and distribution costs, non-energy benefits and environmental benefits.

## 2.6 Consistency With State Energy Efficiency Goals

The Division of Energy Resources (“DOER”) has established statewide energy efficiency goals that are to be used by efficiency program administrators as the basis for developing their energy efficiency programs. Section 6 describes these goals and demonstrates that the Compact’s EEP is consistent with the statewide energy efficiency goals. In fact, the Compact’s EEP is likely to achieve each of the goals to a high degree.

The *overall* statewide energy efficiency goal is “to strengthen the economy and protect the environment by increasing the efficiency of energy use.” The Compact’s efficiency programs will clearly achieve this overall goal. The efficiency measures installed by the Compact over the three-year planning period are expected to save roughly 29 MWh per year. These cumulative annual efficiency savings are expected to reduce emissions of CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>x</sub>, fine particulates, mercury and other hazardous power plant emissions. These emission reductions will be achieved at a net negative cost, which means that

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energy efficiency represents the most cost-effective means of reducing emissions and addressing some of the most pressing environmental issues facing our society today.

On average, every dollar spent on the Compact's efficiency programs will result in roughly 2.6 dollars saved in terms of avoided electricity generation, transmission and distribution costs. Participating customers will see even greater savings on their electric bills, because avoided electricity prices are higher than these avoided electricity costs. Lower electric bills will provide businesses and industries with lower operating costs, improved cash flow, and greater opportunities for investment. Lower electric bills will help government agencies reduce costs and keep their budgets in balance. Lower electric bills will also provide residential customers with greater disposable income, which in turn can be used to help stimulate the local economies on the Cape and Vineyard. These impacts will clearly help strengthen the local and state economy.

## 3. Residential Programs

### 3.1 Introduction and Overview

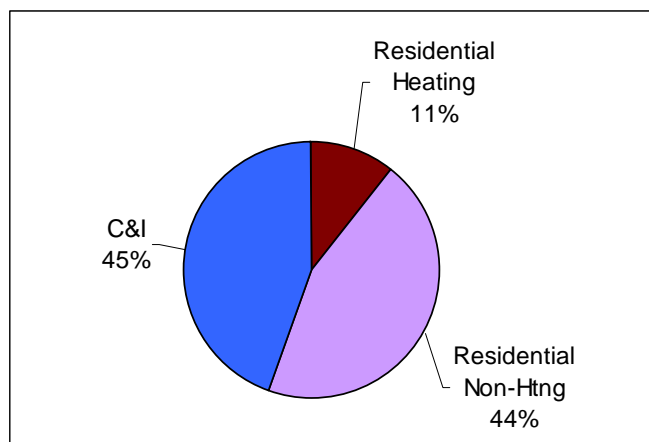
There were roughly 172,000 residential electricity customers in the Compact's member towns in 2004, and they consumed approximately 1,122 GWh of electricity throughout the year. Residential customers represent 87 percent of all Compact electricity customers, but their electricity consumption represents only 55 percent of total electricity consumption, due to the lower amount of electricity consumed per customer.

**Table 3.1 Residential Customers and Sales in 2004**

	Number of Customers	Percent of Class	Percent of Total	Sales (MWh)	Percent of Class	Percent of Total
Low-Income	30,344	18%	15%	233,212	21%	11%
Non-Low-Income	141,578	82%	71%	888,387	79%	44%
Electric Heat	19,604	11%	10%	219,111	20%	11%
Non Electric Heat	152,317	89%	77%	902,488	80%	44%
Total Residential	171,922	100%	87%	1,121,599	100%	55%
Total Compact	198,118	Na	100%	2,039,587	na	100%

Table 3.1 provides a breakdown of different types of residential customers in the Compact's member towns. Low-income customers are roughly 15% of the total customers, and consume roughly 11% of the total electricity sold within the Compact. Customers with electric space heat (both low-income and non-low-income) are responsible for roughly 11% of the total electricity consumption within the Compact.

**Figure 3.1 Compact Sales: Residential Breakdown**



The Compact's residential energy efficiency programs are designed to address all of the main residential electricity end-uses, including space heating, water heating,



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refrigeration, lighting and major appliances. They are also structured to be available to all of the various customer types, including low-income, new customers, high-use customers, and moderate-use customers. In addition, the programs are linked together, so that customers participating in one residential program will be informed of, and encouraged to participate in, other residential programs.

## **3.2 Residential ENERGY STAR New Construction Program**

### **Background**

This program will be a continuation of the Residential New Construction (“RNC”) Program that the Compact is currently offering. The Compact will also continue efforts that seek to promote greater energy efficiency savings per participant, as well as incorporate, where appropriate, the construction of sustainable and environmentally sound homes.

### **Program Design**

The Residential New Construction Program promotes the ENERGY STAR Homes standards in an effort to minimize lost energy efficiency opportunities. This regional fuel-blind initiative was created to help homebuilders and buyers design and construct homes that use less energy than homes built to Model Energy Code standards.

The ENERGY STAR Homes Program is a national, voluntary program designed by the US Environmental Protection Agency that develops partnerships with new home builders, home building contractors and related industries. It is implemented by electric and gas efficiency program administrators in Massachusetts and other Northeast states, and includes a strong education component as well as a technical/rating service to evaluate and reward the builder/homeowner for building a high performance home. In Massachusetts and neighboring states, a Joint Management Committee (“JMC”), made up of representatives of the participating efficiency program administrators, administers the ENERGY STAR Homes Program. The Compact is an active member of the JMC.

This program is targeted to home builders, home buyers and the residential construction trade allies, with the long-term goal of promoting efficient residential construction practices and increasing demand for efficiency in both construction design and heating and cooling systems. The program is available to all new homes, regardless of the type of heating fuel used. As a part of this program, the Compact works with local officials, home builders and environmental advocacy groups to encourage the improvement of building codes on the Cape and Vineyard that recognize high performance building practices.

### **Marketing and Delivery of Program**

This program will be marketed with direct builder outreach, home and trade show exhibits, trade journals, general public print, builder and homebuyer seminars, the Compact web site ([www.capelightcompact.org](http://www.capelightcompact.org)), the ENERGY STAR website ([www.energystarhomes.com](http://www.energystarhomes.com)) and other Compact marketing initiatives. A contractor

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hired by the JMC performs much of the marketing on a region-wide basis. Targeted field-outreach is provided by the contractor to insure opportunities are captured in each of the program sponsor’s territories.

This program is also delivered in the field by builder-interface technicians through the contractor hired by the JMC. The delivery contractor works with home builders and buyers, applies the Home Energy Rating System (“HERS”) to the home, and provides the HERS certification. The contractor processes the rebates and financial incentives offered directly through the program and leverages other energy efficiency rebates and offers that may be available from time-to-time (e.g., KeySpan/GasNetworks rebates for high efficiency heating systems or the NEEP Products initiatives that may be available for appliances).

### **Efficiency Measures and Customer Incentives**

This program promotes efficiency upgrades to all end-uses in a new home, including building shell, HVAC, domestic water heating, and ENERGY STAR lighting and appliances.

The program offers an ENERGY STAR plan review, a pre-construction meeting, a post installation inspection, and HERS certification for homes that meet the ENERGY STAR standards. The program also offers:

- FREE HVAC commissioning service for ducted space conditioning systems
- FREE code compliance documentation
- FREE bulb installation service
- Performance incentives based on the Home Energy Rating score achieved according to the following schedule (incentives are per unit):

HERS Score	Single Family	Duplex	Triplex	4-Plex	5+ Units
86	\$300	\$250	\$233	\$225	\$200
87	\$400	\$300	\$267	\$250	\$200
88	\$900	\$650	\$567	\$525	\$400
89	\$1,400	\$1,050	\$933	\$875	\$700
90	\$1,800	\$1,400	\$1,267	\$1,200	\$1,000
91	\$1,900	\$1,500	\$1,367	\$1,300	\$1,100
92+	\$2,000	\$1,600	\$1,467	\$1,400	\$1,200

### **New Program Elements Relative to Phase II**

- Targeted outreach to include new large and small builders within the Compact’s member towns through a new builder incentive.
- The HERS Score performance incentives have been revised by lowering the incentives on homes rated below a HERS Score of 88 and to incrementally increase

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the incentives for homes rated above a HERS Score of 88 to reward the building community for achievement of better overall home energy performance.

- A partnership is being developed with Massachusetts Technology Collaborative and the JMC to increase PV installations on Massachusetts residences. Costs can be lowered through installation of PV during the construction phase in high performance homes.
- To increase the installation of high efficiency central air conditioning systems in residential new construction (to SEER 13 or higher), the ENERGY STAR Homes program will mimic the MA COOL SMART (residential central air conditioning program) for equipment rebates and quality installation verification. This will maintain consistency and coordination with the existing successful MA COOL SMART initiative.

### **3.3 Massachusetts Home Energy Services Program (“MassSAVE”)**

#### **Background**

During Phase II, the Compact integrated the Residential High Use Program into the Residential Conservation Services Program (“RCS”), to create the new Massachusetts Home Energy Services Program. (This program was also referred to as the HomEnergy Program.) The integration of the two programs provided residential customers with a “one-stop shopping” approach to home energy efficiency services, streamlined the delivery of in-home energy programs, optimized the financial incentives offered to residential customers, and offered customers a wider range of efficiency opportunities.

The HomEnergy Program, now renamed MassSAVE, is designed to comply with the RCS Coalition Action Plan, as amended. The MassSAVE program offers customers a consistent statewide service as directed by the RCS Network. The Department previously approved the budget for this program on December 24, 2004 in DTE 04-103.

#### **Program Design**

This program will offer home energy services to all residential customers that pay an electric bill within the Compact’s member towns. The overall objective of the program will be to provide comprehensive information, home energy audits and financial incentives to help customers retrofit their existing homes with more efficient measures. All residential customers will be eligible, regardless of their electricity usage levels. The program will offer fuel-blind assistance for non-electric energy measures, including non-electric space-heating efficiency measures.

The Compact will continue to be a participant in the RCS Network that includes representatives from DOER and the electric and gas utilities in Massachusetts. This will allow the Compact to keep the MassSAVE Program up-to-date with modifications that are made by the RCS Network over time.

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## **Marketing and Delivery of Program**

This program will be marketed through several channels. The Compact will participate in the statewide MassSAVE toll-free phone number, as outlined in the Compact's amendment to the 2001 RCS Coalition Action Plan. The program will also be marketed through the Compact's web site, the MassSAVE website, informational flyers, public forums, and the various Compact marketing and education activities.

Starting in Phase III, this program will offer tiered services to better target customer needs. Under the Tier I services, customers that call the Cape Light Compact toll-free number will be interviewed in order to determine their need and reason for calling. The Tier I Customer Service Representative will use the interview to determine the most appropriate means of addressing the customer's needs. The Tier I Representative will also determine whether the customer can benefit from initiatives not related to energy efficiency, such as services offered through utility Customer Service Departments, or the low-income discount electric rate.

The Tier I Representative will also determine whether the customer is a good candidate for the appropriate in-home energy audit. If so, the customer will be referred to either the Walk-Through Audit, the Comprehensive Class A Audit, or the Advanced Diagnostic Audit. If not, the customer will be provided with educational materials regarding energy use and efficiency opportunities. All customers that specifically request an in-home energy audit after talking with the Tier I Representative will be referred to the at least the Walk-Through Audit, unless they have received Tier II services within the past 12 months. This tiered-audit approach will better meet customer expectations and insure the delivery of program services are coupled with cost-effective energy savings.

A vendor selected by the Compact through a competitive bidding process will provide the Tier II services. The Tier II services will include a Walk-Through Audit, a Comprehensive Class A Audit, or the Advanced Diagnostic Audit. The in-home energy audits will be conducted using the RCS home energy audit tool. The purposes of the audit will be to assess the efficiency opportunities of the customer, deliver on-site energy education and low-cost on-site efficiency measures, and to encourage the customer to implement the cost-effective efficiency measures that are identified.

## **Efficiency Measures and Customer Incentives – Tier II**

This program will address all of the key end-use measures that are currently addressed through either the Home Energy Services/RCS program. The MassSAVE Program financial incentives are summarized in Table 3.5.

As a targeted market promotion, certain pre-screened electric space-heating customers will be provided with an analysis of the costs and benefits of replacing the existing electric space heating system with a high efficiency gas, oil or propane system. In order to qualify for the Compact rebate, a gas furnace must have an Annual Fuel Utilization Efficiency ("AFUE") rating of 90 percent or greater, and a gas boiler must have an AFUE rating of 85 percent or greater. Oil and propane systems will also be required to meet comparable efficiency ratings.

**Table 3.2 Efficiency Measures and Incentives Offered by the MassSAVE Program**

Efficiency Measure	Walk Through Audit	Comprehensive Class A Audit	Advanced Diagnostic Audit
Hot Water: Electric.	ISM.	ISM.	ISM.
Hot Water: Fossil.	ISM.	No measures.	ISM.
Thermal Measures:			
Electric Heat & AC.	n/a	Rebate of 75%, no cap.	Rebate of 75%, no cap.
Non-Electric.	n/a	Rebate of 50%, up to \$1,500.	Rebate of 50%, up to \$1500.
Electric Heat.	n/a	Pre-approved fuel-switching supported with \$3000 mail-in rebate	Pre-approved fuel-switching supported with \$3,000 mail-in rebate
Lighting Measures:			
Fixtures.	Fixture costs are shared with customer, with a total cap of \$500 paid by Compact.	Fixture costs are shared with customer, with a total cap of \$500 paid by Compact	Fixture costs are shared with customer, with a total cap of \$500 paid by Compact
Torchieres.	Replace halogen, free.	Replace halogen, free.	Replace halogen, free.
Bulbs.	ISM, limited to high use lighting applications.	ISM, limited to high use lighting applications.	ISM, limited to high use applications
Refrigerators.	Usage: AHAM for eligibility, \$200 rebate.	Usage: AHAM for eligibility, \$200 rebate.	Usage: AHAM for eligibility, \$200 rebate.
Bill Disaggregation.	If requested.	Disaggregation report provided to all.	Disaggregation report provided to all.
Health and Safety	n/a	For all heating system and thermal upgrades, pre- and post-test. Others as identified by technician.	For all heating system and thermal upgrades, pre- and post-test. Others as identified by technician.
Infrared Scan and other advanced steps	n/a	n/a	IR Scan for exterior wall insulation installations. Also, upon customer request.
Additional Incentives (high efficiency heating/domestic hot water, ENERGY STAR® window rebates)	As offers are available.	As offers are available.	As offers are available.
<p><i>Notes:</i></p> <ul style="list-style-type: none"> <li>• <i>ISM: Instant Savings Measure, includes no-cost or low-cost measures that are provided at the time of the initial audit at no cost to the customer.</i></li> <li>• <i>Refrigerator Replacement Incentive: Lookup of the energy ratings using the Association of Home Appliance Manufacturers (“AHAM”) database with the application of an industry accepted age degradation factor. (Note: Refrigerators evaluated in non-living space will be metered for a minimum of 75 minutes). Replacement incentive will be available for all units, regardless of size or configuration, whose annual usage, as determined above, is equal to or greater than 1,175kWh/year.</i></li> <li>• <i>Thermal measures include: blower door test, insulation, air-sealing, duct-sealing, ventilation and programmable thermostats.</i></li> <li>• <i>Non-electric thermal measures are not provided to customers with gas space-heating. These customers are instead offered thermal measures by the KeySpan RCS/HomEnergy program.</i></li> </ul>			

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The space heating analysis will take account of the specific characteristics of the customer's home, e.g., the availability of natural gas or propane, whether there is existing ductwork in the home, whether there is an existing flue for the home, the remaining life of the existing system, and whether a partial space heating system (i.e., an area heater) would be appropriate. For those applications where fuel-switching is cost-effective, the customer will be required to apply for pre-approval. Participants will be offered up to a \$3,000 mail-in rebate to replace the electric space heating system provided the system change can be done cost-effectively.

The Compact will also continue to cross-promote the programs that may be available from KeySpan Energy/GasNetworks to customers with gas space heating. The Compact will reimburse KeySpan for all of the Energy Efficiency Incentives (such as: EEI and piggyback lighting measures) that it provides to customers for installing efficient electric end-use measures.

### **New Program Elements Relative to Phase II**

- Following a study, the RCS Network voted to re-adopt the MassSAVE name for better recognition of the program. This is a statewide initiative.
- All residential customers that are eligible for an energy audit will be placed in one of three service delivery levels, depending on their needs. This will expedite the process as well as better meet the needs of customers.
- Refrigerator incentives will be determined using AHAM lookup data. This will expedite the process, making it less labor-intensive.
- All residential customers will be offered consistent measures initiated by the RCS Network.
- The Fuel Switch program for those customers that wish to replace their electric space heat system has been enhanced to pre-screen customers to determine eligibility and streamlined with a pre-approval process and simpler installation/verification instructions.
- The Compact will work with its program vendor to address many of the comments and suggestions from customers through the survey distributed by the vendor after major measure installations.

## **3.4 Residential High Efficiency Central Air Conditioning**

### **Background**

This program is a continuation of the Residential High Efficiency Central Air Conditioning program, COOL SMART with ENERGY STAR, which was rolled-out in the Spring of 2004. Enhancements are proposed to introduce a quality installation verification component in 2005 to support the market changes that will be occurring with the Federal HVAC standards and the ENERGY STAR specifications in 2006 and beyond.

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## **Program Design**

This MA COOL SMART program promotes the purchase and installation of energy efficient central air conditioning systems in new construction and market conversion of older HVAC units. The program also is designed to increase the number of North American Technical Excellence (“NATE”)-certified technicians in the state, and to improve the quality of installations. All residential electric customers and HVAC contractors and distributors in the Compact territory will be eligible to take advantage of the measures provided in this program. Customers that are eligible for any other residential program offered by the Compact, such as MassSAVE or ENERGY STAR Homes, will be encouraged to learn about and take advantage of the MA COOL SMART program, and will also be offered lighting and appliance measures that are offered through the NEEP Regional Lighting and Appliance initiatives.

This MA COOL SMART program has been designed and implemented on a statewide basis including all the electric energy efficiency program administrators, with the overall goal of not missing lost opportunities and of transforming the markets for high efficiency central air conditioning systems by increasing the knowledge of, availability, consumer acceptance, contractor training and installation of these systems.

The MA COOL SMART Initiative includes a marketing campaign aimed at all market actors, equipment rebates, NATE-qualified technician incentives and quality installation verification incentives. The equipment rebate component provides customers (or contractors) with mail-in rebates for the installation of qualifying (SEER 13 or greater) systems.

## **Marketing and Delivery of Program**

The program administrators, through the marketing contractor has developed a marketing campaign designed to promote ENERGY STAR residential central HVAC systems at multiple levels. This campaign includes print and major media designed to reach consumers, contractors, distributors, with program information and education. The program is also promoted on the Compact web site and the [www.macoolsmart.com](http://www.macoolsmart.com) website.

The MA COOL SMART program coordinates with the ENERGY STAR brand to promote the important messages about: choosing the right contractor, system sizing, checking for proper air flow, duct leaks and air sealing and well as system refrigerant charge.

North American Technician Excellence training sessions for contractors are provided by the program and NATE-certified contractors are provided incentives for every qualifying installation.

A contractor/distributor outreach and training service is provided by the program vendor who coordinates recruitment, training, and placement of retail marketing materials. A marketing firm is used to develop and produce point of purchase advertisement as well as print and major media campaigns. The program vendor is the fulfillment contractor who processes rebate applications and payments to customers, contractors and technicians.

## Efficiency Measures and Customer Incentives

This program promotes ENERGY STAR qualified high efficiency central air conditioning systems. In 2005 the Compact will continue to offer incentives offered in 2004 and enhance the program to incorporate a quality installation verification component.

This program provides rebate incentives directly to customers, contractors, technicians, as follows:

**Table 3.3 Rebates for ENERGY STAR Qualified Central A/C Equipment**

Central Air Conditioning System			
SEER <sup>1</sup> 13.00 to 13.99 EER <sup>2</sup> 11	SEER 13.00 to 13.99 - with ECM <sup>3</sup> EER 11	SEER ≥ 14.0 EER 12	SEER ≥ 14.0 - with ECM EER 12
\$300	\$350	\$450	\$500
Central Air Source Heat Pump Systems			
SEER 13.00 to 13.99 & HSPF <sup>4</sup> 8.00 to 8.49 EER 11	SEER 13.00 to 13.99 & HSPF 8.00 to 8.49 - with ECM EER 11	SEER ≥ 14.0 & HSPF 8.5 EER 12	SEER ≥ 14.0 & HSPF 8.5 – with ECM EER 12
\$300	\$500	\$450	\$650
<i>Thermostatic Expansion Valve (TXV) required for all equipment.</i>			
<sup>1</sup> SEER – Seasonal Energy Efficiency Ratio		<sup>3</sup> ECM – Electronic Commutated Motor on Indoor Fan	
<sup>2</sup> EER – Energy Efficiency Ratio, expressed in Btu/hour per watt. This measure of instantaneous cooling efficiency was reinstated as a standard of the ENERGY STAR specification on August 5, 2004		<sup>4</sup> HSPF – Heating Seasonal Performance Factor	

## New Program Elements Relative to Phase II

- This program will promote the quality installation verification of high efficiency residential central air conditioning systems.
- During 2005 the Compact, along with the other MA COOL SMART sponsors, will place yellow pages ads to increase consumer awareness of the program.



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## 3.5 Residential ENERGY STAR Products and Services Program

### Program Design

This program promotes the purchase and installation of energy efficient lighting measures and appliances at the time of initial purchase or replacement. All residential customers in the Compact territory will be eligible to take advantage of the measures provided in this program. Customers that are eligible for any other residential program offered by the Compact would be served primarily through that program, but would also be offered lighting and appliance measures through this program.

This program will promote and implement the Northeast Energy Efficiency Partnership ENERGY STAR Products Initiative. This initiative is offered with other regional Program Administrators, with the overall goal of transforming the markets for efficiency products by increasing the availability, consumer acceptance, and use of these products.

The NEEP Product Initiative includes a catalog component and a retail sales component. The catalog component offers customers a selection of ENERGY STAR qualified lighting products, and NEEP sponsors subsidize the costs of the efficiency items. The retail sales component provides customers with instant rebates toward the purchase of qualifying lighting products, with rebate coupons provided through the mail and at point of sale. The region has developed and implemented the Negotiated Cooperative Promotions (“NCP”) in which manufacturers and retailers work cooperatively to promote ENERGY STAR lighting.

The NEEP Appliance Initiative promotes the purchase of high-efficiency appliances at the point of sale, by working with appliance distributors and offering promotional literature and rebates at retail appliance stores. The program will also provide information and labels for use by retailers and manufacturers to identify which appliances meet the ENERGY STAR energy efficiency guidelines. The NEEP sponsors are also pursuing an option to apply the popular NCP process to the appliance sector.

The Compact along with other regional sponsors through NEEP, works with industry, DOE and EPA to ensure and improve compact fluorescent light (“CFL”) product quality, selection and performance. The Compact, is also a sponsor of the Consortium for Energy Efficiency (“CEE”), and continues to promote advances in high efficient lighting design through CEE’s Lighting For Tomorrow fixture competition that began in 2003.

### Marketing and Delivery of Program

In collaboration with NEEP and other program administrators throughout the region, the Compact has developed a marketing campaign designed to promote ENERGY STAR lighting and appliances at multiple levels. This campaign includes print and major media designed to reach consumers, information and education provided to retail sales staff, as well as enlistment of partnerships and cooperative advertising with manufacturers and retail partners. The program is also promoted on the Compact web site as well as the regional website, [www.myenergystar.com](http://www.myenergystar.com). The tie-in to the ENERGY STAR brand also offers marketing and promotional opportunities through that national program.

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This program is delivered in coordination with other NEEP program administrators jointly utilizing three contractors. A retail outreach service coordinator provides recruitment, training, and placement of retail marketing materials. A marketing firm is used to develop and produce point of purchase advertisement as well as print and major media campaigns. A fulfillment contractor processes rebate applications and payments to customers and retailers. See additional information in the Education section, chapter 8.

### **Efficiency Measures and Customer Incentives**

This program promotes ENERGY STAR qualified fixtures and screw-in compact fluorescent bulbs, as well as clothes washers, refrigerators, and room air conditioners. In 2005 the Compact will continue to offer incentives to replace inefficient dehumidifiers and air conditioners, which are commonly used on Cape Cod and Martha's Vineyard due to the moist climate there.

This program provides rebate incentives directly to customers, as follows:

- Compact florescent bulbs: \$2 (and light kits for ceiling fans).
- Exterior fixtures: \$10.
- Interior fixtures and torchieres: \$15.
- Clothes washers: \$50.
- Room air conditioners: a regional pre-season rebate is being planned as well as local turn-in events
- Dehumidifiers: Through local turn-in events
- Additional coordinated high-efficiency furnace initiative, where a \$400 customer rebate is shared between the Compact and GasNetworks (\$200 from Gas Networks, \$200 from the Compact).<sup>2</sup>
- Additional national ENERGY STAR and NEEP-coordinated initiatives may be offered during limited promotional times with regional partners (manufacturers and retailers). For example, the Compact may support the EPA Change-A-Light, Change-the-World initiative, Cool Your World, and various Earth Day efficiency activities.

### **New Program Elements Relative to Phase II**

- This program will look for more cooperative promotions for both lighting and appliances to better leverage funds with retailers and manufacturers.
- During 2005 the Compact will investigate alternative catalog options along with the other Massachusetts sponsors.

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<sup>2</sup> GasNetworks is comprised of six member Massachusetts natural gas companies serving residential and C&I customers throughout Massachusetts (see [www.gasnetworks.com](http://www.gasnetworks.com)).

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## 4. Low-Income Programs

### 4.1 Introduction and Overview

There are over 30,000 residential electricity customers eligible for the Compact's low-income programs, which is roughly 18% of all residential customers. These low-income customers consumed 233 GWh of electricity throughout the year, which is roughly 21% of sales to all residential customers. Table 4.1 provides information regarding the low-income customers in the Compact's member towns.

**Table 4.1 Low-Income Customers and Sales in 2004**

	Number of Customers	Percent of Class	Percent of Total	Sales (MWh)	Percent of Class	Percent of Total
Low-Income	30,344	18%	15%	233,212	21%	11%
Non-Low-Income	141,578	82%	71%	888,387	79%	44%
Total Residential	171,922	100%	87%	1,121,599	100%	55%
Total Compact	198,118	Na	100%	2,039,587	na	100%

*The number of low-income customers is based on 2000 census data. The sales to these customers have been estimated by multiplying the number of customers by the usage per customer of all customers on the discount/assistance electric rate.*

While low-income customers account for only 11% of the total sales, they are an important component of the Compact's efficiency initiatives because they tend to use more electricity than other residential customers. One reason for this is that they rely more heavily upon electricity for space heating. Roughly twenty percent of customers on the low-income electric rate rely upon electric space heating, while only eleven percent of other residential customers do. Low-income customers are also important because their electricity bills tend to represent a larger portion of their total expenses, relative to other residential customers, and reducing low-income electricity bills offers several societal benefits.

In 2005 the Compact will continue using the recently established criterion for determining the eligibility of customers for the low-income programs. Residential customers will be eligible for these programs if their household income is 60% or less of the median income of their county. In Barnstable County the median income is \$45,933, and 60% of this is \$27,560. In Dukes County the median income is \$45,559, and 60% of this is \$27,335. The Compact revises these median income levels as updates become available from Federal and State sources.

In recent years, the Massachusetts electric companies have coordinated their low-income efficiency programs through the Low-Income Energy Affordability Network. This network provides support in the design of low-income programs, and provides a connection to the local weatherization agencies that operate throughout Massachusetts. The Compact will continue to coordinate its low-income programs with the LEAN initiatives and the statewide best practices working group. The program designs in this

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EEP are based on the LEAN programs and measures, and the delivery of these programs will be coordinated with the local weatherization agency on Cape Cod and Martha's Vineyard.

The 2005 low-income program budgets include a line item referred to as "Low-Income Special Projects." This line item includes costs for special initiatives that are targeted to low-income customers but are not necessarily delivered through one of the other three low-income programs. In 2005 the Low-Income Special Project funds will be used to complete the energy efficient renovations for the Pocasset Assisted Living Facility. The funds for this budget item are obtained from the low-income carryover funds from previous years.

## **4.2 Low-Income Single-Family**

### **Background**

This program is a continuation of the Low-Income Single Family Program that the Compact is currently offering.

### **Program Design**

This program addresses all low-income customers living in single-family dwellings. The program will be made available to all customers that are presently billed on NSTAR's Residential Assistance Rate. Other eligible households include those who receive assistance from government agencies such as Fuel Assistance, WAP, Aid to Families With Dependent Children, Supplemental Social Security, Women Infants and Children programs, or customers whose household income level falls below 60% of the median household income in their county.

Through this program, eligible customers will receive an energy audit, including direct installation of low-cost measures addressing lighting, thermal measures, and water heating end-uses. Customers will also be provided with education materials providing advice on how to reduce electric bills through more efficient practices.

The Compact will work with the program vendor to ensure that participants are properly screened before being visited for an energy audit. If a customer has electric space heat, then the vendor will send an auditor that is trained to provide weatherization audits, assistance and education, as well as the electricity-based audits and assistance. The Compact will also ensure that weatherization funds are appropriately coordinated for participating customers.

### **Marketing and Delivery of Program**

By statute, the low-income programs are implemented by the low-income weatherization and fuel assistance network. The lead agency for this program, the Housing Assistance Corporation ("HAC"), serves as the project coordinator and provides direction to other agencies and subcontractors.

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Customers will be contacted directly by the Housing Assistance Corporation. Promotional material and literature will also be distributed through the WAP networks, local social service agencies, town governments, and other networks available to the Compact. In addition, the Compact has joined the statewide campaign, Energy Bucks, and provided HAC with a portion of the marketing budget to better market the relationship between Cape Light Compact and HAC to low-income clients.

In 2005 the Compact will increase its efforts to identify and serve customers that might not be easily identified as eligible for the low-income programs. If the Compact's MassSAVE auditor identifies a customer that is eligible for a low-income program, that auditor will provide the appropriate low-income audit and program materials at the time of the visit. This will help prevent the inefficiencies and barriers created by having two separate visits and audits and better market the programs to low-income clients.

### **Efficiency Measures and Customer Incentives**

This program offers participants site visit diagnostics, customer education, disaggregation of the customer's electricity bill, analysis of high-use appliances, and installation of efficiency measures. The package of measures also includes compact fluorescent lightbulbs, hot water flow restrictors, pipe insulation and water heating tank wraps as applicable, replacement of existing refrigerators where applicable, and replacement of electrically-heated water beds with standard mattresses.

The space heating component of this program will provide weatherization measures such as air sealing, insulation, thermostat controls, interior storm windows, and pipe and hot water tank wraps. These measures will also be provided at no cost to the participant.

Electric space-heating customers will be provided with an analysis of the costs and benefits of replacing the existing electric space heating system with an efficient gas, oil or propane system. In order to qualify for Compact funding, a gas furnace must have an AFUE rating of 90 percent or greater, and a gas boiler must have an AFUE rating of 85 percent or greater. Oil and propane systems will also be required to meet comparable efficiency ratings.

The space heating analysis will take account of the specific characteristics of the customer's home, e.g., the availability of natural gas or propane, whether there is existing ductwork in the home, whether there is an existing flue for the home, the remaining life of the existing system, and whether a partial space heating system (i.e., an area heater) would be appropriate. For those applications where fuel-switching is cost-effective, participants will be offered a grant of up to \$6,000 to replace the electric system.

All materials and measures will be provided at no cost to the program participant. Where applicable, building owners (or tenants) will also be informed about any other relevant measures offered to customers through the Residential ENERGY STAR Products and Services Program.

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## **New Program Elements Relative to Phase II**

- Housing Assistance Corporation will begin to work more collaboratively with RISE Engineering.
- HAC will be connected with the Cape Light Compact (“CLC”) database to better manage customer files, transactions, and work orders.
- The Compact will work with the Human Services community to better identify and serve customers that might not be easily identified as eligible for the low-income programs.
- To better market the programs, HAC has been allocated a portion of the marketing budget to enhance the relationship with Cape Light Compact to the low-income clients.

## **4.3 Low-Income Multi-Family**

### **Background**

This program is a continuation of the Low-Income Multi-Family Program that the Compact is currently offering.

### **Program Design**

This program addresses all low-income customers living in multi-family housing, which is defined as including more than four dwelling units. The program will be made available to all customers that are presently billed on NSTAR’s Residential Assistance Rate. Other eligible households include those who receive assistance from government agencies such as Fuel Assistance, Weatherization Assistance Programs, Aid to Families With Dependent Children, Supplemental Social Security, Women Infants and Children programs, or customers whose household income level falls below 60% of the median household income level of their county.

The program includes an energy audit with a “one-stop shopping” approach, including direct installation of low-cost measures addressing primarily the lighting and water heating end-uses. During the audit process, technicians will identify the need for additional services such as space heating measures or refrigerator replacements. Customers will also be provided with education materials providing advice on how to reduce electric bills through more efficient practices. Customers will not be required to incur any costs of program participation.

In 2005 The Compact will work with LEAN and the program vendor to ensure that the program auditors are trained to provide weatherization audits, assistance and education, as well as the electricity-based audits and assistance. The Compact will also ensure that weatherization funds are appropriately utilized for participating customers.

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## **Marketing and Delivery of Program**

By statute, the low-income programs are implemented by the low-income weatherization and fuel assistance network. The lead agency for this program is the Housing Assistance Corporation.

Promotional material and literature will also be distributed through the WAP networks, local social service agencies, town governments, and other networks available to the Compact.

## **Efficiency Measures and Customer Incentives**

This program offers participants site visit diagnostics, customer education, disaggregation of the customer's electricity bill, analysis of high-use appliances, and installation of efficiency measures. The package of measures also includes compact fluorescent lightbulbs, hot water flow restrictors, pipe insulation and water heating tank wraps as applicable, replacement of existing refrigerators where applicable, and replacement of electrically-heated water beds with standard mattresses.

The space heating component of this program will provide weatherization measures such as air sealing, insulation, thermostat controls, interior storm windows, and pipe and hot water tank wraps.

Public Housing Authorities, building owners, and managers of properties serving low-income families will be provided with educational materials offering advice on how to improve electricity efficiency and reduce operating costs through energy management and maintenance practices.

All materials and measures will be provided at no cost to the program participant. Where applicable, building owners (or tenants) will also be informed about any other relevant measures offered to customers through the Residential ENERGY STAR Products and Services Program.

## **New Program Elements Relative to Phase II**

- The Compact will work with the human services community to identify opportunities to integrate the electricity-based audits with the weatherization-based audits, to ensure “one-stop shopping” for low-income customers.

## **4.4 Low-Income New Construction and Rehabilitation**

### **Background**

This program is a continuation of the Low-Income New Construction Program that the Compact is currently offering.

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## **Program Design**

This program addresses all low-income housing units that are newly built or that undergo major renovations. The program is targeted to low-income housing development agencies, WAP agencies, home builders, and the residential construction trade allies. The program is available to all new low-income housing units, regardless of the type of heating fuel used.

This program will offer the same services that are provided by the Residential ENERGY STAR New Construction Program. The program offers home builders a free home energy certification, as long as the completed home meets the minimum standard of 86 on the Home Energy Rating Scale. It also offers rebates for efficient lighting and appliances.

This program differs from the Residential ENERGY STAR New Construction Program in that it (a) will be focused on a few key housing projects, (b) will rely on a more targeted marketing effort, and (c) will include coordination with low-income housing agencies. Experience has shown that some low-income housing projects have such limited funding sources that the additional contribution for energy efficiency services can make the difference between a feasible and an unfeasible project. This program will seek to address those low-income housing projects most in need of energy efficiency services.

## **Marketing and Delivery of Program**

By statute, the low-income programs are implemented by the low-income weatherization and fuel assistance network. The lead agency for this program, the Housing Assistance Corporation, serves as the project coordinator and provides direction to other agencies and subcontractors.

The program is marketed through direct mailing, telephone, and personal contacts with agencies building low-income housing projects on the Cape and Vineyard. The Compact also has a close working relationship with Habitat for Humanity Cape Cod, which will be building several dwelling units under this program.

## **Efficiency Measures and Customer Incentives**

The program provides incentives directly to the participating homebuilders or low-income housing agencies. Participants receive a free Home Energy Rating certification for units that achieve a HERS rating of 86. The Home Energy Rating System addresses building shell measures, heating systems, lighting systems, and hot water heaters. There will be a maximum of \$4,500 in incremental upgrade financial incentives available per new construction unit. Subsidies are also available to encourage homebuilders or low-income housing agencies to achieve a HERS rating of higher than 86.

If additional incentives are identified that would enable the project to incorporate additional energy efficiency design and products, those incentives will be considered on a case-by-case basis.



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## **New Program Elements Relative to Phase II**

- The Compact will work to increase the efficiency standards to which new, low-income homes are built. In the past, many participants of this program did not achieve a HERS rating of 86, due to several obstacles that low-income builders face. The Compact and its vendor will work with builders to increase the HERS rating of participating units.
- The Compact will continue to work with Habitat for Humanity Cape Cod to build high efficiency new low-income and affordable housing units.

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## 5. Commercial and Industrial Programs

### 5.1 Introduction and Overview

Table 5.1 presents an overview of the commercial and industrial customers and sales within the Compact member towns in 2004. The information is broken out by small versus medium/large customers because of the important differences in serving these customer types. Small customers are defined as having peak electrical demands less than 100 kW (approximately 25,000 sq. ft. of typical commercial or industrial space.)

**Table 5.1 Commercial and Industrial Customers and Sales in 2004**

	Number of Customers	Percent of Class	Percent of Total	Sales (MWh)	Percent of Class	Percent of Total
Small	2,264	9%	1%	35,203	4%	2%
Medium	21,144	81%	11%	562,816	61%	28%
Large	164	1%	0%	297,862	32%	15%
Streetlights	2,624	10%	1%	9,082	1%	0%
Total C&I	26,197	100%	13%	917,988	100%	45%
Total Compact	198,118	---	100%	2,039,587	---	100%

*The C&I totals do not equal the sum of the components because the Total C&I includes the two CON accounts.*

Roughly 90% of the Compact's C&I customers are small and medium customers (eligible for the Small C&I Retrofit Program), while only one percent are large C&I customers (eligible for the Large C&I Retrofit Program).<sup>3</sup> Therefore, the Compact's C&I programs will focus on reaching out to many of the small and medium C&I customers. At the same time, the relatively few large C&I customers are responsible for roughly 32% of total C&I sales and 15% of total sales to Compact member towns. Thus, the C&I programs will also serve this important sector of the C&I class.

In addition, the Compact's C&I programs will focus on providing efficiency services to the many government agencies on the Cape and Vineyard. While government agencies represent only one percent of all customers, they are responsible for roughly 21% of the C&I sales and roughly 10% of the total Compact sales. The majority of the government agencies fall within the small and medium customer category.

The Compact's C&I programs differ from the residential programs in that they offer customers and vendors with both prescriptive and custom approaches to energy efficiency measures. Under the prescriptive approach, customers are informed of a large number of energy efficiency measures and services that are available, along with pre-determined levels of financial support for each. Under the custom approach, Compact

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<sup>3</sup> The small and medium customer categories are defined differently than they were in the Phase II EEP. These categories are now defined according to the DOER definitions prescribed for the Annual Report on Energy Efficiency Activities. The small customer category includes customers on the G7 and GENSEASONAL rates, and the medium customer category includes those on the G1, G5 and G6 rates.

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technical assistance providers and contractors, as well as customers and their vendors, are free to propose efficiency improvements that are specifically tailored to the individual customer's needs and interests. The Compact will then review each proposal to ensure that it is cost-effective and meets relevant program guidelines. Under this approach, customers or vendors will be reimbursed for a certain percentage of the incremental cost of the installed efficiency measures.

In late 2003, the Compact hired a new staff person to concentrate on marketing the large C&I and government programs to customers and trade allies, including outreach to the Cape Cod Chamber of Commerce and local Chamber business members. The new staff person has been coordinating the marketing and outreach activities closely with the Compact Governing Board and staff, the Management Contractor, technical assistance contractors and the C&I related-NEEP initiatives.

## **5.2 C&I New Construction and Rehabilitation**

### **Background**

This program is a continuation of the C&I New Construction Program that the Compact is currently offering.

### **Program Design**

The C&I New Construction Program targets all time-dependent energy efficiency opportunities in the commercial and industrial sector. It promotes energy efficiency in the design and construction of all new commercial, industrial, institutional, and government facilities. It is available to these customer types at the time of new or substantial reconstruction, renovation, remodeling of existing buildings, or equipment replacement at the end of its useful life. The intent is to help customers overcome the first-cost and other barriers to investing in energy efficiency. An additional component of the program includes marketing and implementation of regional market transformation initiatives such as MotorUp and Cool Choice.

This program is similar to the C&I new construction programs being offered by electric distribution companies in the region in order to help eliminate customer confusion and achieve consistent approaches to C&I energy efficiency. Participating customers will be offered technical support, financial assistance, education, project design and commissioning services.

### **Marketing and Delivery of Program**

Eligible customers and vendors are encouraged to submit proposals for site-specific projects, i.e., the program is vendor-driven. Qualified vendors and customers will be encouraged to propose projects to be serviced by this program. In some cases vendors and customers will take the initiative of performing engineering studies as appropriate, identifying efficiency measures, documenting the incremental costs and savings of the measures, installing all qualifying measures, performing any on-going O&M services,

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and demonstrating the savings that are achieved over time. In most cases, however, much of these services will be encouraged or directly provided by the Compact. For example, the Compact will provide technical and design assistance early in the development of designs to ensure efficient measures are analyzed and included in projects where appropriate and cost effective. For customers interested in these services, the Compact will work out financial arrangements where the customer may contribute some portion to these service costs.

Program implementation activities are directed through trade allies, energy service companies, and customers. The Compact contracts for support of certain activities including technical review of some applications, as well as technical and design assistance to work with customers and their contractors to ensure efficiency measures are identified and analyzed, potentially including full simulation modeling from comprehensive design projects. The Compact will also perform post installation inspection on some projects. Additionally, broad-based customer marketing and direct upstream marketing to manufacturers, distributors and vendors for motors and unitary HVAC equipment will be performed through the MotorUp and CoolChoice programs delivered through the market transformation initiative coordinated by the Northeast Energy Efficiency Partnership. Additionally, these program contractors will perform some rebate fulfillment services for the Compact.

This program is marketed using media advertisements, direct mail to customers and trade allies, customer site visits, the Cape Light Compact web site, and construction bulletins. The Compact has also established partnerships with the Cape Cod Chamber of Commerce and local Chambers of Commerce and trade associations to promote all C&I programs.

### **Efficiency Measures and Customer Incentives**

This program covers a wide range of efficiency measures, depending upon the customer's electricity end-uses and measure cost-effectiveness. The technologies supported include, but are not limited to, lighting, variable speed drives, building envelope measures, controls, energy management systems, HVAC and process improvements. Prescriptive efficiency criteria and financial incentives are offered for selected lighting, motor, variable frequency drive and HVAC measures. All other cost effective measures are promoted with custom incentives.

Financial incentives are based on the incremental equipment and labor costs of installing efficient equipment, as compared to the costs of standard efficiency equipment. Two types of rebates are offered: prescriptive and custom. Prescriptive rebates are fixed amounts provided for specific measures, while custom rebates are based on the unique energy savings criteria of a customer's efficiency project. In general, rebates are designed to cover up to 80% 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 (in the case of Government Agencies, 100% of the incremental cost of efficiency measures are supported by the program (see Section 5.5 Government Agencies for further description)). This program also offers design incentives, where appropriate, to cover 50 to 100 percent of incremental architectural and design costs for efficiency improvements.

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The financial incentives will be limited to a maximum of \$75,000 per project. Upon a vote of the Governing Board of the Compact, requests to exceed this limit may be approved on a project-by-project basis.

## **5.3 Large Commercial and Industrial Retrofit**

### **Background**

This program is a continuation of the Large C&I Retrofit Program that the Compact is currently offering.

### **Program Design**

The program encourages customers to replace existing operating equipment and processes in their facilities with high efficiency equipment. These are discretionary retrofits to equipment the customer would otherwise not consider replacing, but for improved efficiency. It serves all commercial and industrial customers whose peak demands exceed 100 kW. This retrofit program is similar to the large C&I retrofit programs being offered by electric distribution companies in the region in order to help eliminate customer confusion and achieve consistent approaches to C&I efficiency throughout the region.

Qualified customers and their vendors, contractors and design professionals are provided with education, technical assistance, financial assistance, and commissioning services. Eligible customers and vendors are encouraged to submit proposals for site-specific retrofit projects, i.e., the program is vendor-driven. This program will also encourage customers to participate in the C&I Products and Services Program, as appropriate. In some cases (particularly government customers, see below) the Compact may provide technical services to help initiate projects.

### **Marketing and Delivery of Program**

Eligible customers and vendors are encouraged to submit proposals for site-specific projects, i.e., the program is vendor-driven. Qualified vendors and customers will be encouraged to propose projects to be serviced by this program. In most cases, vendors and customers will have the responsibility for performing engineering studies as appropriate, identifying efficiency measures, documenting the incremental costs and savings of the measures, installing all qualifying measures, performing any on-going O&M services, and demonstrating the savings that are achieved over time.

Program implementation activities are directed through trade allies, energy service companies, and customers. The Compact contracts for support of certain activities including technical review of some applications, technical assistance for comprehensive design, chiller, and other projects, and post installation inspection. This program is marketed using media advertisements, direct mail to customers and trade allies, customer site visits, the Cape Light Compact web site, and construction bulletins. The Compact

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has also established partnerships with the Cape Cod Chamber of Commerce and local Chambers of Commerce and trade associations to promote all C&I programs.

### **Efficiency Measures and Customer Incentives**

The program offers customers financial assistance, education, technical assistance and commissioning services. This program covers a wide range of efficiency measures, depending upon the customer's electricity end-uses and measure cost-effectiveness. The technologies supported include, but are not limited to, lighting, variable speed drives, building envelope measures, controls, energy management systems, HVAC and process improvements.

Financial incentives are based on the total equipment and labor costs of installing efficient equipment. Two types of rebates are offered: prescriptive and custom. Prescriptive rebates are fixed amounts provided for specific measures, while custom rebates are based on the unique energy savings criteria of a customer's efficiency project. Prescriptive incentives are offered for selected lighting measures only. Any other electrical efficiency measures that pass the cost-effectiveness criteria are eligible for custom incentives. 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. This program also offers design incentives, where appropriate, to cover 50 to 100 percent of incremental architectural and design costs for efficiency improvements.

The financial incentives will be limited to a maximum of \$75,000 per project. Upon a vote of the Governing Board of the Compact, requests to exceed this limit may be approved on a project-by-project basis.

### **New Program Elements Relative to Phase II**

- The Compact reviews and coordinates with other program administrators, such as the Massachusetts Electric Company, its prescriptive and custom C&I offerings to ensure current technologies and other energy efficiency measures are up to date.

## **5.4 Small Commercial and Industrial Retrofit**

### **Background**

This program is a continuation of the program that the Compact is currently offering.

### **Program Design**

This program serves all existing commercial and industrial customers whose peak demands are 100 kW or less. Customers are provided with an energy audit and are encouraged to replace existing equipment in their facilities with high efficiency equipment. Participating customers are offered a single source for information, technical assistance, financial assistance, and installation services.

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In 2003, this program was integrated with the Small C&I Program that KeySpan offers to its natural gas customers. The Compact program vendor provides customers with an audit for both electric measures and gas measures (where applicable). In addition to the electric efficiency services, the program vendor will provide the customer information regarding the potential gas efficiency services available from KeySpan, as well as advice for how to participate in the KeySpan program. In early 2003 the Compact worked with KeySpan to develop this sort of integrated approach to the two programs.

The electric end-use audit will offer more comprehensive information to customers about ways that they can save energy beyond the program's offering of eligible measures and financial incentives.

This program will also encourage customers to participate in the C&I Products and Services Program, as appropriate.

### **Marketing and Delivery of Program**

This program is delivered utilizing a contract vendor that is hired through a competitive bidding process. The vendor will be responsible for all aspects of delivering this program, including developing and implementing the marketing plan, identifying eligible participants, conducting the energy audits, and installing measures or coordinating and managing third party installations as warranted.

The program vendors have the primary responsibility for marketing this program. The Compact has also established partnerships with the Cape Cod Chamber of Commerce and local Chambers of Commerce and trade associations to promote all C&I programs.

### **Efficiency Measures and Customer Incentives**

The specific technologies addressed will depend upon the needs of each participant. All end-uses are eligible for efficiency improvements, within cost-effectiveness constraints. The primary opportunities are likely to come from lighting, refrigeration, water heating and HVAC end-uses. Where appropriate, retrofitting multiple and interacting end-uses will be coordinated to ensure optimal system design (e.g., re-sizing and replacement of cooling equipment at the time of a comprehensive lighting replacement).

In the past, lighting and refrigeration efficiency measures have dominated the Small C&I programs because of their short pay-back periods. In 2005 the Compact will continue to provide the program vendors with the mandate and the financial incentives (for the vendor) to expand the range of efficiency measures that are promoted to customers. Some additional measures may become standard practice. In addition, the contractor will be expected to identify and install (either directly or through a subcontractor) all cost effective electric efficiency measures on a custom basis.

Participants will be provided with audits to identify cost effective opportunities free of charge. Most participants will receive from the Compact a rebate equal to 80% of the total equipment and labor costs of installing efficient measures. (In the case of Government Agencies, 100% of the cost of cost effective efficiency measures are

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supported by the program. See Section 5.5 Government Agencies for further description.)

Participants that are not eligible for gas efficiency programs from KeySpan will also be provided with educational materials and small financial incentives for non-electric efficiency measures. The program vendors will present such participants with a list of non-electric efficiency measures, such as faucet aerators, weatherstripping, insulation, duct sealing measures, commercial dishwasher efficiency measures, and others. Certain low-cost measures will be installed for free, some measures will be covered by the Compact with a 80% rebate up to a total \$2,000 cap per project, and other measures will have to be fully paid by the customer.

### **New Program Elements Relative to Phase II**

- The Compact reviews and coordinates with other program administrators, such as the Massachusetts Electric Company, its prescriptive and custom C&I offerings to ensure current technologies and other energy efficiency measures are up to date.

## **5.5 Government Agencies**

### **Background**

This program is a continuation of the Government Agencies Program that the Compact is currently offering. During Phase I the Compact learned that many government agencies do not have the funding or authority to pay for even 20% of the cost of efficiency investments. As a result, this program will cover 100% of the costs of the efficiency improvements. In prior years, the Compact has been able to secure supplemental funding from Barnstable County, which has been used to provide additional financial incentives to improve the efficiency of the facilities in Barnstable County and the government customers in its constituent municipalities. The Compact will seek supplemental/leverage funds as they may become available from Barnstable County or other sources.

### **Program Design**

This program addresses all government facilities, including municipal, state and federal facilities. These customers will be offered the same efficiency services that are offered through the C&I New Construction, C&I Large and Medium, and C&I Small Customer Programs, depending upon their size and needs. The primary difference between this program and the other C&I programs will be in the marketing and financial incentives. The Compact will market, on a limited basis subject to budget limitations, its C&I programs to all government customers through its government agency network on the Cape and Vineyard. In addition, technical and design assistance will be provided at no cost, and measure financial incentives will cover 100% of the incremental (new construction) and full (retrofit) costs of measures.



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## Marketing and Delivery of Program

For small government customers, the same vendor that implements the Small C&I Program will implement this program. For new construction, and large and medium government agencies, the same strategies and services will be used as for non-governmental customers.

## Efficiency Measures and Customer Incentives

The efficiency technologies addressed through this program will depend upon the needs of each participant. The government agencies will be offered the same efficiency measures and technical support as the customers in other C&I programs. In 2005 the Compact will provide all participating government agencies with financial incentives to cover 100% of the incremental costs of new efficiency measures as the budget will allow. This increase in the financial incentives will help address the fact that many government agencies currently have very limited budgets and are unable to contribute toward a portion of the efficiency costs.

The financial incentives will be limited to a maximum of \$75,000 per project. Upon a vote of the Governing Board of the Compact, requests to exceed this limit may be approved on a project-by-project basis.

## New Program Elements Relative to Phase II

- In December 2004, the Compact issued an Invitation for Bid (“IFB”) for the purpose of qualifying one or more vendors to support an initiative to install adjustable frequency drives (“AFD”) to motors used in pumping water at several Water Districts and Departments on Cape Cod and Martha’s Vineyard. Four vendors out of thirteen who had expressed initial interest were qualified. The first project at the Harwich Water Department is expected to begin in the Spring of 2005 with service to follow to other Water Districts and Departments who have requested these targeted energy efficiency upgrades.

## 5.6 C&I Products and Services

### Program Design

The purpose of this program is to transform the markets for particular energy efficiency products, services and practices. The Compact will continue to participate in the regional C&I market transformation programs that are being designed and coordinated through NEEP and other regional efficiency agencies. This includes the following initiatives:

- MotorUp. This NEEP program seeks to transform the market for motors by offering customers rebates for purchasing and installing premium-efficiency motors as qualified by the Consortium for Energy Efficiency. The sponsors of this program – including 19 organizations throughout New Jersey, Connecticut, Massachusetts, Vermont, Rhode Island, and New Hampshire – have hired a contractor which is responsible for identifying, recruiting, and training trade allies

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to support program efforts, and for broad-based print advertising targeted to trade allies and customers.

- Cool Choice. This NEEP initiative is designed to increase the adoption of energy efficient unitary HVAC products through marketing, customer rebates, promotion of high-efficiency unitary HVAC equipment among consumers equipment specifiers, and vendors, and working with other organizations to promote higher national standards for unitary HVAC equipment. The program is delivered through a regional circuit-rider who informs unitary HVAC vendors about the program and distributes the appropriate rebate information.
- National Standards. Through the Compact's involvement in CEE and NEEP's national and regional premium efficiency motor and unitary HVAC initiatives a collaborative effort continues to promote higher national standards.
- Building Operators Certification. This NEEP program is a competency-based training and certification for building operators designed to improve the energy efficiency of commercial buildings. Operators earn certification by attending training sessions and completing project assignments in their facilities. The certification provides a credential for their professional development while offering employers a way to identify skilled operators. This regional program is currently being evaluated with results expected by summer 2005 that will guide the next course offering(s).

These programs will be coordinated with other relevant C&I programs offered by the Compact. Actual motor and unitary HVAC rebates and savings will be counted under the C&I New Construction Program. Marketing efforts will be linked with this program, and customers will also be informed of these products and services during the course of audits and technical assessments provided through the other Compact C&I programs.

### **Marketing and Delivery of Program**

The program is primarily delivered through the vendor network participating in the NEEP design initiatives. MotorUp is provided through a vendor who is responsible for identifying, recruiting, and training trade allies to support program efforts. Cool Choice is provided through a vendor who acts as a regional circuit rider who informs HVAC retailers about the programs and distributes the appropriate rebate information. The Building Operators Certification course is provided directly by staff at NEEP. For MotorUp and Cool Choice (the unitary HVAC program), the Compact will promote the measures to its customers and provide any technical assistance and rebates, as appropriate.

The eligible population for this program varies according to the type of product or service. In some cases the target market is C&I customers, while in other cases the target market includes builders, developers, contractors, retailers, and other trade allies.

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## **Efficiency Measures and Customer Incentives**

The primary efficiency measures addressed by this program include premium efficiency motors, HVAC equipment, lighting and lighting controls, and overall building efficiency maintenance and education. For motors and unitary HVAC the program offers prescriptive rebates that on average, cover about 75% of the incremental efficiency cost, and vary based on the size of the equipment installed. Training and educational assistance are also provided.

In 2005 the Compact will continue to encourage C&I customers to participate in the Residential ENERGY STAR<sup>®</sup> Products and Services Program, where appropriate. For example, owners of hotels, inns, small shops and restaurants will be informed of the rebates available for purchasing new efficient room air conditioners. As another example, small C&I customers will be informed of the rebates available for purchasing new efficient dehumidifiers.

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## 6. Consistency with Energy Efficiency Goals

### The Massachusetts Energy Efficiency Goals

The Massachusetts Division of Energy Resources has established the statewide energy efficiency goals presented in Table 6.1. These goals are to be used by efficiency program administrators as the basis for developing their energy efficiency plans. The DOER has proposed three levels of energy efficiency goals: an overall statewide goal, threshold goals, and priority-setting goals.

**Table 6.1 Statewide Energy Efficiency Goals.**

<b>Overall statewide energy efficiency goal:</b> To strengthen the economy and protect the environment by increasing the efficiency of energy use.
<b>Energy efficiency operational goals:</b> <ol style="list-style-type: none"><li>1. To reduce the use of electricity cost-effectively pursuant to the DTE's directive.</li><li>2. Ensure that energy efficiency funds are allocated to low-income customers consistent with requirements of the Restructuring Act, and allocated equitably to other customer classes.</li></ol>
<b>Energy efficiency programmatic goals:</b> <ol style="list-style-type: none"><li>1. To reduce customer energy costs by balancing short- and long-run savings from energy efficiency programs.</li><li>2. To support the development of competitive markets for energy efficiency products and services.</li></ol>

The threshold goals are intended to represent mandatory requirements that must be met in order to obtain ratepayer funding to implement energy efficiency programs. They will each be applied independently as pass/fail criteria.

The priority-setting goals are not intended to be applied as strict pass/fail criteria, but rather as a package of goals that should be optimized by a well-balanced portfolio of energy efficiency activities. In some instances, achieving one goal may hinder the achievement of other goals, in which case the program administrator must seek to achieve the appropriate balance between the competing goals.

### Consistency With The Overall State Energy Efficiency Goal

The Compact's energy efficiency programs are clearly consistent with the overall goal of protecting the environment and strengthening the economy by increasing the efficiency of energy use. As described in Section 2.5, the efficiency measures installed by the Compact over the three-year planning period are expected to save roughly 29 MWh per year. These cumulative annual efficiency savings are expected to substantially reduce emissions of CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>x</sub>, fine particulates, mercury and other hazardous power plant emissions. These emission reductions will be achieved at a net negative cost, which means that energy efficiency represents the most cost-effective means of reducing emissions and addressing some of the most pressing environmental issues facing our society today.

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On average, every dollar spent on the Compact's efficiency programs will result in roughly 2.6 dollars saved in terms of avoided electricity generation, transmission and distribution costs. Participating customers will see even greater savings on their electric bills, because avoided electricity prices are higher than these avoided electricity costs. Lower electric bills will provide businesses and industries with lower operating costs, improved cash flow, and greater opportunities for investment. Lower electric bills will help government agencies reduce costs and keep their budgets in balance. Lower electric bills will also provide residential customers with greater disposable income, which in turn can be used to help stimulate the local economies on the Cape and Vineyard. These impacts will clearly help strengthen the local and state economy.

## **Consistency With The Operational Goals**

### 1. To Save Electricity Cost-Effectively

The Compact energy efficiency programs are highly cost-effective. As indicated in Section 2.4, all of the Compact's programs combined have a benefit-cost ratio of 2.6. Most of the Compact's programs are very cost-effective, especially the larger programs serving the Compact's core customers.

### 2. Low-Income Customers and Equitable Allocation of Funding

The Compact energy efficient programs offer three programs to low-income customers: one for single family units, one for multi-family units, and one for new construction. These programs have been designed by LEAN, and are also being implemented by a number of Massachusetts electric companies.

The amount of funding dedicated to these low-income programs is based on the requirements of the Electric Utility Restructuring Act. As described in Section 2.3, the low-income budget allocation is equal to 11% of the total budget, because low-income customers represent 11% of total electricity sales. This results in an initial allocation of \$563,691, which is higher than the two legislatively mandated low-income budget floors.

In addition, there is some low-income carryover from 2004, which will increase the total low-income 2005 budget to \$707,656 – which is equal to 15 percent of the total budget for all the Compact's programs. Furthermore, low-income customers are eligible for the measures offered through the Residential Products and Services Program.

The Compact programs and budgets are specifically designed to be equitably allocated among customer classes. First, the programs are designed to make energy efficiency services available to all customer types (low-income in single and multi-family units, low-income new construction, low- and moderate-use residential, high-use residential, residential new construction, small, medium and large C&I, government agencies, and C&I new construction). Second, the funding allocated to the residential and C&I program budgets is based on these customer classes' shares of total annual electricity sales, thereby ensuring that the funds are allocated equitably across these customer classes.

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## **Consistency With The Programmatic Goals**

### **1. Balance Short- and Long-Run Savings From Energy Efficiency Programs**

The primary purpose of this goal is to ensure that there is an appropriate balance between market transformation-type programs that focus on long-run savings, and more conventional programs that are designed to save energy immediately. The Compact's EEP clearly achieve this goal by offering programs that both result in immediate energy savings and promote long-term market transformation of energy efficiency products and services.

### **2. Support the Development of Competitive Markets for Energy Efficiency**

The Compact has a relatively small internal staff to implement its energy efficiency programs. Consequently, a large portion of the program activities – administration, implementation, monitoring and evaluation, legal and technical services – will be conducted by contractors outside of the Compact. Each of the contractors hired by the Compact to administer and implement the energy efficiency programs has been, or will be, selected through competitive bidding processes consistent with applicable law. These competitive processes will be open to all interested and qualified bidders.

The Compact will rely entirely upon competitive energy service companies to deliver its energy efficiency programs. These companies, in turn, rely upon a variety of other competitive companies that manufacture and distribute energy efficiency technologies. Combined, these businesses represent the core of the competitive market for energy efficiency. The Compact's energy efficiency programs will offer these companies opportunities to increase their activities, and will therefore facilitate the development of the competitive market for energy efficiency.

The Compact participates in relevant statewide and regional market transformation initiatives. This amended EEP includes several market transformation programs offered through NEEP and the ENERGY STAR Products Initiative. In addition, our new construction programs are specifically designed to help transform the residential and C&I construction industries, by working with home builders, architects, and various construction trade allies in order to promote efficient construction practices over the long-term. New construction programs are offered separately for low-income, residential, and C&I construction industries, because of the unique characteristics and market barriers facing these different industries.

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## 7. Program Monitoring and Evaluation Plan

### Background

The Compact has recently completed its first three and one-half years of running local energy efficiency programs and participating in joint statewide, regional and national initiatives. From the outset, the Compact has been firmly committed to evaluation of its in-house programs and multi-party market transformation activities.

The Compact has considered several factors for evaluation planning purposes including the length of time that the program has been in the field, the order of program roll-out, the number of participants that have been served, the duration of customer energy conservation measure installations, availability of participants' post-installation billing data and other information, customer market priority, opportunities for conducting joint studies with other program administrators in order to take advantage of their expertise and cost sharing, and experience with program delivery vendors. These criteria are necessarily somewhat different than those employed by more mature programs that have existed for many years and undergone previous process and impact evaluations.

### Monitoring and Evaluation Goals and Methods

The Compact has established several goals to guide the program monitoring and evaluation activities. These goals were first presented in the Compact's Phase I Energy Efficiency Plan, were updated in the Phase II plan, and are presented again below:

- Ensure that programs are implemented as designed;
- Identify opportunities to improve program design and effectiveness;
- Verify energy and capacity savings from program impacts;
- Monitor program costs;
- Determine program cost effectiveness; and
- Assess end use market changes caused by efficiency program.

The Compact plans to achieve these goals through four primary monitoring and evaluation ("M&E") research techniques and studies. These studies will be conducted either independently by the Compact or through the joint efforts of the energy efficiency program administrators in Massachusetts:

- Market baseline studies to establish benchmark information on energy using equipment and practices;
- Process evaluations to assess program implementation and identify design improvement opportunities;
- Impact evaluations to measure program effects; and

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- Market evaluations that assess market transformation objectives, including program impacts on market structure, trade allies and electric customers.

The Compact will continue to work constructively with DOER, DTE and other energy efficiency policy stakeholders on program evaluation during 2005 and beyond, in order to support key state energy efficiency policy objectives, maintain high program standards for its customers, and to cooperate on joint research efforts for statewide and regional program initiatives.

### **Response to Regulatory Directives**

DOER, joined by DTE in the first document, issued two memos (12/21/01, 2/12/02) providing utility energy efficiency program administrators with specific guidance on how 2002 and subsequent evaluation plans should be developed, improved, filed and implemented. As was the case in previous plans, the Compact's 2005 evaluation program will substantially comply with DOER and DTE's directives wherever appropriate to fit the circumstances and obligations, specifically regarding the following provisions:

1. **Evaluation Budget.** The Compact is committed to the importance of performing a thorough evaluation of its energy efficiency programs. DOER called for at least 3% of statewide energy efficiency funds to be budgeted for evaluation. The Compact has allocated approximately 5% of its total 2005 energy efficiency budget (\$244K) to evaluation and market research activities.
2. **Staff and Contractor Resources.** The Compact will devote adequate personnel resources (staff, contractors, and/or consultants), with the necessary expertise and experience, to plan, manage, and conduct evaluation and related activities. These personnel will make every reasonable effort to ensure that planned 2005 evaluation activities are completed this year or advanced according to plan.
3. **Spending Evaluation Budgets.** The Compact plans to spend its evaluation budgets and to complete or advance planned evaluation activities in a well-managed and cost-efficient manner. Given the Compact's relatively small program revenues and correspondingly limited associated evaluation budget, evaluation studies of different aspects of its programs will need to be staggered somewhat across several years in order to maintain affordability and balance budget priorities.
4. **Evaluation Plans and Standardized Format.** The Compact has used the standardized format here as described in DOER's February 2002 memo. The Plan includes a list and brief description of planned 2005 evaluation studies, other related activities and budgets with expected start and completion dates when available, as stated below.

### **Commitment to Energy Efficiency Program Quality Control**

The Compact has established internal quality control procedures to help ensure the strong performance of the energy efficiency programs as implemented. These procedures include internal review of reported data, site visits to vendor operations and customer installations, outreach to trade allies, and continuous feedback from the members of the



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Compact Governing Board. In addition, a qualified third party vendor regularly inspects samples of customer installations for the Compact's in-house residential, low-income, small/medium/large C&I and government agency programs.

### **Planned 2005 Evaluation Activities**

The Compact's planned 2005 evaluation and research activities are as follows:

- Complete a modified process and impact evaluation of the 2003-2004 Residential New Construction Demonstration Project

This study will evaluate how effectively this demonstration project, that served only four participants, met the research goals of the project. The evaluation will employ surveys of program participants, interviews with provider agencies and contractors, program administrators and others to examine customer and trade ally satisfaction, barriers to participation, and other market effects. The process studies will also assess program marketing materials, data tracking systems, communications and electronic services, e.g., customer service, the Compact website, the quality of each installation and applicability of program elements to the overall Residential New Construction ENERGY STAR Homes program. As with all of the Compact's monitoring and evaluation studies, these process evaluations will be conducted by independent contractors who will be selected through competitive bidding processes.

- Prepare to conduct process evaluation(s) of the Compact's C&I New Construction and Medium/Large Retrofit and Government Agency Programs that have seen significant increases in large C&I program activity during the latter half of 2003 and into 2004. The Compact will develop plans to conduct process evaluations of these programs for implementation during 2005-2006.
- Work with DOER and other in-state energy efficiency program administrators on any joint process and impact evaluations of the redesigned MassSAVE program.
- Continue multi-year evaluation efforts sponsored by the JMC program administrators of the Energy Star Homes Program.
- Participate as a sponsor in evaluation and market research activities for regional market transformation program initiatives. Many of these efforts have multi-year program evaluation and market progress reporting plans ("MPER") underway or are developing such plans. The Compact will actively support and co-fund such efforts in 2003. Some of these activities are still under discussion. These joint evaluation planning and research activities include the following:
  - ◆ ENERGY STAR Lighting: implement MPER 2003 recommendations and follow-up with past research, as determined by initiative sponsors, including establishment of a market share product sales tracking reporting system.
  - ◆ ENERGY STAR Appliances: implement MPER 2003 recommendations and follow-up with past research, as determined by initiative sponsors, including

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- establishment of a market share product sales tracking reporting system and evaluation of industry sales campaigns.
- ◆ ENERGY STAR Appliance Awareness: participate in the CEE market share/product awareness surveys.
  - ◆ ENERGY STAR Homes: implement on-going MPER activities, including market assessment and evaluation research.
  - ◆ Residential HVAC: establish a market share product sales tracking reporting system.
  - ◆ Commercial HVAC / Cool Choice Program: conduct a scoping study to develop market-based indicators and assess the feasibility of market share tracking; develop market share projections to support cost-effectiveness assessments; plan regional market assessment study.
  - ◆ Commercial Motors / Motor Up Program: conduct a scoping study to develop market-based indicators and assess the feasibility of market share tracking; develop market share projections to support cost-effectiveness assessments; develop regional market assessment study.
- Participate in a joint study to update avoided energy supply costs (“AESC”) for cost-effectiveness planning conducted by regional working group.
  - Participate in joint Free-ridership and Spillover (“FR & SP”) study conducted by Massachusetts program administrators of all 2004 commercial and industrial program jobs completed to utilize standardized factors.
  - Participate in joint NEEP Building Operator Certification (“BOC”) course evaluation.

**Table 7.1 2005 Projected Program Evaluation Schedule**

<b>Program</b>	<b>Research Activity</b>	<b>Delivery Date</b>
Common Measure Life	Participate in joint sponsor initiative	Third quarter 2005
Low Income Best Practices	Participate in joint sponsor initiatives	Ongoing
Residential N/C Demo	Program impact evaluation	Third quarter 2005
BOC	Support joint sponsor initiative 2005 M&E plan	Second quarter 2005
MassSAVE (RCS)	Participate in any state-wide evaluations	Ongoing
ENERGY STAR Lighting	Support joint sponsor initiative 2005 M&E plan activities	Ongoing
ENERGY STAR Appliances	Support joint sponsor initiative 2005 M&E plan activities	Ongoing
ENERGY STAR Awareness	Support joint sponsor initiative 2005 M&E plan activities	Ongoing
ENERGY STAR HOMES	Support joint sponsor initiative 2005 M&E plan activities	Ongoing
Residential HVAC	Support joint activities	Ongoing
C&I Market Share	Support joint sponsor new construction market monitoring project	Ongoing
C&I Med/Large and Gov't Agencies	In-house programs – impact evaluation	December
Cool Choice	Support joint sponsor activities	Ongoing
Motor Up	Support joint sponsor activities	Ongoing
FR & SP Study	Participate in joint MA study	July 2005
AESC Study	Participate in joint regional study	July 2005
2005 M&E Plan	Finalize Plan	April 2005
2006-7 M&E Plan	Develop Plan	December 2005
2004 M&E Report	File Report with DOER and DTE	Third quarter 2005

**Table 7.2 2005 Projected Program Evaluation Budget (\$1000)**

<b>Program</b>	<b>Activity*</b>	<b>Internal Costs**</b>	<b>Contractor Costs</b>	<b>Total Costs</b>
<b>General:</b>				
2004 M&E Report	Process	\$8.0	\$0.0	\$8.0
2005 M&E Plan	Process	\$1.0	\$0.0	\$1.0
2006-7 M&E Plan	Process	\$2.0	\$0.0	\$2.0
AESC Study Update	Joint	\$4.0	\$6.0	\$10.0
Common Measure Life	Joint	\$1.0	\$1.6	\$2.6
Other Joint Studies	Joint	\$11.0	\$66.0	\$77.0
Subtotal – General	---	\$27.0	\$73.6	\$100.6
<b>Residential:</b>				
MassSAVE (RCS)	Impact	\$3.0	\$7.0	\$10.0
Low Income Best Practices	joint	\$1.0	\$2.5	\$3.5
Res. N/C Demo	impact	\$1.0	\$9.0	\$10.0
ENERGY STAR Lighting	joint	\$1.0	\$9.0	\$10.0
ENERGY STAR Appliances	joint	\$1.0	\$9.0	\$10.0
ENERGY STAR Awareness	joint	\$0.5	\$2.5	\$3.0
ENERGY STAR Homes	joint	\$1.5	\$21.3	\$22.8
Residential HVAC	joint	\$0.5	\$1.0	\$1.5
Subtotal - Residential	---	\$9.5	\$61.3	\$70.8
<b>Commercial &amp; Industrial (C&amp;I):</b>				
Med/Large / Government Agencies	Impact	\$5.0	\$40.0	\$45.0
C&I Market Share	joint	\$0.5	\$0.5	\$1.0
Cool Choice	joint	\$1.5	\$2.5	\$4.0
BOC	Joint	\$1.0	\$5.0	\$6.0
MotorUp	joint	\$1.5	\$2.0	\$3.5
FR & SP Study	joint	\$1.5	\$11.7	\$13.2
Subtotal - C&I	---	\$11.0	\$61.7	\$72.7
<b>Grand Total</b>	<b>---</b>	<b>\$47.5</b>	<b>\$196.6</b>	<b>\$244.1</b>

\* Activity denotes type of evaluation to be performed: “process” = process evaluation; “impact” = impact evaluation; and “joint” = joint evaluation, research or planning effort with NEEP sponsors, Massachusetts utilities and/or DOER..

\*\* Internal costs include M&E expenses of in-house consultants retained by the Compact; program administration and staffing costs are imbedded in fixed contracts and salaries that are allocated to other expense columns in the overall CLC EEP budget and are not included in this table.

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## **8. Public Education and Marketing**

The Cape and Vineyard communities – like all communities – continue to struggle with a lack of consumer awareness and corresponding limited knowledge of energy efficiency technology and practices. Well-designed programs and consumer education are key to overcoming these barriers. Building on lessons learned during Phase I and II of the Compact’s energy efficiency program, the Compact has revised several aspects of the education and marketing plan in this Phase III Plan. The revisions are described below.

The representatives of the Compact Governing Board (the “Board”) will remain a vital link to consumers. Board members provide educational information to consumers through: (1) regular updates to town Boards of Selectmen and Councilors on the Compact energy efficiency programs (most of these meetings are televised on a local government access channel); (2) speaking engagements and membership on various civic and business committees per member; and (3) outreach to the media, including daily and weekly newspapers and radio spots.

Looking ahead, the Compact will continue to utilize the extensive network and opportunities it has at the community level to deliver its public education and marketing programs, and to advance existing and emerging energy efficiency services, technologies, and practices.

### **8.1 Cape Light Compact Schools Initiative**

The Compact’s education efforts will focus on the development and implementation of an energy and education program for elementary school students on the Cape and Vineyard. Partnering with Barnstable County’s education department, Cooperative Extension, the Compact introduced the NEED project in the fall of 2003. The NEED project is aligned with the national and state standards for science and technology for the targeted grade levels and is an asset to teachers on the Cape and Vineyard. The Cape Light Compact was honored with NEED’s Region of the Year Award in 2004 for ongoing efforts in energy education.

The Compact has organized a Teacher Advisory Committee consisting of teachers, school administrators, Compact Board members and staff. This group assists with assessment, implementation and evaluation of the Energy Education Program.

The NEED Project is now used in 100% of the elementary schools on Martha’s Vineyard and 95% of the elementary schools across the Cape. Teacher workshops and technical assistance will continue to be provided.

The Compact also incorporated education in both the non low-income residential program through the first CFL School Fundraiser in Massachusetts. Other energy efficiency programs in the state have since followed suite. In 2005, we plan to continue the school fundraiser for students that currently use the NEED materials in their classroom. All monies from the fundraiser (as paid through the non low-income

residential products and services) will be paid directly to the schools for energy education purposes. The Compact is also planning to support students to identify vending machines in municipal buildings that may benefit from the vending miser technology. Each school will be paid directly for identifying eligible vending machines.

The Compact also supports the Renewable Energy Education program coordinated by the Cape Cod Community College (“CCCC”). In 2004, the CCCC received a National Science Foundation Grant to build a trained workforce able to support renewable energy technologies. Students at CCCC learn about energy efficiency and renewable energy technologies and participate in hands-on diagnostics of their homes or businesses using Cape Light Compact audit protocols.

## 8.2 Local Events

The Compact has held five successful Energy Fairs. The Energy Fairs were designed to feature Compact efficiency programs and feature community "turn-in" events that focus on efficient lighting and home appliances such as air conditioners and dehumidifiers. The Compact was recently recognized by the Association for Energy Service Professionals (“AESP”) for innovation in marketing through our energy fairs.

**Table 8.1 Results of the Energy Fairs**

	Cape 2002	Vineyard 2003	Cape 2003	Vineyard 2004	Cape 2004
Attendance	1000	400	2000	800	1,500
Torchiere Turn-In Event	200	32	140	67	120
Lamps and Fixtures sold	968	258	1,160	590	900
Dehumidifiers & Air Conditioners (through turn-in)	300	90	620	179	620
kWh Savings	288,000	72,405	394,000	154,770	440,000
Monetary Savings	\$40,000	\$10,136	\$55,000	\$21,667	\$62,000

In 2005, the Compact will seek to better serve customer needs by transforming the local events into multiple staged turn-in events through the Cape, and seeking to hold more shared community-based Energy Fairs with like-minded organizations.

In addition to Energy Fairs the Compact will continue to participate and sponsor community events that provide demonstrations of existing and emerging technologies and services in energy efficiency. Examples of these events include Earth Day conferences, construction/builder seminars, and educational training seminars for facility managers through the Building Operators Course.

## 8.3 Marketing Materials

The Compact will continue to participate in energy efficiency service provider and utility initiatives that market energy efficiency services to targeted customer groups. Over the

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past years the Compact has worked successfully with energy efficiency service providers and the regional utilities to design, implement and market commercial and industrial programs such as Motor-up and Cool Choice, as well as the products and services programs for the residential and commercial sectors such as Massachusetts COOL SMART, the statewide ENERGY STAR Homes program and the Northeast ENERGY STAR Lighting and Appliance Initiative.

The Compact will also dedicate resources to the development of educational materials in-house where possible that describe the Compact's programs and the purpose of energy efficiency and more fully utilize its website [www.capelightcompact.org](http://www.capelightcompact.org). These materials and methods will help to cost-effectively increase consumer awareness about the Compact's programs and will complement the Compact's other educational efforts.

## Attachment A: Comparison of Program Names

Table A includes a comparison of the program names that are used in this Energy Efficiency Plan and the program names (by BCR Activity) used in the Compact's Annual Report on Energy Efficiency Activities submitted to DOER. The names used in the Annual Report are determined by DOER and are used consistently by all efficiency Program Administrators in Massachusetts. As indicated, some of the programs described in this EEP are included within other programs in the Annual Report.

**Table A. Comparison of Program Names Used for the EEP and the Annual Report**

<b>Energy Efficiency Plan: Program Name</b>	<b>Annual Report to DOER: Benefit Cost Ratio Activity</b>
Residential ENERGY STAR New Construction	Residential Lost Opportunity
Residential Home Energy Services (MassSAVE)	Residential Retrofit 1-4
Residential High Efficiency Central Air Conditioning	(Included in Residential Appliances)
Residential ENERGY STAR Products and Services -- Lighting	Residential Lighting
Residential ENERGY STAR Products and Services -- Appliances	Residential Appliances
Low-Income Single-Family	Low-Income Retrofit 1-4
Low-Income Multi-Family	Low-Income Multifamily Retrofit
Low-Income New Construction and Rehabilitation	Low-Income Lost Opportunity
C&I New Construction and Rehabilitation	C&I Lost Opportunity
Large Commercial and Industrial Retrofit	Large C&I Retrofit
Small Commercial and Industrial Retrofit	Small C&I Retrofit
Government Agencies	(Included in Small C&I Retrofit)
C&I Products and Services	(Included in Large C&I Retrofit)



## Attachment B: List of Acronyms

**Table B. List of Acronyms**

<b>Acronym</b>	<b>Definition</b>
ACEEE	American Council for an Energy Efficient Economy
AFD	Adjustable Frequency Drives
AFUE	Annual Fuel Utilization Efficiency
AESC	Avoided Energy Supply Costs
AESP	Association of Energy Service Professionals
AHAM	Association of Home Appliance Manufacturers
BOC	Building Operators Course
C&I	Commercial and Industrial
CCCC	Cape Cod Community College
CEE	Consortium for Energy Efficiency
CFL	Compact Fluorescent Lamp
CLC	Cape Light Compact
CO2	Carbon Dioxide
DOE	Department of Energy
DOER	Division of Energy Resources
DTE	Department of Telecommunications and Energy
ECM	Electronic Commutated Motor
EEI	Energy Efficiency Incentive
EEP	Energy Efficiency Plan
EER	Energy Efficiency Ratio
EPA	Environmental Protection Agency
FR&SP	Free-ridership and Spillover
HAC	Housing Assistance Corporation
HERS	Home Energy Rating Scale
HSPF	Heating Seasonal Performance Factor
HVAC	Heating Ventilation and Air Conditioning
HVAC	Heating, Ventilation and Air Conditioning
IFD	Invitation for Bid
ISM	Instant Savings Measure
JMC	Joint Management Committee
LEAN	Low-income Energy Association Network
LED	Light Emitting Diode
M&E	Monitoring and Evaluation
MPER	Multi-Year Program Evaluation and Reporting
MTC	Massachusetts Technology Collaborative
NATE	North American Technician Excellence
N/C	New Construction
NCP	Negotiated Cooperative Promotions
NEED	National Energy Education Development

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NEEP	Northeast Energy Partnerships, Inc.
O&M	Operation and Maintenance
PV	Photovoltaic
RCS	Residential Conservation Services
RFP	Request for Proposal
SEER	Seasonal Energy Efficiency Rating
TRC	Total Resource Cost
TXV	Thermostatic Expansion Valve
WAP	Weatherization Assistance Programs

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## **Attachment C: Support Letter from the Cape Cod Chamber of Commerce**

Attached below.



April 26, 2005

Kevin F. Galligan, Program Manager  
PO Box 427  
Barnstable, MA 02630

Re: Cape Light Compact C&I Energy Efficiency Program

Dear Kevin:

Please acknowledge this letter as a commitment by the Cape Cod Chamber of Commerce / Convention & Visitors Bureau to partner with the Cape Light Compact for purposes of marketing and promoting the Commercial & Industrial Energy Efficient Programs that you administer.

The breakfast meeting that we hosted this past winter was a good indication of the interest our members have in your cost savings audits and energy improvement installation. With over 1350 members and 4000 affiliate members to whom we communicate on a weekly basis, we stand ready to spread the word on the access our businesses have to your programs.

We understand that extensive efficiencies have been completed for municipal and government entities as well as residential customers. We are positive that we can grow the interest in the commercial and industrial efficiency programs as well.

I look forward to meeting with you soon to map out a marketing plan for this initiative. Please do not hesitate to contact me to set up a date to start this promotional effort.

Sincerely,

*Signed electronically*

Wendy K. Northcross, CCE  
Chief Executive Officer  
Cape Cod Chamber of Commerce / CVB  
PO Box 790  
Hyannis, MA 02601