



**REQUEST FOR PROPOSAL**

**VENDOR FOR MULTI FAMILY RETROFIT SERVICES  
FOR CAPE LIGHT COMPACT**

**Issued: March 1, 2013**

**Proposals Due: April 12, 2013, 2:00 PM ET**

Cape Light Compact. P.O. Box 427, Barnstable, MA 02630  
[www.capelightcompact.org](http://www.capelightcompact.org)

**VENDOR (VENDOR) FOR THE  
MULTI FAMILY RETROFIT PROGRAM**

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# 1 General Information

## 1.1 Program Administrator

The Cape Light Compact (Compact) is a governmental aggregator under G. L. c. 164, section 134, providing energy services on Cape Cod and Martha's Vineyard. The Compact administers a regional energy efficiency program and works with the combined buying power of the region's over 200,000 electric consumers to negotiate for lower cost electricity, including a green power offering, and other public benefits. The Compact members include the twenty-one towns in Barnstable and Dukes Counties, as well as the two counties themselves. It is organized through a formal Intergovernmental Agreement under G. L. c. 40, section 4A. The Compact maintains a business office within Barnstable County offices located at the Superior Courthouse, 3195 Main Street, Barnstable, MA. Barnstable County serves as the fiscal agent for the Compact.

## 1.2 Multi Family Retrofit Services Program Design

### 1.2.1 Introduction

Cape Light Compact is soliciting proposals from qualified Vendors to provide service delivery for the Multi-Family Retrofit Program (Program). The Program is scheduled to begin on June 1, 2013 and continue thru December 31, 2015, at which time, the Program may be extended for one additional calendar year. The overall objective of the Program is to provide comprehensive information, energy assessments, and, with the incorporation of applicable Commercial and Industrial Programs, offer incentives for cost-effective energy efficiency measures to eligible multi-family facilities containing five or more dwelling units on a single property. As stated in D.P.U. 12-107, <http://www.capelightcompact.org/library/2010/08/2013-2015-3-Yr-Plan-Order.pdf>, the goal of the Compact is to implement the Program using a fuel-blind approach, meaning that all end uses are examined regardless of the heating fuel used<sup>1</sup>.

Program marketing is conducted using several mediums. In order to maximize marketing outreach, the PAs collectively maintain a statewide entity, the Multi-Family Market Integrator (MMI) that performs call intake and coordinates multi-family projects. Cape Light Compact will continue to utilize the MMI as a primary point of intake to the Program. However, customers may enroll into the Program by contacting the Cape Light Compact's Call Center. Historically, the Program has been marketed through channels such as radio, direct mail, community based marketing, public forums and various Cape Light Compact educational activities. The chosen vendor may also be expected to implement enhanced targeted marketing campaigns. Marketing is often used in an effort to promote specific energy efficiency enhancements as they relate to overall Program goals.

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<sup>1</sup> Fuel neutral services are currently pending approval

In 2012, the Multi-Family Retrofit Program underwent significant redesign efforts in order to better serve customers who live in a Multi-Family facility. The Program design to be implemented from 2013-2015 is as designated below:

<p><b>Customer Qualification Screening Customer Intake</b></p>	<p><b>Multi-Family Market Integrator (MMI) or Cape Light Compact</b></p>
<p><b>Energy Assessments Project Coordination Data Management</b></p>	<p><b>Vendor</b></p>
<p><b>Weatherization Measures Installation</b></p>	<p><b>Vendor</b></p>
<p><b>Quality Assurance (QA/QC)</b></p>	<p><b>Vendor or Statewide QA/QC Vendor</b></p>

The Vendor will have responsibility for Program administration, customer scheduling, project coordination and training, energy assessments, marketing support, quality assurance and control, data management and reporting, invoicing, complaint resolution, evaluation coordination and attendance at meetings. Cape Light Compact may require the Vendor to align software algorithms with other Vendors.

If the Vendor chooses to utilize subcontractors for the installation weatherization, electrical, or other measures, those subcontractors must meet the same requirements as the Vendor such as certifications,

insurance, and background checks as well comply with designated terms and conditions. All subcontractors will be required to subcontract directly with the chosen Vendor.

In addition to any Quality Assurance/Quality Control (QA/QC) provided by the Vendor, a statewide QA/QC Vendor procured independently by Cape Light Compact through a separate RFP will be responsible for an independent review of both assessments and installed measures.

## 2 Products & Services to be Provided

### 2.1 Program Management

The Vendor is responsible for overall management and providing technical assistance to internal field staff and their installers. The Vendor must be Building Performance Institute (BPI) accredited to manage all aspects of the Program. The Program requires applicable BPI certified auditor training for all internal Vendor field staff. Cape Light Compact will not compensate the Vendor for any auditor training costs associated with auditor certification, unless otherwise specified in advance. All work should comply with local, state, and federal regulations as well as best practices such as BPI, where applicable.

The Vendor is responsible for facilitating, scheduling, installing and coordinating. This includes internal scheduling for assessments, coordinating with other Vendors to provide convenient assessment schedules, coordinating work schedules for installation of measures and scheduling any subcontractors. The schedule will be shared with the QA/QC Vendor to ensure the Program quality.

In addition to the Program management activities listed above, Vendor responsibilities will include the following: (additional details regarding some responsibilities are included in this document):

- Develop all forms and other printed materials necessary for successful and efficient implementation of the Program. All Vendor-developed forms must be submitted to Cape Light Compact for approval and finalized prior to Program implementation
- All internal personnel recruitment, management and training, other than training which has been specified as being provided by Cape Light Compact
- Procure all equipment and materials necessary for Program implementation for internal responsibilities
- Provide storage for all materials to be determined by Cape Light Compact for customer education and implementation
- Develop and maintain a list of multi-family facilities located within the Cape Light Compact's service territory to track participation and identify future opportunities
- Participate in specific marketing efforts to increase whole-facility enrollment
- Scheduling of site visits
- Coordinating all on-site work crews if applicable
- Maintain a data tracking system capable of tracking implementation of work that may be completed over a multi-year period. The use of this tracking system will allow for appropriate follow up with participants

- Implementing a systematic process for following-up with customers who do not act on recommendations for additional diagnostic services, weatherization measures or appliance upgrades. This process will include reporting on the effectiveness of the strategy
- Promptly responding to any customer complaints or inquiries
- Taking appropriate action upon identification of any potential hazards at customer home (e.g., improperly vented combustion equipment, gas leaks, presence of moisture damage or mold, etc.)
- Collecting all data necessary for continuing Program management, monitoring, and evaluation needs
- Performing quality control functions for internal staff, as well as, sub-contractors
- Performing ongoing Program development and refinement, in conjunction with Cape Light Compact, other PAs and other Vendors through the statewide Multi-Family Working Group
- Submission of monthly implementation and management reports to Cape Light Compact as well as any additional reports deemed necessary by Cape Light Compact
- Complete assessments of facilities within reasonable time from date of original customer request (subject to customer availability) unless special circumstances arise
- Adhere to BPI procedures for identification and testing for all potential health and safety issues, as appropriate
- Adhere to all applicable state and local regulations and codes
- Incentive processing
- Invoicing on an at least-monthly basis with invoices due by the 10<sup>th</sup> of the month



## **2.2 Allocation of Weatherization Work Orders**

Weatherization work orders for all facilities containing more than 20 dwelling units will be put out to bid. For 20 units and under, the Vendor will install all measures based on an approved pricing schedule.

The Compact encourages the Vendor to allocate weatherization bid awards based on the following criteria:

**Quality of Work** – A significant amount of quality assurance will be performed at the project level. Quality of work should play a significant role in the allocation of work orders to subcontractors. Quality of work should include the following categories (at minimum):

- Safe Work Practices
  - Including working in accordance with all local, state and federal codes
- Technically sound installation practices conforming to the Building Performance Institute (BPI) approach
- Installation consistent with energy efficient upgrades offered at the time of the home energy assessment
- Repair work resulting from failed QA/QC

**Customer Satisfaction** – Customer satisfaction may be closely monitored via follow up QA/QC visits, phone surveys, written surveys, etc. At a minimum, customer satisfaction measures should include:

- Reliability: cancellations, adherence to scheduled appointments
- Overall customer satisfaction/professionalism
- Complaint resolution
- Prompt service
- Cleanliness of the worksite

The Vendor has responsibility for ensuring a quality end product. Cape Light Compact requests the bidder to provide a proposal related to how they intend to allocate work orders.

## ***2.3 Scheduling/Follow-up/Technical Assistance Services***

The Vendor will offer continued support throughout participation in the Program. The Vendor will not be responsible for initial customer intake. Within customer intake, customers that contact either the MMI or Cape Light Compact will be interviewed in order to determine their need and reason for calling.

In addition to supporting the MMI and PA telephone numbers, the Vendor needs to provide a direct line of communication to allow outreach staff to schedule assessments from the field (i.e. a customer's facility) or have a member of their staff call the customer to schedule the appointment based on customer choice. This is intended to expedite the scheduling process and have assessments scheduled when the customer is most motivated.

All customers will be provided with educational materials regarding energy use and efficiency opportunities. The Vendor will schedule eligible customers for the appropriate energy assessment. For those customers that have completed an assessment within the last 12 months, appropriate follow-up action must be determined by the Vendor. The Vendor will be responsible for collaborating with the MMI and other Vendors to ensure convenient scheduling of the assessment with the customer.

Outreach staff training and qualifications should include:

- Customer service and telephone experience
- General knowledge of energy efficiency
- Knowledge of all residential energy efficiency and demand-side management Program offerings
- Knowledge of information resources presented to customers during initial intake
- Knowledge of the Cape Light Compact's role as a municipal aggregator for Cape Cod and Martha's Vineyard

The Vendor should maintain Technical Assistance Representatives who have a greater degree of technical training.

Technical Assistance Representatives should possess:

- Extensive knowledge of energy efficiency and renewable technology including but not limited to an energy auditing background, building science background, and diagnostic experience (e.g. blower door, duct blaster, infrared imagery technology)
- Additional training in the area of building system fundamentals for a wide array of systems, including high efficiency residential and commercial equipment
- Knowledge of all residential and Commercial & Industrial energy efficiency, demand-side management and renewable energy, Program offerings
- In-field audit experience

## **2.4 Energy Assessments**

Cape Light Compact strives to offer comprehensive energy efficiency services to all Multi-family (MF) facilities located within its territory. The MF energy assessment objective is to provide customers with the opportunity to understand the impact of all major energy efficiency measures and improvements that can be implemented in their multi-family facility as a whole as well as their individual unit. The Vendor will perform an assessment of all applicable energy efficiency opportunities including thermal measures, HVAC system efficiency, combustion safety, refrigerator energy use, cost-effectiveness of major measures, and address all health, safety and indoor air quality issues. The use of a blower door, duct blaster, infrared thermography as well as installation of electric and domestic hot water instant savings measures (ISM) is required during assessments when applicable. This educational process is meant to motivate customers to implement major measures.

There are several different types of multi-family facilities located within the Cape Light Compact's service territory. The Vendor is expected to demonstrate that it has both the diagnostic tools, as well as the technical capability necessary to comprehensively assess and address efficiency opportunities in all of them. Facility sizes can vary from five units to several hundred units and may be:

1. Condominium complexes comprised of several small (2-4 unit) buildings<sup>2</sup>
2. Condominium complexes comprised of several large (5+ unit) buildings
3. Condominium complexes comprised of several single detached units
4. Mixed use facilities (Condominiums or Apartments)
  - a. Residential units with common areas
  - b. Residential units with commercial spaces
5. Timeshares
6. Remodeled homes, converted into an apartment building

In addition the variety of types of multi-family facilities, the Cape Light Compact Multi-Family customers can receive several types of energy assessments:

1. Cape Light Compact Multi-Family Facility Assessment
2. Cape Light Compact Multi-Family (single) Unit Assessment
3. Cape Light Compact Multi-Family Facility Assessment coupled with Commercial and Industrial Assessment
4. Cape Light Compact Assessment coupled with Natural Gas Assessment

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<sup>2</sup> Assessments done on buildings containing fewer than 5 units must be done in accordance with the Mass Save Home Energy Services Energy Assessment Standards (See Attachment 10.5)

Consistent with Program goals, Vendors are encouraged to combine the visits above for a one-time, comprehensive visit for the customer(s).

In addition to the four levels of service designated above, Cape Light Compact may require the Vendor to implement Special Site Visits (SSV). These visits are designed to assist those customers who have a concern about high-energy use and request a site visit in order to address their concern. The SSV is also used to qualify a customer for a specific incentive or assist with questions about a particular piece of equipment or home efficiency measure. ISMs will be made available for installation at this time.

Cape Light Compact also requires that the Vendor be capable of providing customers with an energy assessment report in a timely manner. The report should provide the customer with energy efficiency opportunities in an easy to understand and an appealing format that remains consistent with the statewide Multi-Family report template. The report must include (at minimum) recommended/installed individual efficiency measures, the estimated costs, and the payback and savings. In cases where there are multiple Vendors working on the same project (i.e. Natural Gas and Electric), the reports will be compiled for delivery to the customer. PAs are in the process of developing consistent collateral to be provided to customers during the assessment. The Vendor will be expected to produce the agreed upon collateral for distribution. The Vendor may also be required to provide the customer with a list of Program approved subcontractors.

To increase the adoption of major measures, the Vendor will be required to develop and implement a systematic process for encouraging customers to follow through with actions recommended through the Program including:

- Additional diagnostic services
- Contracts issued for weatherization improvements; and
- Recommendations for high-efficiency heating or cooling systems and/or energy-efficient refrigerators

Various communication channels including telephone, mail and email may be used.

Cape Light Compact requests the bidder to provide a detailed description of how they intend to implement energy assessments offered through the Program, as well as any qualifications/ certifications demonstrating the ability to deliver energy efficiency services to various building types.

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

Energy assessments provide customers with a comprehensive review of their energy usage as well as recommendations for improvement within Program guidelines. Energy efficiency measures will be selected for installation on the basis of cost-effectiveness, appropriateness and customer acceptability. In order to achieve the Program goal of maximum implementation while controlling costs, the Vendor's approaches, protocols, and procedures used will be designed to identify not just the obvious and most cost-effective opportunities, but also more subtle and "niche" energy retrofit opportunities. For many measures, this will involve the use of the audit software. The software provided by the Vendor is intended to guide field staff assessments to determine, while on site, the appropriateness of candidate measures given site-specific circumstances and installation costs.

Current program incentives are listed below. As the Program continues to evolve, incentives are likely to be changed. The incentive structure may also change in the future, based on regulatory or evaluation results. Cape Light Compact also continues to collaborate with PAs in order to investigate the opportunity to offer ancillary services and/or deeper savings measures.

<b>Targeted End Use</b>	<b>Technology</b>	<b>Incentive</b>
In Unit Lighting	Compact Fluorescent Light Bulbs	No Cost to Customer
In Unit Lighting	ENERGY STAR <sup>®</sup> Rated Light Fixtures (in unit)	No Cost to Customer
In Unit Lighting	LED technology	Copayment to be determined based on cost- effectiveness screening
Water Conservation	Faucet Aerators and Showerheads	No Cost to Customer
Heating and Cooling	Programmable Thermostats	No Cost to Customer
Weatherization	Air Sealing	No Cost to Customer
DHW Insulation	Pipe Insulation	No Cost to Customer
Electricity Conservation	Smart Strips	No Cost to Customer
In Unit Lighting	Night Lights	No Cost to Customer
Insulation	Attic Insulation	75% Incentive
Insulation	Wall Insulation	75% Incentive
Insulation	Basement/ Crawl Space Insulation	75% Incentive
Insulation	Rim Joist Insulation	75% Incentive

Common Space Lighting	ENERGY STAR® Light Fixtures for Common Areas	\$10 Co-Payment per fixture
Common Space Lighting	Metal Halide Pulse Start Lighting	\$10 Co-Payment per fixture
Common Space Lighting	Daylight Dimming	\$10 Co-Payment per fixture
Common Space Lighting	Occupancy Sensors: Remote Mount	\$10 Co-Payment per fixture
Common Space Lighting	Occupancy Sensors: Wall Mount	\$10 Co-Payment per fixture
Common Space Lighting	HIF and HID: Wall Mount	\$10 Co-Payment per fixture
Common Space Lighting	HIF and HID: Ceiling Mount	\$10 Co-Payment per fixture
Safety and Lighting	Exit Signs	\$10 Co-Payment per fixture
Common Space Lighting	LED technology	Copayment to be determined based on cost-effectiveness screening
Appliances	ENERGY STAR® Rated Refrigerator	\$150 For Qualified Replacements
<b>Future Technologies under consideration:</b>		
Domestic Hot Water	Demand Control Circulators	Copayment determined on a custom basis after cost-effectiveness screening
Controls	WiFi Thermostats	Incentive to be determined
Indoor Air Quality	Improved ventilation systems	Custom incentive, based on cost-effectiveness

- Weatherization measure installation is to be implemented in accordance with the Mass Save Materials & Installation Standards when applicable. (See Attachment 10.6)
- Thermostat models must be approved by Cape Light Compact and consist of 7 day programmable capability. WiFi Thermostat eligibility is currently pending
- Showerheads must have a maximum flow-rate no greater than 2.5 gpm, at 80 psi, as tested in accordance with ANSI A112-18-1M. Faucet Aerators must have a maximum flow rate no greater than 1.5 gpm. All flow restrictor installation shall not lead or cause “water-hammer” at the time of installation, and shall be hand tightened only
- CFL and/or LED bulbs used in the Program must be installed. All bulbs installed through the Program must be ENERGY STAR® or equivalent and have a rated life of at least 10,000 hours for standard bulbs. Preference will be given to bulbs that have already successfully completed third-party testing. All bulbs must be pre-approved by Cape Light Compact staff
- Refrigerators must be ENERGY STAR® rated. Eligibility of the \$150 incentive is based on early replacement opportunities identified at the time of the audit that lead to sufficient kWh savings. Eligibility will often require on site efficiency screening, meaning metering or AHAM data as proxy. Please explain which method will be employed

The Vendor is expected to promote all available/applicable incentives offered via applicable statewide residential energy efficiency programs, such as Home Energy Services, Cool Smart, GasNetworks, Major Renovations, Lighting and Products, etc.

To address potential financial barriers, the Vendor will develop and implement a process to allow for multi-year projects for installing major measures. This addition to the Program design seeks to encourage customers to achieve deeper savings.

Electric and gas PAs are working together in order to offer all available energy efficiency measures with a fuel-blind approach, the implementation of which is currently pending approval. The Vendor will be expected to “piggyback” measures with the other Vendors to ensure seamless delivery to the customer.

When applicable, the Vendor shall provide warranties to participating Cape Light Compact customers covering the materials and labor for a period, which is the greater of one year, or the warranty periods customarily provided by the Vendor to its customers, commencing on the final date of installation. In addition, all manufacturers and other applicable warranties shall accrue to the benefit of the participating Cape Light Compact customer, and the Vendor shall provide to such customers documentation relating to such warranties. Such warranties shall render Vendors solely responsible for the performance of the products and to respond to all complaints of product malfunctions or failures, or problems caused by, or resulting from, the product installation for the stated period. The Vendor is expected to require the same level of warranty be provided by all applicable subcontractors. Failure of subcontractors to honor warranties will result in dismissal from participation in the Program.

The Vendor will also be expected to work with Cape Light Compact and any leveraged program that may also enhance the customer experience. Awarded grants in specific areas may require that the assessments have an added element of reporting for enhanced incentives and services. Cape Light Compact will work with the Vendor to ensure that this is also seamless for the customer.



## **2.6 Incentive Processing**

Customers are offered Energy Efficiency Incentives (EEI) by Cape Light Compact. Once the customer has purchased or installed a qualified measure, the incentive application requires processing, and payments must be sent out to the applicable party in a timely fashion. Currently, the only EEI offered through the Program is for the installation of an ENERGY STAR® Rated Refrigerator when replacement is qualified. EEI offerings may expand to include measures offered by the Home Energy Services Program. In 2012 the Program received two (2) EEI applications.

**Please note that Cape Light Compact may choose to process some or all rebate applications instead of having the Vendor process such requests.**

If elected to process rebate applications, the bidder must be able to perform the billing, payment, informational and reporting services as described below:

1. Maintain mailing address to receive application forms
2. Maintain trained staff capable of reviewing and processing such forms
3. Provide toll-free phone number for customers seeking additional information or assistance and trained staff to provide such information
4. Track each application request through completion (complaint requests and non-compliant requests)
5. Mail check to customer within four weeks of receipt of the rebate request
6. Notify customer in writing of non-compliant application request (contact should also be attempted via phone)
7. Provide monthly reporting of all application request activity, invoicing and savings reports

The Vendor will be expected to track incentive information related to payment of subcontractors separately from customer mail-in rebates. A subcontractor's installation of weatherization measures are provided as an instant, up-front incentive to participating customers. Therefore, the Vendor will be responsible for timely incentive payment directly to the subcontractors for qualified/completed installations.

Cape Light Compact requests the bidder to provide a detailed description of how they intend to execute the delivery of EEIs.

## **2.7 Toll-free Hotline(s) for Rebates/Incentives**

The Vendor will be required to maintain a toll-free customer service and information telephone number(s) for customers seeking information related to the processing of specific rebates/incentives and scheduling. The toll-free line must be maintained by trained staff and provide business hours ensuring a high level of availability for customers. Cape Light Compact requests a copy of the Vendor rebate/incentive call center availability with this proposal. Please include current staffed hours and specify if operational hours/staff differ from general customer intake call center operations.

## **2.8 HEAT Loan Referral**

Participation in the HEAT Loan Program is open to Multi-family consumers who own a condominium unit which has a, currently active, individually metered residential electric account. The HEAT Loan was included in the Green Community Act of 2008 as a financing component of the Mass Save Home Energy Services Program and was expanded to include individually metered condominium units serviced through the Mass Save Multi Family Retrofit Program in 2012. The Vendor will be expected to adopt processes/procedures in accordance with modifications to the HEAT Loan Program.

The Vendor will assist the HEAT Loan Program Administrator in enrolling eligible MF customers into the HEAT Loan program by doing the following:

- Provide training on Program details and process to all Energy Advisors
- Present eligible customers with HEAT Loan Program literature
- Inform eligible customers of HEAT Loan Program offerings, eligible measures, program guidelines and requirements
- Prepare Section 1 of the HEAT Loan Intake Form for eligible customers
- Inform eligible customers with the process to obtaining a HEAT Loan
- Submit HEAT Loan Intake Form documents to the HEAT Loan Program Administrator in a timely manner (not to exceed 10 days after date of energy assessment)
- Direct customers to the HEAT Loan Program Administrator for the resolution of any issues relating to the HEAT Loan Program

## **2.9 Quality Assurance**

The Vendor will provide effective project-level Quality Assurance/Quality Control (QA/QC) procedures. Cape Light Compact will require the Vendor to provide QA/QC for one hundred percent of weatherization projects for awarded work for facilities over 20 units. The planned percentage may be adjusted as necessary. All work for performed on facilities 20 units and fewer should be high quality.

Policies and procedures shall include:

1. Documentation and record keeping (paper or electronic)
2. Supervision of work
3. Review and inspection
4. Quarterly Quality Assurance reports to Cape Light Compact

Vendor performance will be evaluated in the following areas:

1. Customer relations and service
2. Data collection
3. Customer education
4. Testing and diagnostic procedures
5. Measures installed
6. Materials used
7. Sales and presentation
8. Rebate processing
9. Customer problem resolution
10. Scheduling and Backlog
11. Accuracy of work measures and costs
12. Timeliness of Services

The Vendor shall require the same level of quality assurance from its subcontractors.

The statewide QA/QC Vendor will perform additional quality assurance inspections of Program services and installations based on Cape Light Compact requirements. These will include both in-field, pre and post evaluations. The Vendor will ensure that identified issues are resolved and reported to Cape Light Compact.

The Vendor should provide QA/QC protocols currently being implemented for the purpose of this response. The Bidder should also provide detailed information such as:

- Previous experience in QA/QC activities
- Number of assessments performed within the last 12 months Number of QA/QC visits within the last 12 months
- Types of QA/QC qualifications and capabilities

## ***2.10 Data Transfer and Reporting***

The Vendor is required to provide Cape Light Compact with all customer data, assessment information, work order records and other reports in a timely manner.

PAs also routinely provide updates for regulatory and reporting purposes. Vendors must be capable of providing information related to metrics such as, overall savings achieved, time to serve, implementation conversion rates, QA/QC issues/ratings, etc. All file structures, record layouts, and file indexes will be provided to the Compact from the Vendor.

Continuous Program activity tracking and monitoring will be the responsibility of the Vendor. The Vendor must collect and manage data necessary for its own monitoring and project management, PA oversight of the Program, required reporting and for Program evaluations to be conducted by outside evaluation Vendors engaged by Cape Light Compact.

Data collection and tracking procedures must be established at Program initiation, and submitted to Cape Light Compact for approval prior to Program delivery. Vendors are required to develop and maintain a computerized data tracking system. Specific data needs may be expanded, at the request of Cape Light Compact. At a minimum, the data tracking system must be able to:

- Monitor Program progress (number of participants, installations, costs, etc.)
- Meet regulatory reporting requirements
- Support Cape Light Compact's ability for early identification of major issues that would jeopardize the ability of the Program to meet its goals
- Support the calculation of energy impacts, by measure and for the Program, using acceptable engineering algorithms
- Lead generation tracking

Such data might include, but not be limited to:

- Detailed information on all customer interactions
- Participant and non-participant (no shows or customers that decline a visit, contact name, address, building type, owner/renter, household size, etc.)
- Number of site visits made, by whom, when
- Detailed information on all measures installed, including size, location, number of units, usage, type and model of equipment removed and installed
- Information relating to efficiency measures that were recommended to the customer, but were not installed

Periodic and ad hoc electronic transfers of any or all of the aforementioned computerized data tracking systems will be required. The timing, format, and contents of these transfers will be specified by Cape Light Compact and may be changed for any reason at any time at no additional cost to Cape Light Compact.

The Vendor may be required to upload, at least monthly, a detailed file including all energy efficient measures installed, services provided and an invoice for reconciliation with Cape Light Compact's internal database. Data transfers must be of the highest integrity in order to avoid additional administrative burden and payment requests.

## ***2.11 Marketing Support***

With extremely aggressive energy savings goals, the Program will require marketing support for the Program. Cape Light Compact intends on implementing specific marketing initiatives. Cape Light Compact welcomes a marketing plan that will help to support participation and installation of measures in the Program. Please include marketing mechanisms designed to increase program participation and major measure adoption.

## 2.12 Program Goals and QA Visits

The table below provides a summary of this Program's estimated energy assessments expected to take place 2013-2015. These numbers are included to provide a sense of the magnitude of this Program. Program goals for 2013 and later years may be significantly different than those below.

<b>Program Year</b>	<b>Multi-Family Unit Assessments</b>
2013	400
2014	600
2015	600

\*Number of Energy Assessments includes all levels of service for Cape Light Compact is projected, and is subject to change. Number of QA/QC visits include in process and post inspections QA/QC visits performed by the Vendor. Additional QA/QC visits will be performed by a statewide third party QA/QC Vendor.

Cape Light Compact expects bidders to achieve these goals while:

- Achieving maximum level of cost-effective energy savings per dollar spent
- Providing cost and value added services not provided in basic program pricing
- Achieving persistence of energy savings through effective and appropriate choice of energy efficiency measures
- Focusing on comprehensive, cost effective, energy efficiency measure installation rather than number of audits completed
- Improving participants comfort, health and safety

Refer to <http://www.capelightcompact.org/eep> for a link to the approved Massachusetts 3 year plans and the Statewide Technical Resource Manual.

### **3 General Conditions Regarding Material Installations**

1. The Vendor shall not install any materials without prior approval of the property owner.
2. All work shall be performed in a professional manner and be consistent with all applicable safety standards.
3. All installed materials shall be consistent with the application and be sufficiently durable to ensure measure performance
4. The Vendor shall at all times keep the customer work site free from accumulations of waste material or rubbish caused by performance of the work. Upon completion of the work all rubbish, tools, equipment, surplus material and supplies shall be collected leaving the location free from any debris in "broom clean" condition. Ability to vacuum into original condition desired.

The proper, safe, and lawful disposal of all items used or removed during implementation of the Program including, without limitation any substances considered hazardous and/or toxic under state or federal law or regulation, is the sole responsibility of the Vendor and its subcontractors. Upon request, the Vendor shall advise Cape Light Compact and the applicable customer(s) of the practices, use, storage, treatment, handling and disposal of such hazardous and/or toxic materials, and other material and equipment removed from the customer's location in the course of the work. The Vendor shall also provide on request, documentation (including without limitation certificates and manifests) evidencing proper use, storage, treatment, transportation, handling, and disposal of such material and associated property and equipment.



## **4 Financial Accounting**

The Vendor is responsible for the financial management of the Program. Accounting systems must be sufficient to efficiently implement all aspects of the Program, and keep track of all payments made, liabilities incurred, receivables, and material and equipment inventories. The Vendor is solely responsible for developing compensation systems between itself and subcontractors, as well as with its own staff. Cape Light Compact reserves the right to audit the Vendor's financial and accounting records pertaining to the Program at any time.

It is anticipated that the Vendor will submit invoices once per month. Cost proposals should make clear the invoicing terms. Cape Light Compact will work with the selected Vendor to identify the information to be provided on invoices. The Vendor will be required to propose the final form of invoice and secure Cape Light Compact approval of the format before use.

Duplicates of all invoices, supporting documentation and financial reports submitted shall be kept on file at the Vendor's place of business.

## 5 Qualifying Questions/Information

Please provide answers/information/proposals for the following:

1. Detailed description of the proposed approach for implementing all of the requested services to various multi-family facilities located within the Cape Light Compact service territory
2. Detailed description of the proposed approach to deliver Program services, in a timely manner, to customers located on Martha's Vineyard
3. List of all currently employed staff proposed to provide the indicated services and summary of their qualifications, including technical training, licensing, etc. (e.g. 3 BPI Certified Multifamily Building Analyst Energy Auditors, 4 BPI Certified Building Analysts)
4. If Bidder intends to hire additional staff in order to provide proposed services, a description of its approach to hiring and the qualifications it will require of prospective employees should be included
5. Sales training provided to field staff (if none, please provide a plan to provide sales training)
6. Current call center operational capacity including, number of full-time and part-time call center staff, current hours of operation and 2012 call volume
7. Number of multi-family energy assessments performed in the previous twelve month period
8. Number of quality assurance visits performed in the previous twelve month period
9. Standard procedures used to deal with issues related to potential short and/or long-term health and safety issues (procedures should include those addressed within Program scope and those beyond the immediate scope of the Program)
10. Detailed description of the bidders approach to delivering comprehensive energy assessments to the various multi-family facilities located within the Cape Light Compact service territory, including certifications and qualifications of field staff performing assessments.
11. Detailed description of if/how the bidder intends to utilize subcontractors for the installation of weatherization measures for projects containing 20 units or fewer
12. Detailed plan on how the Bidder proposes to institute a competitive bid process for the installation of weatherization measures for projects containing more than 20 units
13. Detailed description of the proposed approach to electronically communicate with Cape Light Compact
14. Detailed description of the proposed approach to ensuring an exceptions customer experience (i.e., initial scheduling, implementation scheduling, backlog management)
15. Detailed description of how the bidder will execute the delivery of Energy Efficiency Incentives
16. Detailed description of the tracking and follow up process that will be used to implement major measures over multiple years (include how data will be tracked so as to allow both calendar year reporting of savings and total savings by customer for these multi-year projects)

17. Detailed description of the proposed approach for following-up with customers on recommendations they have not acted on (must include mechanism for assessing the effectiveness of the approach)
18. Complete description of Bidders technological capabilities in the areas of Information Management Systems hardware and software, electronic data transfer, rebate processing capabilities and technology related to MF energy assessments.
19. Vendor is required to have/obtain suitable office, dispatch and warehouse facilities and vehicles as necessary, located within easy access to all parts of the Cape Light Compact service territory (Identify the planned facilities and equipment to be used in Program implementation and identify the extent to which such facilities and equipment are already on hand. If acquisition of facilities and equipment is required a timeline should be made available to Cape Light Compact)
20. List other similar contracts in force in Massachusetts and/or nationally along with the names or references to be contacted regarding performance for programs that are within the size and scope of the MF Program
21. Assurances that as the MF Vendor the ability exists to be in the field at the appropriate start up time (June 1, 2013), given the proposed service(s), such that Cape Light Compact's anticipated delivery projections will not be adversely delayed
22. Complete description of Bidders ability to provide robust marketing support in order to meet Program goals
23. Detailed description of quality control policies and procedures (energy assessment delivery services, measure installations and post-installation inspections)
24. Customer scheduling policies and procedures (describe a proposed approach for allowing assessments to be scheduled from the field)
25. Protocols for resolving customer dissatisfaction, either at the time of the site visit, or after
26. Quality Assurance Plan, including criteria to judge auditor and subcontractor performance
27. Current warranty policy, if applicable

## 6 Summary of Cape Light Compact Responsibilities

In general, Cape Light Compact anticipates a limited role in program implementation, preferring that the Vendor provide virtually “turn-key” program delivery. Broadly, Cape Light Compact responsibilities can be assumed to be:

1. Providing customer information for those likely to be eligible for the Program including names, addresses, account numbers, telephone numbers, and referrals from other programs
2. Ongoing Program development and refinement, in conjunction with PAs and Vendors
3. Monitoring and oversight of Vendor performance, including
  - a. Reviewing and approving any change orders or modifications to program implementation procedures
  - b. Reviewing and approving all forms, program materials, procedures, protocols and software proposed for use by the Vendor in implementing the Program
  - c. Reviewing all management reports from the Vendor
  - d. Reviewing the quality and conduct of work performed, including conducting random site inspections through a third-party quality control Vendor
  - e. Monitoring and tracking the resolution of customer complaints or inquiries
  - f. Verifying, approving and processing Vendor invoices
4. Providing a principal Cape Light Compact point of contact
5. Assistance in customer intake and referral to the MMI
6. Customer qualification

## 7 Pricing Structure

For Administrative and Instant Savings Measure installation, bidders shall quote a fixed dollar cost per line item. See Attachment 10.1

The Cape Light Compact requests that the Bidder provide a detailed pricing structure for common weatherization measures to be installed in projects consisting of 20 units or fewer projects. As well as, a detailed description of how the bidder will execute a successful competitive bid process for projects larger than 20 units.

## 8 Schedule

RFP issued: March 1, 2013

Pre-bid conference call: March 15, 2013, 2:00 p.m. ET\*

Questions regarding the RFP due: March 22, 2013

All proposals due: April 12, 2013 by 2:00 p.m. ET

Vendor selected: May 1, 2013 (estimated)

Kick-off meeting: May 15, 2013 (tentative)

Implementation: June 1, 2013 – December 31, 2015

\*Please indicate via e-mail to Margaret Downey ([mdowney@barnstablecounty.org](mailto:mdowney@barnstablecounty.org)) your interest in participating in the call by March 11, 2013.

## 9 Proposal – Number of Copies and Format

Proposals, to be entitled for consideration, must be submitted in accordance with the following instructions. The Bidder shall be responsible for submitting one (1) electronic, one (1) original and three (3) copies of the proposal in such form as set forth below.

Proposals shall be:

- Type written on 8 1/2" x 11" paper;
- The pages numbered; and
- The Proposal must also be signed in longhand in accordance with the instructions as stated in Attachment 10.2, "Bid Submission Page"

Acceptance of any proposals remains in the sole discretion of Barnstable County. Proposals which in the judgment of Barnstable County fail to meet the requirements of this RFP or which are incomplete or obscure, or in which errors occur will be rejected.

## 9.1 *Bid Due Date*

The bound Proposal must be signed and shall be delivered to Barnstable County within the time set forth in this Request for Proposals (RFP). Proposals will be enclosed in sealed envelopes and marked as follows:

RFP Title: Multifamily Retrofit Program Vendor  
 Dated:  
 Bidder's Name:  
 Delivered to: Barnstable Superior Courthouse  
 3195 Main Street  
 Barnstable MA, 02630  
 Attention: Margaret Downey  
[mdowney@barnstablecounty.org](mailto:mdowney@barnstablecounty.org)  
 Cape Light Compact Chief Procurement Officer

Bids must be received by April 12, 2013 by 2:00 p.m. Est. Proposals received after this time will not be considered.

### 9.1.1 Interpretation of the RFP

Barnstable County is seeking one qualified firm to provide the requested services. Proposals shall be in accordance with all requirements set forth in this RFP. Should a Bidder find any ambiguity, discrepancy or omission in the RFP, the bidder should notify the Compact in writing. Such information must be received by March 22, 2013, to afford Barnstable County an opportunity to send any instructions or interpretations to other Bidders who have received an Invitation to Bid. Barnstable County will not be responsible for any oral instructions or interpretations. Please send all inquiries to

**Barnstable Superior Courthouse**

3195 Main Street

Barnstable MA, 02630

Attn: Margaret Downey

### 9.1.2 Rights to Modify This Specification

Barnstable County reserves the right to modify any aspect of this RFP if the change will make the *Multi-Family Retrofit Program* more cost-effective and customer responsive. Only qualified contractors experienced in providing energy audits and efficiency services are invited to submit proposals.

## 9.2 Proposal Contents

### 9.2.1 Narrative Requirements

Bidders must submit a proposal narrative containing the following information. Please note that Barnstable County reserves the right to reject any proposal, which, in its judgment, is incomplete. Please provide the following:

- a. A brief description of the business nature of the Bidder, its purpose, and its general history. Include a summary of contracts held similar in nature to the services described in this RFP;
- b. A listing of all staff proposed to provide the indicated services and summary of their qualifications, including technical training, licensing, and installation experience. If existing positions are to be used, indicate the percentage of time to be devoted to this project. Include a summary of qualifications and references for each subcontractor. If the Bidder intends to hire additional staff in order to provide the proposed services, a description of its approach to hiring and the qualifications it will require of prospective employees should be included. If licenses are required, Bidder shall provide verification of each license holder;
- c. A detailed description of the proposed approach for implementing all of the proposed services;
- d. A detailed explanation of how the Bidder proposes to coordinate and develop subcontracting relationships;
- e. A detailed description of the proposed approach to electronically communicate with the Compact;
- f. A detailed description of the proposed approach, which affects the delivery of the services to all eligible customer sectors. In particular, scheduling approaches to ensure implementation and customer convenience. Please discuss methods utilized in backlog management and reporting;
- g. A complete description of your company's technological capabilities in the areas of, Information Management Systems hardware and software, electronic data transfer, rebate processing capabilities and *energy assessment* related technology;
- h. The locale or anticipated locale for field operations and describe how this site or sites will help satisfy the requirements of this RFP. Describe the approach for providing service to all areas in the *Cape Light Compact* service area;
- i. A list of other similar contracts in force in Massachusetts and/or nationally along with the names of references to be contacted regarding your company's job performance for programs that are within the size and scope of the *Program*;
- j. Assurances that as the *MF Program* Vendor/contractor, you will be able to be in the field at the appropriate start up time, given the proposed service(s), such that the anticipated delivery schedule will not be adversely delayed. Further, describe the company's planned allocation of resources

toward timely startup of the *Program* services. Include an implementation schedule and list of startup resources to be utilized;

- k. With regards to your quality control policies and procedures, please describe:
  1. The quality control process for Audit Delivery Services, Measures Installations and Post-Installation Inspections
  2. The corrective measures available to deal with customer problem resolution and quality assurance issues. Describe how The Cape Light Compact will be notified concerning these issues
  3. Your specific Quality Assurance Plan, including criteria to judge auditor, subcontractor and database performance, and the effectiveness of energy conservation measures installed;
- l. Any exceptions to the Contract provided as Attachment 10.3

### **9.2.2 Pricing Structure**

Bidders shall quote a fixed dollar unit cost per line item for direct and indirect costs including all administrative cost, direct labor costs, labor burden, overhead costs, profit and other indirect costs associated with the labor and rebate processing requirements. Bidders shall provide complete documentation and detailed assumptions of the pricing to support projections.

Bidders shall quote a price based upon the estimated minimum number of jobs projected. Barnstable County makes no representations of the actual number of jobs to be performed.

Any start-up costs, which are nonrecurring or which may be expected to be reduced, over time should be clearly identified. Bidders shall describe how their unit prices would change, if at all, in the event that the actual participation targets for the programs and measures differ from the budget estimates.

### **9.2.3 Qualification of Bidders**

The competency and responsibility of Bidders and of any proposed Sub-Contractors will be considered in making the award. Barnstable County expressly reserves the right to reject any or all Proposals (either generally or in a particular instance and either retroactively or prospectively) and to waive any informalities or regularities in Proposals, and to accept that Proposal whether it be the lowest bid or not, which in the unilateral judgment of Barnstable County best serves the Cape Light Compact's purpose and intent provided, that, no course of dealing or delay or omission on the part of the Barnstable County in exercising such right shall operate as a waiver thereof.

### **9.2.4 Sub-Contracts**

The Bidder shall submit with its Proposal the names and addresses of any Sub-Contractors proposed for principal parts of the Work and their price. The Compact encourages the utilization of Cape Light Compact territory based contractors. The cost of work proposed by each said Sub-Contractor shall be



included in this information. Barnstable County reserves the right to substitute other Subcontractors to provide like services or materials.

### **9.2.5 Substitutions**

Unless otherwise stated in the RFP, any material or computer hardware mentioned by its trade name or identified by the name of the Manufacturer in the specifications is to be regarded as merely indicating a standard or the type desired. Articles of other manufacturers may be used, provided they are equal or better in material, design and workmanship to those named, and such substitutions are approved by Barnstable County in writing. The Bidder shall attach to its Proposal a list showing manufacturer and type of all material or computer hardware it proposes to substitute for that specified by name in the various specifications. If there is no attachment, it will be assumed by Barnstable County that the Bidder intends to use material and computer hardware as specified and no substitution will be allowed at a later date. In all cases, Honeywell DMC shall have the right to request samples, descriptive literature and/or design calculations and data on substitute materials before granting an approval. No substitutions of Subcontractors are allowed unless approved by Barnstable County in writing.

### **9.2.6 Massachusetts State Sales Tax**

Massachusetts Sales Tax on materials and equipment rentals or any other taxable items for use in the completion of lump sum or guaranteed price contracts will be paid by the Program Contractor who is considered the consumer and not billed to the Cape Light Compact or its customers. Said Massachusetts Sales Tax shall be incorporated into the cost prices used in determining the bids submitted. Any amounts owing, due, claimed or paid with regard to such taxes shall be subject to the indemnification provisions of the contract.

### **9.2.7 Detailed Bid Information**

Where specific information (such as names, addresses, and prices of any Sub-contractor; number of working days and/or calendar days required to complete the Work; or other data) requested in the written Proposal is omitted, the Bidder may be automatically eliminated from consideration for the Contract at the discretion of Barnstable County.

## ***9.3 Acceptance of Proposals and Award of Contract***

Barnstable County, at its sole discretion, may accept entire proposals submitted by a Bidder, or accept portions of proposals submitted by a Bidder, or reject proposals in whole or in part.

Screening Proposals for Compliance with Submission Requirements and Minimum Evaluation Criteria will include utilizing the proposal submission requirements and the minimum criteria incorporated herein. The Selection Committee, to be designated by the Chief Procurement Officer, shall screen proposals as to their responsiveness, and identify those which are responsive. Any proposal, which in the opinion of the

Evaluation Committee, fails to include the information or documentation specified in the submission requirements shall be determined to be non-responsive and shall be rejected. Any bidder who fails to meet any of the standard set forth as minimum criteria shall be determined to be non-responsive and shall be rejected. All other proposals meeting both the submission requirements and minimum evaluation criteria shall be considered qualifying proposals.

Barnstable County reserves the right to waive portions of the RFP for all bidders and to waive minor informalities as defined by Chapter 30B, or allow the bidder to correct them. The remaining responsive proposals shall be evaluated using the comparative evaluation criteria incorporated herein. Each proposal shall be assigned:

- a) a separate rating for each comparative evaluation criterion; and
- b) a composite rating.

Proposal ratings and accompanying written explanations shall be forwarded to the Chief Procurement Officer.

Methodology for Determining Best Price:

Taking into consideration price and the evaluations of the Evaluation Committee, the Chief Procurement Officer shall determine the most advantageous proposal. Award of the contract is subject to the approval of the Barnstable County Commissioners.

### **9.3.1 Selection Criteria**

The final selection of a consultant shall be based on the following sets of criteria:

Minimum Evaluation Criteria

- a. Submission of all required documentation and certifications detailed in Proposal Contents.
  - b. Demonstrated capacity to provide a full range of services to address the issues facing the Cape Light Compact energy efficiency program.
  - c. Demonstrated understanding of electric utility restructuring issues.
  - d. A minimum of five (5) years related experience in the delivery of multi-family energy efficiency programs
  - e. Submitted proposal responds to the issues identified in the RFP.
- Comparative Evaluation criteria

1. Experience of Program Management and Field Staff in Delivery of Residential Programs in Massachusetts

- a. Highly Advantageous: The bidder has demonstrated an exceptional background and greater than five years of experience within Massachusetts in residential program management and delivery
- b. Advantageous: The bidder has demonstrated an adequate background and greater than one year of experience with Massachusetts in residential and Commercial & Industrial program management and delivery

2. Experience and Knowledge in Implementation of Multi-Family Energy Conservation installations and educational services

- a. Highly Advantageous: The bidder has extensive knowledge and greater than one year experience in working with Multi-Family Energy Conservation installations and educational services
- b. Advantageous: The bidder has adequate knowledge and up to one year of experience in working with Multi-Family Energy Conservation installations and educational services

3. Experience of Project Team with Barnstable and Dukes County Issues

- a. Highly Advantageous: The bidder has experience working with more than one town in Barnstable or Dukes County on energy policy, energy efficiency or other energy related issues.
- b. Advantageous: The bidder has experience working with one town in Barnstable or Dukes County or other Massachusetts municipality on energy policy, energy efficiency or other energy related issues.

Contract negotiations will commence in order to complete a signed contract within 15 days of contract award. All contracts will incorporate the general terms and conditions included with the bid package and the written documents provided by the Bidder in its bid.

If a contract is not executed by the chosen Vendor by **May 15, 2013** Barnstable County reserves the right to negotiate with an alternative Bidder in order to execute a contract by **June 1, 2013**. All exceptions to the contract must be noted in writing and included within the body of the proposal

## **9.4 Proposal Confidentiality**

All proposals will become the property of The Cape Light Compact. As a public entity it may become necessary to supply price information to regulatory agencies for review. Barnstable County will request that all such information be treated confidentially by the regulatory agencies and Barnstable County will furnish such information when required. If any proprietary information is contained in the Proposal, it should be clearly identified and will be treated as such provided that neither the Barnstable County, The Cape Light Compact, officers, employees shall be liable for any action taken, or omitted to be taken, in good faith by it or them hereunder or be responsible for the consequences of any oversight or error in judgment thereof except for direct losses due to its or their willful misconduct or gross negligence.

### **9.4.1 Return of Proposal Materials**

Proposal materials will not be returned to Bidders. All costs incurred by Bidders in the preparation and submission of a proposal and/or oral presentation shall be the sole responsibility of Bidders.

## **9.5 Oral Presentations**

Bidders whose Proposals are deemed as competitive may be required, upon request, to make an oral presentation. The location of the presentation will be stated on the invitation; presentations will be limited to two (2) hours. The first half hour will be allocated to a formal presentation by the Bidder. The balance of the presentation period will be devoted to questions by and discussion with Barnstable County's representatives.

The oral presentation will be arranged through Barnstable County. Bidders will receive at least 48 hours notice to prepare for the presentation. Attendance must include the Bidder's proposed Project Manager. Barnstable County may disqualify a Bidder on the basis of its refusal to honor its request for an oral presentation.

Results of the oral presentations will be used in part to arrive at ranking the finalist(s) and may result in adjustments to the final rankings assigned. In addition to, or as an alternative to additional technical data provided in a written or oral format, Barnstable County reserves the right to request a "best and final offer" from said Bidders in order to arrive at a final selection.

Based upon all information, Barnstable County will select a finalist with which contract negotiations will commence.

## 10 Attachments

### 10.1 Pricing Structure

Service	Unit	Price	Additional Details
Call Center Services (Scheduling included)	Monthly		Fixed monthly cost
Contractor Management Fee/ Competitive Bid Management	Per Unit		Bidder may wish to provide multiple Per Unit costs dependent on the number of units per project
Heat Loan Application Coordination	Per Application		Fixed Cost for Intake and Reporting to HEAT Loan
Screening Assessment	Per Assessment		Fixed Assessment Cost
Diagnostic Assessment	Per Unit		Fixed Assessment Cost
Comprehensive Assessment (Single Unit)	Per Unit		Fixed Assessment Cost
Comprehensive Assessment (< 20 Unit Facility)	Per Unit		Fixed Assessment Cost
Comprehensive Assessment (> 20 Unit Facility)	Per Unit		Fixed Assessment Cost
Special Site Visit	Per Visit		Fixed Visit Cost
Rebate Processing Fee	Per Rebate		Bidder may wish to provide cost based on rebate type
Quality Assurance/ Quality Control Visit	Per Unit Visit		Fixed Visit Cost
Combustion Safety Test Visit	Per Unit Visit		Fixed Visit Cost
<b>Marketing Support</b>	<b>Per Hour</b>		<b>Bidder may wish to provide hourly cost for multiple designated resources</b>

Personnel Cost for Ad Hoc Support	Unit	Price	Additional Details
Principal	Per Hour		Personnel Cost for Ad Hoc Support to be used for costs incurred as a result of requests relating to projects outside the Lead Vendor Scope of Work. All Costs expected to be billed in this category will first require approval.
Consultant	Per Hour		
Senior Professional	Per Hour		
Staff Professional	Per Hour		
Professional	Per Hour		
Office Support	Per Hour		

Product	Unit	Price	Install Fee	Total Cost	Product Description
<b>Compact Fluorescent Lighting (In Unit)</b>					
60 Watt Equivalent Bare Spiral	Per Bulb				
75 Watt Equivalent Bare Spiral	Per Bulb				
100 Watt Equivalent Bare Spiral	Per Bulb				
3-Way Bare Spiral	Per Bulb				
40 Watt Equivalent Globe	Per Bulb				
60 Watt Equivalent Globe	Per Bulb				
65 Watt Equivalent PAR 30 (Non-dimmable)	Per Bulb				
65 Watt Equivalent PAR 30 (Dimmable)	Per Bulb				
65 Watt Equivalent PAR 30 (Exterior)	Per Bulb				
<b>LED Lighting (In Unit)</b>					
60 Watt Equivalent	Per Bulb				
75 Watt Equivalent	Per Bulb				
100 Watt Equivalent	Per Bulb				
40 Watt Equivalent Globe	Per Bulb				
60 Watt Equivalent Globe	Per Bulb				
65 Watt Equivalent PAR 30	Per Bulb				
LED Nightlight	Per Light				
<b>Thermostat</b>					
7 Day Programmable (Elec., oil, propane)	Per Thermostat				
Wi-Fi Enabled (Elec, Oil, Propane)	Per Thermostat				
<b>Domestic Hot Water ISM</b>					
Flip Aerator (2.2 gpm)	Per Aerator				
Standard Aerator (1.5 gpm)	Per Aerator				
Low Flow Showerhead (1.7 gpm)	Per Showerhead				

## **10.2 Bidder's Submission Statement**

### Bidder's Submission Statement

The following must be completed and included in each Bidder's proposal:

The undersigned Bidder hereby offers to perform the Services as described in the Request for Proposal (RFP) dated March 1, 2013, prepared by Barnstable County, in accordance with the Proposal attached hereto. This bid offer is firm and shall remain in effect for a period of sixty (60) days after receipt thereof by Barnstable County.

In connection with such offer, the undersigned represents and warrants to Barnstable County that it has carefully and thoroughly reviewed the entire RFP and that it possesses the special experience, skills, and abilities necessary to perform the Services bud on in accordance with the specifications detailed in the RFP.

Name of Bidding Firm

Signature

Name of Signatory (print or type)

Position with (print or type)

### **10.3 Draft Contract**



**CONTRACT**  
**between**  
**BARNSTABLE COUNTY**  
**and**  
**[insert name of vendor]**

This Contract is made effective as of [\_\_\_\_\_], and is by and between Barnstable County, Massachusetts (“THE COUNTY”) and [\_\_\_\_\_] (“THE VENDOR”). THE VENDOR and THE COUNTY may be referred to herein collectively as the “Parties,” or either singularly as a “Party.”

WHEREAS, pursuant to G. L. c. 40, § 4A, the towns of Aquinnah, Barnstable, Bourne, Brewster, Chatham, Chilmark, Dennis, Edgartown, Eastham, Falmouth, Harwich, Mashpee, Oak Bluffs, Orleans, Provincetown, Sandwich, Tisbury, Truro, West Tisbury, Wellfleet, and Yarmouth, and the counties of Barnstable and Dukes County (the “Member Municipalities”), entered into an inter-governmental agreement, as amended from time to time, to act together as the Cape Light Compact (the “Compact”);

WHEREAS, the purposes of the Compact include protecting and advancing the interests of residential, commercial and industrial customers in a competitive electric supply market, and promoting energy efficiency and the reduction of energy bills;

WHEREAS, the Compact is operating an Energy Efficiency Plan approved by the Massachusetts Department of Public Utilities on January 31, 2013, DPU 12-107, for plan years 2013 through 2015;

WHEREAS, THE COUNTY provides fiscal and administrative services to the Compact, pursuant to an Administrative Services Agreement dated April, 2000, as amended from time to time;

WHEREAS, THE COUNTY seeks to enter into a contract with THE VENDOR for [\_\_\_\_\_] services in connection with the energy efficiency programs that the Compact will operate under the Energy Efficiency Plan;

WHEREAS, THE VENDOR is experienced in the [\_\_\_\_\_] field(s) and can provide the Compact with the services required pursuant to this Contract;

WHEREAS, THE VENDOR was selected by **[describe competitive bidding, or other, process used to hire vendor]**; and

WHEREAS, the Compact and the Member Municipalities are intended third-party beneficiaries of this Contract.

NOW, THEREFORE, THE COUNTY and THE VENDOR do mutually agree as follows:

## 1. SCOPE OF WORK

### (a) Description of Work

THE VENDOR shall furnish all labor, equipment, permits, supervision and materials to perform the work described in the Scope of Work attached as Exhibit A hereto (the "Work").

### (b) Contract Documents

The following documents (the "Contract Documents") shall comprise this Contract:

- (i) this Contract between Barnstable County and **[insert name of Vendor]** dated [\_\_\_\_\_]
- (ii) any and all exhibits hereto, including any plans and specifications related to the Work; and
- (iii) any and all Contract change orders.

The Contract Documents are listed in order of precedence. THE VENDOR is solely responsible for any errors or omissions caused by any failure to inspect, familiarize and understand the complete set of Contract Documents. The Work shall be performed in strict compliance with the Contract Documents and any written amendments thereto and other drawings and detail requirements that may be furnished or accepted by THE COUNTY under Section 15 or Section 16 below. No substitutions shall be made with the Work unless permitted in the Contract Documents and only then upon THE VENDOR first receiving all approvals required under the Contract Documents for substitutions.

## 2. Authorized Representatives and Notice

THE COUNTY hereby names     **[insert name and title]**    , as its authorized representative and day-to-day point of contact for THE VENDOR for all issues arising under this Contract. THE VENDOR shall submit all Contract related correspondence to THE COUNTY at the following address:

Margaret T. Downey  
 Assistant County Administrator  
 P.O. Box 427  
 Barnstable, MA 02630  
 mdowney@barnstablecounty.org (email)

All VENDOR communications with THE COUNTY, an owner or tenant of properties at which THE VENDOR is performing or will perform Work, or their representative, (collectively referred to herein as the "Customer"), and/or separate contractors, subcontractors, or suppliers of THE COUNTY shall be made through:

Margaret T. Downey  
 Assistant County Administrator  
 P.O. Box 427  
 Barnstable, MA 02630

[mdowney@barnstablecounty.org](mailto:mdowney@barnstablecounty.org) (email)

THE VENDOR hereby names     **[insert name and title]**    , as its authorized representative and day-to-day point of contact for THE COUNTY for all issues arising under this Contract and the person responsible for ensuring (over the entire term of this Contract, unless otherwise requested in writing to THE COUNTY, the consent of which shall not be unreasonably withheld) that the Work is performed and completed in a manner satisfactory to THE COUNTY and in accordance with the terms of the Contract Documents (the “Project Manager”). THE COUNTY shall submit all Contract related correspondence to THE VENDOR at the following address:

**[insert contact information]**

Except for any notice required by law to be given in another manner, all notices, waivers, demands, or other communications required or permitted by this Contract to be effective shall be in writing, properly addressed, and shall be given by: (i) personal delivery; (ii) established overnight commercial courier delivery service with charges prepaid or duly charged by the sender; or (iii) registered or certified mail, return receipt requested, first class, postage prepaid. Notices given hereunder shall be deemed sufficiently given on: (i) the date of personal delivery if so delivered; (ii) the day after sending if sent by established overnight commercial courier delivery service; or (iii) the fifth day after sending if sent by registered or certified mail. Either Party may additionally provide notice by electronic mail, facsimile, or telephone communication, but this shall not relieve the Party of the obligation to provide notice as specified above.

### **3. Contract Term**

The Contract term shall commence on **[insert date]** and shall continue until the earlier of **[insert date]** or termination pursuant to Sections 27 or 28 hereof. THE COUNTY may, in its sole discretion, extend the term of the Contract until the earlier of **[insert date]** or termination pursuant to Sections 27 or 28 hereof.

### **4. Contract Price and Rates; Credits**

The Contract price and rates shall be as set forth and described in Exhibit B hereto.

THE VENDOR may not claim any governmental or other energy efficiency credits, tax credits, forward capacity payments, rebates or incentives of any kind as a result of or in connection with the Work performed under this Contract (collectively, the “Credits”) without the written consent of THE COUNTY in its sole discretion. To the extent any Credits are allocated to THE COUNTY or the Compact (or any other Compact project or program participant) by operation of law or regulation, THE VENDOR shall, upon request and without charge, cooperate fully with THE COUNTY to disclaim any rights to such Credits and to assign or allocate all such Credits, and the value thereof to the party designated by THE COUNTY.

### **5. Payment Procedures**

#### **(a) Retainage**

Intentionally omitted.

**(b) Effect of Payment**

THE COUNTY shall not be deemed to have accepted any improper Work, materials or performance by virtue of any payment made to THE VENDTOR. Payments (if any) shall be deemed advances and are subject to adjustment for errors, overpayments, or THE COUNTY's good faith determination that the remaining balance of payments may be insufficient to ensure completion of Work or to pay lien claims.

**(c) Invoicing and Payment**

THE VENDTOR shall submit monthly invoices to THE COUNTY by the 10<sup>th</sup> day of each month, unless otherwise authorized in writing by THE COUNTY. THE COUNTY will remit payment within forty-five (45) calendar days of THE COUNTY's receipt of each monthly invoice. Payment may be contingent upon final inspection and acceptance of the Work. Upon request, THE VENDTOR shall provide to THE COUNTY all backup documentation required to establish the value of the Work in place as represented by THE VENDTOR's monthly invoices.

All payments, including final payment, are contingent upon:

- (i) all Contract Documents being fully executed;
- (ii) provision by THE VENDTOR of a Release, Certification, and Lien Waiver in the form attached as Exhibit C hereto (THE VENDTOR shall be required to provide a Release, Certification, and Lien Waiver only prior to final payment);
- (iii) proof by THE VENDTOR that it is in current compliance with all of its insurance obligations under this Contract;
- (iv) proof by THE VENDTOR that it is not in default of any provision of this Contract; and further, when required by THE COUNTY, all payments, including final payment, shall be contingent upon THE VENDTOR providing THE COUNTY with:
  - (a) copies of all necessary permits and/or licenses;
  - (b) performance and payment bonds;
  - (c) a written statement indicating whether THE VENDTOR is a certified minority and/or women business enterprise;
  - (d) evidence of compliance with defined industry safety requirements; and/or
  - (e) where applicable, State Prevailing Wage Forms or U.S. Department of Labor Form WH-347 Payroll Form, WH 348 Statement of Compliance Form, or similar, in accordance with all Prevailing Wage Laws and Requirements.

**6. Prevailing Wage**

To the extent that it applies to the Work (e.g., in the implementation of energy efficiency services that result in physical alterations to public buildings), THE VENDOR shall comply with the requirements of G.L. c. 149, §§ 26-27H, as well as any and all other applicable local, state and federal wage laws. When Work is performed under prevailing wage rates, THE VENDOR is required to submit Statements of Compliance and certified payrolls using appropriate state forms or, if a federal project, U.S. Department of Labor Form WH-347 and WH-348 (or similar), for each payroll period. If these forms are not submitted with each invoice, payment will not be made. THE VENDOR shall keep an accurate record showing the name, craft or trade, and actual hourly rate of wages paid to each worker employed by it in connection with such prevailing wage Work, and such records shall be preserved at least two (2) years from the date of payment.

## **7. Withholding**

THE COUNTY reserves the right to withhold payment(s), partial or complete, for any default by THE VENDOR in the performance of any of its obligations under any of the Contract Documents, and/or in the event that an entity or individual makes a claim, prepares to make a claim, or threatens to make a claim upon said payment(s), including, but not limited to, claims for liquidated damages, attachments, the failure to pay compensation to any party when due, or other damages. Payments to THE VENDOR shall be withheld for failure of THE VENDOR to comply with all applicable tax laws, or the failure to remedy any lien against it or THE COUNTY. Upon lawful resolution of any such claim, THE COUNTY shall have the right to reconcile with all parties in accordance with the resolution, including the use of checks payable jointly to the order of THE VENDOR and its suppliers, lessors, laborers or unions. THE COUNTY is not responsible for paying any interest on any withheld payment(s).

## **8. Partial Performance**

THE VENDOR shall not be entitled to any payment for any partial performance except for progress payments made in accordance with the Contract Documents, or in the event that this Contract is terminated by THE COUNTY as set forth under Section 27 or Section 28 below. THE VENDOR understands that THE COUNTY is contracting for nothing less than full, complete and timely performance of the Work, and with the express agreement that THE COUNTY shall be obliged only upon final completion of the Work.

## **9. Correction of the Work**

THE VENDOR is required to correct in a timely fashion any Work rejected by THE COUNTY, or a Customer for failing to comply with the Contract Documents, whether observed prior to the commencement of the Warranty Period or during the Warranty Period established under Section 26 below. THE VENDOR shall correct at its own cost and time and bear the expense of additional services for any non-conforming Work.

## **10. Nonperformance**

If THE VENDOR defaults in performance of its obligations under these Contract Documents, and fails to cure the default or produce a plan acceptable to THE COUNTY (in its reasonable discretion) to cure the default within 24 hours of notice from THE COUNTY, THE COUNTY may take over the Work or any separable part thereof, and complete the same or have the same completed at THE VENDOR's expense. In taking over, THE COUNTY shall have the right, for the purpose of completing Work, to take possession of all drawings and materials belonging to THE VENDOR and purchased or leased for the performance of THE VENDOR's Work. For such purpose, this Contract shall be construed as an assignment by THE VENDOR to THE COUNTY of said drawings and materials. THE VENDOR shall not be entitled to receive further payment until Work is completed. After such Work is completed, the direct and indirect costs of such completion (the "Cost of Completion") shall then be applied against the Contract Price. If the Cost of Completion is in excess of the balance due to THE VENDOR, the excess shall be a debt immediately due from THE VENDOR to THE COUNTY.

## **11. Time for Commencing and Completing Work; Damages**

THE VENDOR shall commence and complete the Work in accordance with the Project Schedule attached hereto as Exhibit D.

THE VENDOR hereby agrees that, should THE VENDOR fail to fully perform according to the Contract Documents, including the Project Schedule, then THE COUNTY shall recover from THE VENDOR any and all damages resulting from said breach, including, but not limited to, retaining THE VENDOR's payment(s) hereunder up to the full amount of said damages, plus interest and other charges as may be applicable and suffered by THE COUNTY. Should THE VENDOR fail to complete said Work, THE COUNTY also reserves the right to have any uncompleted Work performed by another vendor of THE COUNTY's choosing, with any and all additional project costs incurred by THE COUNTY to become the sole expense of THE VENDOR.

## **12. Independent Contractor**

In performing the work under the Contract Documents, THE VENDOR will at all times be acting as an independent contractor. As such, THE VENDOR will not be an employee of THE COUNTY and will not by reason of the Contract Documents or by Work performed be entitled to participate in or to receive any benefit or right under THE COUNTY's employee benefit plans. All employees/personnel supplied by or used by THE VENDOR shall be deemed employees or subcontractors or agents of THE VENDOR. THE VENDOR assumes full responsibility for the actions of all such employees or subcontractors or agents while performing the Work under the Contract Documents and for the payment of their compensation. THE VENDOR agrees to pay all withholding, FICA, worker's compensation and other taxes, union contributions or other employment related taxes and/or dues required by law or third-party agreement, as and when the same become due and payable. THE VENDOR shall have no authority to bind or make commitments on behalf of THE COUNTY for any purpose and shall not hold itself out as having such authority.

## **13. Standards of Performance and Compliance with Laws**

THE VENDOR shall fulfill its obligations hereunder in accordance with generally accepted standards of professional care, skill and competence in the field(s) in which it is providing services to THE COUNTY. THE VENDOR warrants and represents that it is and shall remain properly licensed in the geographical area in which the Work is to be performed. THE VENDOR will, at its expense, apply for and maintain all permits and licenses required to perform the Work and will perform the Work in strict accordance with any and all relevant federal, state, or local codes, laws, regulations, orders, requirements, and guidelines. THE VENDOR shall schedule and obtain at its own expense any and all necessary tests and inspections. Costs associated with the reopening of any concealed area not inspected in a timely manner will be at THE VENDOR's expense. THE VENDOR shall coordinate and cooperate with any and all trades, customs or local agreements without exception, delay, or claim for additional compensation.

## **14. Performance of Work**

THE VENDOR shall strictly conform the Work to these Contract Documents, unless THE COUNTY executes a written authorization specifying the changes. Should there be any discrepancy between the plans or the specifications, or both, and any applicable laws, then the most stringent shall govern. THE COUNTY assumes no responsibility for failure of the Contract Documents to comply with laws, as THE VENDOR represents that THE VENDOR is familiar with the same. If any Contract Documents provide for a method of work contrary to any such laws and regulations, THE VENDOR shall notify THE COUNTY in writing prior to the commencement of the Work. THE VENDOR shall use only materials that are new and the best of their respective kind; labor and workmanship shall be of first class quality.

## **15. Changes and Extra Work**

THE COUNTY may at any time or from time to time during the progress of the Work, or until the expiration of the Warranty Period, as established in Section 26, below, require a deviation from, or an addition to the Contract Documents. No change will be effective unless in writing and approved by both Parties. No such change shall in any manner impair or void the Contract Documents. The value of any change required by THE COUNTY shall be added to or deducted from the Contract Price as the case may be; the adjustment shall be determined by agreement of THE VENDOR and THE COUNTY. If the Parties cannot agree on the amount of such adjustment within ten (10) days from the date that the change is authorized or ordered by THE COUNTY, THE VENDOR shall make the change and the dispute will be settled by later agreement or dispute resolution in accordance with Section 30 (c) below. THE VENDOR shall make no claims for extra work unless the same shall be fully agreed upon in writing by THE COUNTY prior to performance of any extra work. If THE VENDOR performs extra work without first obtaining a written order from THE COUNTY, such action is to be construed as a waiver of any and all claims to extra payment.

**16. Punch Lists; Completion and Acceptance**

Intentionally omitted.

**17. Inspection; Prior Work**

THE VENDOR has examined all Contract Documents, the job site and/or the conditions to be encountered. THE VENDOR enters into this Contract relying solely on its own investigations and not on representations, if any, that may have been made by or on behalf of THE COUNTY or the Compact. Unless THE COUNTY is notified in writing to the contrary prior to THE VENDOR commencing performance of the Work, it shall be conclusively presumed that work by others that precedes THE VENDOR's performance has been done in a proper manner. Any expense accruing to THE VENDOR, THE COUNTY, or the Compact because of the failure of such work by others to be properly done shall be borne by THE VENDOR.

**18. Safety**

To the fullest extent allowed by law, THE VENDOR shall assume responsibility for the general and overall safety of the work site, including the safety of any employee, client, guest, or visitor of THE VENDOR, THE COUNTY, the Compact, or a Customer. Systems that have been disabled or otherwise affected in the course of performance of the Work will be left in a safe condition. Out of service systems will be tagged by THE VENDOR in a manner accepted by OSHA, state and local authorities, the insurance company, and THE COUNTY. THE VENDOR shall at all times exercise reasonable precautions for the safety of its employees and the general public and will be responsible for the performance and maintenance of any appropriate safety procedures pursuant to which it and its employees shall act. Further, THE VENDOR shall operate in complete compliance with OSHA regulations, as well as any and all applicable local, state or federal safety laws, regulations, or requirements.

Imminent danger situations created by THE VENDOR must be corrected immediately. THE COUNTY reserves the right, but without obligation, to take corrective action and pass the



costs associated with the same back to THE VENDOR. Additionally, THE VENDOR shall, at the end of each work day or job site, leave the Work area in a clean and safe condition.

THE VENDOR shall immediately notify THE COUNTY of any accident or damage to persons or property and, within forty eight (48) hours, file a written report of the accident with THE COUNTY. If THE VENDOR encounters any asbestos or other hazardous substances in the course of the Work, THE VENDOR shall immediately notify THE COUNTY and any agency required by state or federal law, and shall stop any Work that may disturb, damage or cause a release of asbestos or hazardous substances until THE VENDOR receives written instruction from THE COUNTY. If any hazardous substances are to be handled in the execution of the Work, THE VENDOR shall assume any and all liabilities associated with such handling and must AT ALL TIMES, provide proper storage and disposal of such hazardous substances. Hazardous substances will be handled and disposed of in compliance with governing federal, state, and local laws and/or codes as originally written or subsequently modified. UNDER NO CIRCUMSTANCES WILL THE COUNTY OR THE COMPACT BE LIABLE FOR ANY INJURY TO i) THE VENDOR, ii) ANY EMPLOYEE, CLIENT, GUEST, REPRESENTATIVE, CONTRACTOR, OR SUBCONTRACTOR OF THE VENDOR, iii) ANY CUSTOMER, ANY EMPLOYEE, CLIENT, GUEST, REPRESENTATIVE, CONTRACTOR, OR SUBCONTRACTOR OF ANY CUSTOMER, OR iv) ANY THIRD PERSON, THAT IS THE RESULT OF ANY SUCH PERSON'S EXPOSURE TO HAZARDOUS MATERIALS OR THAT IS OTHERWISE CAUSED BY A RELEASE OR THREAT OF RELEASE OF HAZARDOUS MATERIALS.

#### **19. Vendor Employees**

THE COUNTY may require THE VENDOR to remove from the work site such employees of THE VENDOR or subcontractors of THE VENDOR as THE COUNTY, in its reasonable discretion, deems objectionable, or whose continued employment in connection with the Work is deemed by THE COUNTY, in its reasonable discretion, to be contrary to the best interests of THE COUNTY or the Compact.

**20. Storage and Clean-up**

THE VENDOR shall maintain, to THE COUNTY's satisfaction, all work sites in a clean, neat and safe condition, and shall comply promptly with any instructions from THE COUNTY relating thereto. As the Work covered by the Contract Documents is completed, THE VENDOR shall remove from the work sites, to the satisfaction of THE COUNTY, all of THE VENDOR's rubbish, debris, materials, tools and equipment, and if THE VENDOR fails to do so promptly, THE COUNTY may remove the same to any place of storage, or any dumping ground, at THE VENDOR's risk and expense and without incurring any responsibility to THE VENDOR for loss, damage or theft. All storage and removal costs thus incurred by THE COUNTY shall be deducted from any payment or balance due to THE VENDOR, and any excess shall be the debt of THE VENDOR to THE COUNTY.

**21. Damage and Loss**

Damage caused by the direct or indirect action of THE VENDOR to a Customer's property and/or facility must be immediately repaired to the satisfaction of THE COUNTY and the Customer, at THE VENDOR's sole expense. THE VENDOR acknowledges that THE COUNTY may provide to THE VENDOR certain materials and/or equipment. THE VENDOR shall install such in accordance with the Contract Documents, all prevailing laws, rules, regulations and codes, and the manufacturers' written recommendations.

THE VENDOR accepts full responsibility for any breakage, shrinkage, damage, or loss of any and all material and/or equipment that has been purchased and/or assigned by THE COUNTY to THE VENDOR. THE VENDOR will replace such lost items with identical items, or THE COUNTY will furnish such items to THE VENDOR, at THE VENDOR's sole expense.

Disruption of services of any kind by THE VENDOR or its agents shall require the immediate action of THE VENDOR to restore such services including, if appropriate, the hiring of subcontractors specializing in the installation and repair of the systems disrupted. No additional compensation shall be due THE VENDOR for such damage and repair. THE VENDOR shall also take reasonable precautions to protect the Work, including materials supplied by THE VENDOR and/or materials supplied by THE COUNTY, prior to final acceptance of the Work.

Written documentation of any and all damage or disruption, as well as the repair action taken, must be forwarded to THE COUNTY immediately. THE COUNTY reserves the right to inspect the damage and repairs. In the event that THE COUNTY executes repairs, THE COUNTY will pursue cost recovery from THE VENDOR and/or its insurance company.

## 22. Indemnification

To the fullest extent allowed by law, THE VENDOR (and its officers, directors, employees, servants, agents, attorneys, designated volunteers, independent contractors, successors and assigns) shall indemnify, defend, and hold harmless THE COUNTY, the Compact, the individual Member Municipalities (and all of the respective officials, officers, directors, employees, servants, agents, attorneys, designated volunteers, independent contractors, successors and assigns of THE COUNTY, the Compact, and each individual Member Municipality), and all Customers from and against any and all costs, claims, liabilities, damages, expenses (including reasonable attorneys' fees and expenses), causes of action, suits, and/or judgments caused by, arising out of, or related to any act or failure to act of THE VENDOR (and/or its officers, directors, employees, servants, agents, attorneys, designated volunteers, independent contractors, successors and assigns) related to the Contract Documents, including, but not limited to, any failure on the part of THE VENDOR (and/or its officers, directors, employees, servants, agents, attorneys, designated volunteers, independent contractors, successors and assigns) to perform or comply with any of the covenants, agreements, terms, or conditions contained in the Contract Documents on its part to be performed or complied with. This indemnification obligation is not limited in any way by the amount or type of damages or compensation payable by THE COUNTY.

## 23. Insurance

The VENDOR shall, at its sole expense, procure and maintain on all of its actions hereunder, the following insurance:

- (a) Until completion of the Work:
  - i. Workers' Compensation and Employers' Liability Insurance covering *each and every worker employed in, about or upon the Work*, as provided for in each and every statute applicable to Workers' Compensation and Employers' Liability Insurance.
  - ii. Commercial General Liability Insurance, written on an occurrence form including coverages for Bodily Injury, Broad Form Property Damage, Personal Injury, Products/Completed Operations, Liability arising out of Subcontractors, Contractual Liability (to specifically include coverage for the indemnification clause of this Contract), and so-called Explosion, Collapse and Underground Hazards, with minimum limits of \$1,000,000 per occurrence/\$2,000,000 per project general aggregate; \$1,000,000 aggregate for products and completed operations.
  - iii. Automobile Liability Insurance covering all owned, non-owned and/or hired motor vehicles to be used in connection with the Work with a minimum combined single limit of \$1,000,000 bodily injury and property damage, including Form MCS-90 and Broadened Pollution Coverage via ISO form CA9948 or its equivalent.

- iv. Umbrella Liability Insurance covering over underlying General Liability, Auto Liability and Employers' Liability Insurance with a minimum limit of \$5,000,000.
  - v. Professional Liability Insurance covering THE VENDOR's errors and omissions relating to the Work if the Work involves rendering of professional advice or consultation, including designs, surveys, drawings, approval of maps, etc. Such insurance shall be provided at a limit of at least \$1,000,000.
- (b) After the Work is completed:
- i. Products and Completed Operations for limits of \$1,000,000/ occurrence; \$1,000,000 aggregate as provided by the Commercial General Liability Insurance form for two years.
  - ii. Professional Liability Insurance with a limit of at least \$1,000,000 for one year.

THE COUNTY reserves the right to refuse any exception to the standard limits and coverages if it is determined that the exception is not in the best interest of THE COUNTY or the Compact. THE VENDOR's insurance companies are to be licensed as "admitted" carriers in Massachusetts with minimum acceptable A.M. Best ratings of "A" and size Class VIII, or as otherwise acceptable to THE COUNTY, in its discretion. THE COUNTY reserves the right of final approval of THE VENDOR's insurance company.

THE VENDOR agrees to waive any rights of subrogation against THE COUNTY, the Compact, the Customer, and their respective employees, subcontractors, engineers, consultants and agents.

THE COUNTY and the Compact must be named as additional insureds on the Commercial General Liability Insurance. In addition, if required by a Customer, THE VENDOR shall name the Customer as an additional insured on such policy.

THE VENDOR shall not enter upon any work site or begin Work without first submitting to THE COUNTY insurance certificate(s) that indicate the coverages required by the Contract Documents. The insurance certificate(s) shall provide that there will be no cancellation or reduction of coverage without thirty (30) days prior written notice to THE COUNTY. If the policy expires prior to completion of the Work, the VENDOR must submit replacement insurance certificate(s) prior to the policy expiration date. Failure to submit new certificates shall result in withholding payments and/or may lead to the termination of this Contract. THE VENDOR shall be solely responsible for tracking and reporting to THE COUNTY the expiration of the policies shown on the insurance certificate(s) provided.

THE COUNTY reserves the right to waive and/or modify the insurance provisions of this Section 23, if THE VENDOR provides alternate forms of adequate security for its obligations under the Contract.

**24. Bonds**

Upon request by THE COUNTY, THE VENDOR shall provide performance and payment bonds from a surety company in amounts, form and substance acceptable to THE COUNTY, naming THE COUNTY as a direct beneficiary of the surety’s obligations under such bonds. Such bonds shall fully protect THE COUNTY and the Compact against any and all breaches by THE VENDOR, including, but not limited to, payments of salaries, withholdings, union welfare funds and any other union or employee benefits. Performance and payment bonds shall cover THE VENDOR’s Work and the Warranty Period described in Section 26 below. Failure to provide the requested bonds, prior to the commencement of the Work or cancellation of requested bonds during the course of the Work or the Warranty Period, shall entitle THE COUNTY to terminate this Contract without recourse by THE VENDOR except as allowed under Section 27 or 28 below.

Performance Bond	<input type="checkbox"/>	required	<input type="checkbox"/>	not required
Payment Bond	<input type="checkbox"/>	required	<input type="checkbox"/>	not required

Premium(s) for requested bond(s) may be added to the Contract Price through a Change Order Form without additional markup by THE VENDOR (except as specifically approved, in writing, by THE COUNTY in advance of the Work). THE VENDOR must present to THE COUNTY a copy of the invoice for the bonds signed by the agent with power of attorney for the bonding company.

THE COUNTY reserves the right to refuse any exception to the bond requirements if it determines that the exception is not in the best interest of THE COUNTY or the Compact. THE VENDOR's surety companies are to be licensed as “admitted” carriers in Massachusetts with minimum acceptable A.M. Best ratings of “A” and size Class VIII, or as otherwise acceptable to THE COUNTY, in its discretion. THE COUNTY reserves the right of final approval of THE VENDOR’s surety company.

**25. Taxes and Contributions**

THE VENDOR is solely responsible to pay when due all sales, use, and transportation taxes, and all contributions and taxes for unemployment insurance or pension or health funds or similar taxes imposed by any government entity or any labor organization, measured by the wages, salaries or other remuneration paid persons employed by THE VENDOR and engaged in the performance of Work. In the event that THE VENDOR fails to pay such taxes or contributions when due, or in the event that THE COUNTY or the Compact is claimed to be liable to pay such taxes or contributions, THE COUNTY shall have the right, but not the obligation, to pay such taxes or contributions, and THE VENDOR agrees to reimburse THE COUNTY upon demand for the amount thereof (including penalties and interest). THE COUNTY shall have the right to deduct any amounts so paid from sums due THE VENDOR, and any excess shall be the debt of THE VENDOR to THE COUNTY.

**26. Warranty**

THE VENDOR hereby warrants that all labor performed and any VENDOR supplied materials furnished hereunder shall conform to the requirements of the Contract Documents and be free from defects for a period of one (1) year from and after THE COUNTY's final acceptance of all Work performed hereunder (the "Warranty Period"). Without limiting any other remedy available to THE COUNTY, if any such non-conformance or defect appears during the Warranty Period, THE VENDOR shall make any and all repairs or replacements necessary to remedy the same at its sole expense and within a reasonable time after notification by THE COUNTY. The warranty shall also apply to all Work performed pursuant to the foregoing warranty with the Warranty Period for the repair or replacement work commencing on THE COUNTY's final acceptance of the repair or replacement work. The said warranty shall, at a minimum, obligate THE VENDOR to respond to all warranty calls placed by telephone within forty eight (48) hours. Failure to honor the warranty shall entitle THE COUNTY to withhold funds due THE VENDOR, enforce any applicable bond, proceed to obtain a judgment against THE VENDOR based on all applicable laws, or pursue any other available remedy. THE VENDOR shall maintain insurance as listed above during the Warranty Period.

THE COUNTY shall have the right to charge THE VENDOR Fifty-Five Dollars (\$55) for inspection of warranty or repair work. This charge will become the sole expense of THE VENDOR, which THE COUNTY shall either deduct from current invoices due or invoice directly to THE VENDOR.

**27. Termination or Suspension at the Discretion of the County**

THE COUNTY may, in its sole discretion, terminate or suspend this Contract upon seven (7) days notice without cause, or immediately for cause. Termination or suspension for cause may include, but not be limited to, THE VENDOR's failure to remedy an imminent danger situation, failure to remedy any lien or lawful claim against it or related to the Work that affects or may affect THE COUNTY, the Compact, a Member Municipality, or a Customer, or for any other material breach of this Contract.

The sole obligation of THE COUNTY upon termination or suspension will be to pay to THE VENDOR the actual cost of the Work in place at the time of termination or suspension as determined by unit price, agreement or audit, less any amount withheld in accordance with the provisions of this Contract. Under no circumstances shall THE VENDOR be entitled to compensation for lost profits, anticipated profits, interest, consequential damages, or the like. THE VENDOR's rights under this Section shall constitute its sole and exclusive remedy under this Contract.

Termination or suspension for cause shall entitle THE COUNTY to assess against THE VENDOR's account all damages, including, but not limited to, costs required to complete the outstanding Work, incurred or to be incurred by THE COUNTY, the Compact, a Member Municipality, or a Customer, and all warranties and guarantees of THE VENDOR as agreed herein to the satisfaction of THE COUNTY.

## **28. Termination or Suspension Due to Changes in Funding**

This Contract is subject to the receipt of funds from various sources to support the Energy Efficiency Plan. If for any reason such funding is terminated, suspended, or restricted, this Contract will become null and void, effective immediately. THE COUNTY shall provide written notice of such termination or suspension to THE VENDOR. In the event of such termination or suspension, THE VENDOR shall be paid for all authorized, satisfactory (in the reasonable discretion of THE COUNTY) Work performed up to and including the date of termination or suspension. Subsequent to termination, neither Party will have any rights or duties towards the other except for any obligations hereunder that by their terms expressly survive such termination.

## **29. Force Majeure**

"*Force Majeure*" shall mean acts of God; hurricanes; tornadoes; fires; epidemic; landslides; earthquakes; floods; strikes; lock-outs or other industrial disturbances; acts of public enemies; acts, failures to act or orders of any kind of any governmental authorities acting in their regulatory or judicial capacity; insurrections; prolonged inability of suppliers to provide essential materials; military action; war, whether or not it is declared; sabotage; riots; civil disturbances; explosions; or any cause or event, not reasonably within the control of the Party claiming *Force Majeure*; provided, however, that *Force Majeure* shall not include the financial inability of the Vendor, whether or not caused by any of the foregoing factors.

In any case where either Party is required hereby to do any act, delays caused by *Force Majeure* shall not be counted in determining the time during which such act shall be completed, whether such time be designed by a fixed date, a fixed time, or "a reasonable time," and such time shall be deemed to be extended by the period of the delay; provided that (i) the non-performing Party, within five (5) business days after the occurrence of the *Force Majeure*, gives the other Party written notice describing the particulars of occurrence; (ii) the suspension of performance be of no greater scope and of no longer duration than is required by the *Force Majeure*; (iii) no obligations of either Party that arose prior to the occurrence causing the suspension of performance be excused as a result of the occurrence; and (iv) the non-performing Party shall use its best efforts to remedy with all reasonable dispatch the cause or causes

preventing it from carrying out its obligations. Notwithstanding the foregoing, neither Party shall be required to settle strikes, lockouts or other industrial disturbances by acceding to the demands of the opposing party or parties when such course is, in its judgment, not in its best interest. In no event, however, shall any extension of time under this Section 29 exceed sixty (60) days.

### **30. Miscellaneous**

#### **(a) Assignment and Subcontracting**

No Work to be performed by THE VENDOR pursuant to this Contract shall be assigned or subcontracted, in whole or in part, to any other organization, association, individual, corporation, partnership, or other entity without the prior written consent of THE COUNTY in its sole discretion. No assignment or subcontract shall relieve or discharge THE VENDOR from any obligation or liability under this Contract. THE VENDOR shall ensure that its assignees and subcontractors are bound to all of the terms and conditions contained in this Contract.

#### **(b) Records; Audit**

THE VENDOR shall maintain books, records, and other compilations of data pertaining to the requirements of this Contract to the extent and in such detail as shall properly substantiate claims for payment under this Contract. THE VENDOR agrees that THE COUNTY may audit THE VENDOR's books, records, and other compilations of data associated with the performance of this Contract to ascertain that the payments requested by THE VENDOR represent the value of the Work. THE VENDOR agrees to maintain separate expense records for each specified project within and to segregate the costs of the base Work and any authorized change orders. All records shall be kept for a period of six (6) years commencing on the first day after final payment under this Contract. If any litigation, claim, negotiation, audit or other action involving the records is commenced prior to the expiration of the retention period, all records shall be retained until the completion of the action and resolution of all issues resulting therefrom, or until the end of the retention period, whichever is later.

#### **(c) Dispute Resolution**

This Contract shall be construed under and governed by the laws of the Commonwealth of Massachusetts, without regard to its rules regarding choice of laws. The Parties agree to use their respective best efforts to resolve any dispute(s) that may arise regarding this Contract. Unless otherwise expressly provided for in this Contract, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under this Contract between the Parties.

Any dispute that arises under or with respect to this Contract shall in the first instance be the subject of informal negotiations between the Assistant County Administrator of THE COUNTY, and the     [insert title]     of THE VENDOR, who shall use their respective best efforts to resolve such dispute. The period for informal negotiations shall not exceed fourteen (14) calendar days from the time the dispute arises, unless it is modified by written agreement of the Parties. The dispute shall be considered to have arisen when one Party sends



the other a written notice that identifies with particularity the nature, and the acts(s) or omission(s) forming the basis of, the dispute.

In the event that the Parties cannot resolve a dispute by informal negotiations, the Parties agree to submit the dispute to mediation. Within fourteen (14) days following the expiration of the time period for informal negotiations, the Parties shall propose and agree upon a neutral and otherwise qualified mediator. In the event that the Parties fail to agree upon a mediator, the Parties shall request that the American Arbitration Association, Boston, Massachusetts, appoint a mediator. The period for mediation shall commence upon the appointment of the mediator and shall not exceed sixty (60) days, unless such time period is modified by written agreement of the Parties. The decision to continue mediation shall be in the sole discretion of each Party. The Parties will bear their own costs of the mediation. The mediator's fees shall be shared equally by each Party.

In the event that the Parties cannot resolve a dispute by informal negotiations or mediation, either Party may seek judicial enforcement. Notwithstanding the foregoing, injunctive relief may be sought without resorting to alternative dispute resolution to prevent irreparable harm that would be caused by a breach of this Contract. In any judicial proceeding, the "Prevailing Party" shall be entitled to payment from the opposing party of its reasonable costs and fees, including but not limited to attorneys' fees and travel expenses, arising from the civil action. As used herein, the phrase "Prevailing Party" shall mean the Party who, in the reasonable discretion of the finder of fact, most substantially prevails in its claims or defenses in the civil action. Venue for any judicial proceeding involving a dispute arising from this Contract shall be Barnstable County Superior Court, Massachusetts. This Section shall not be construed to limit any rights a Party may have to intervene or join in any action, whether litigation or alternative dispute resolution, wherever pending, relating to the Work in any way in which the other is a Party.

THE VENDOR shall diligently carry on the Work and maintain the progress schedule during any dispute resolution proceedings, unless otherwise agreed to by THE COUNTY in writing. No dispute under this Contract shall give THE VENDOR the right to stop Work pending dispute resolution.

**(d) Confidentiality and Compliance with Data Security Laws**

Through the performance of the specified Work, THE VENDOR may be furnished with certain confidential or proprietary information. The disclosure and use of such information shall be governed by the Non-Disclosure Agreement entered into by THE COUNTY and THE VENDOR dated [insert date] and the Non-Disclosure Agreement entered into by the Compact and the Commonwealth Electric Company d/b/a NSTAR Electric dated May 10, 2001.

In addition, THE VENDOR shall comply with all applicable state and federal data security laws. Unless otherwise provided by law, THE VENDOR shall promptly pay all fines, penalties and damages that may arise out of or are imposed because of THE VENDOR'S failure to comply with the provisions of this section and, shall indemnify THE COUNTY and THE COMPACT against any liability incurred as a result of a violation of this section.

**(e) Solicitation**

THE VENDOR shall not solicit work from a Customer for two (2) years from expiration of the Warranty Period, unless THE VENDOR can provide proof that it has a pre-existing relationship with said Customer. For purposes of this subsection, "pre-existing relationship" means a relationship pursuant to which THE VENDOR performed services for the Customer prior to performing services for that Customer under an energy efficiency services program run by the Compact, the Commonwealth Electric Company d/b/a NSTAR Electric, or any other utility. THE VENDOR may do additional work directly with a Customer if said Customer has solicited THE VENDOR.

**(f) Modification and Waiver**

This Contract shall be binding upon THE VENDOR and the COUNTY and their respective attorneys, representatives, agents, officers, successors and assigns, and may not be modified, amended, discharged or supplemented except by an instrument in writing signed by a duly authorized representative of each Party. Failure of THE COUNTY to enforce any provision contained herein does not constitute a waiver of said provision or any other provision.

**(g) Savings Clause**

If any section, sentence, clause, or other portion of the Contract Documents is for any reason held invalid or unconstitutional by any court, federal or state agency of competent jurisdiction, such portion shall be deemed a separate, distinct and independent provision, and such holding shall not affect the validity of the remaining portions hereof.

**(h) Survival**

Neither completion of the Work nor any termination of the Contract shall be deemed to relieve THE VENDOR of any obligations hereunder that by their nature survive completion of the Work; including, but not limited to, all warranties, guarantees and promises of indemnity and confidentiality.

**(i) Third Party Beneficiaries**

The Compact and each individual Member Municipality is an intended third-party beneficiary of this Contract, entitled to the full rights of this Contract.

**(j) Non-Discrimination in Employment and Affirmative Action**

THE VENDOR shall take affirmative action to ensure that its employees, and any member of the public eligible for service under the Energy Efficiency Plan, are treated without regard to race, color, sex, marital status, sexual orientation, age, religion, national origin, ancestry, handicap, disability, or veteran status. THE VENDOR agrees to comply with all applicable federal, state, and local laws, rules, and regulations prohibiting discrimination in employment and in public accommodations.

**(k) Interest of Vendor; Other Activities; Conflicts**

THE VENDOR covenants that it presently has no interest, and shall not acquire any interest, directly or indirectly that would conflict in any manner or degree with the performance of the Work. THE VENDOR agrees to diligently serve and endeavor to further the best interests of THE COUNTY and the Compact. THE VENDOR further agrees not to undertake activities that conflict, or are not in accordance, with the best interests of THE COUNTY and the Compact, and will disclose any other employment or engagements that could conflict with its obligations under this Contract. THE VENDOR further covenants that it shall comply with all relevant provisions of G.L. c. 268A.

**(l) Political Activity Prohibited**

None of the services to be provided by THE VENDOR hereunder shall be used for any partisan political activity, to further the election or defeat of any candidate for public office, or in connection with any referendum question or legislative or grass-roots lobbying activities.

**(m) Anti-Boycott Warranty**

THE VENDOR hereby warrants that, during the term of this Contract, neither it nor any "affiliated company," as hereafter defined, shall participate in or cooperate with an international boycott, as defined in 26 U.S.C.A. § 999 (b) (3) and (4), or engage in conduct declared unlawful by G.L. c. 151E, § 2. An "affiliated company" shall be any business entity of which at least 51% of the ownership interests are directly or indirectly owned by THE VENDOR, or by a person or persons or business entity or entities that directly or indirectly own at least 51% of the ownership interests of THE VENDOR.

**(n) Headings**

All headings contained in this Contract are intended for convenience of reference only, and shall not be used to interpret any of the terms and provisions of this Contract.

**(o) Entire Agreement**

This Contract constitutes the entire agreement between the Parties hereto with respect to the subject matter hereof and supersedes all prior oral or written agreements and understandings between the Parties relating to the subject matter hereof.

**(p) Joint Work Product**

This Contract shall be considered the joint work product of the Parties hereto, and shall not be construed against either Party by reason thereof.

**(q) Counterpart Execution; Scanned Copy**

This Contract may be executed in several counterparts, each of which, when executed, shall be deemed to be an original, but all of which together shall constitute one and the same instrument. The Parties agree that a scanned or electronically reproduced copy or image of this Contract bearing the signatures of the Parties hereto shall be deemed an original and may be introduced or submitted in any action or proceeding as competent evidence of the execution, terms and existence of this Contract notwithstanding the failure or inability to produce or tender an original, executed counterpart of this Contract and without the requirement that the unavailability of such original, executed counterpart of this Contract first be proven.

IN WITNESS WHEREOF, the Parties have executed this Contract effective as of [insert].

BARNSTABLE COUNTY:

\_\_\_\_\_  
Mary Pat Flynn  
Chair

\_\_\_\_\_  
William Doherty  
Vice Chair

\_\_\_\_\_  
Sheila Lyons  
Commissioner

VENDOR:

\_\_\_\_\_  
Name/Title:  
Date:

EXHIBITS

- Exhibit A: Scope of Work
- Exhibit B: Contract Price and Rates
- Exhibit C: Release, Certification and Lien Waiver
- Exhibit D: Project Schedule
- Exhibit E: Change Order Form
- Exhibit F: Requirements for Vendor Employee Background Checks
- Exhibit G: Data Security Policy

EXHIBIT A  
SCOPE OF WORK

EXHIBIT B  
CONTRACT PRICE AND RATES

EXHIBIT C

RELEASE, CERTIFICATION AND LIEN WAIVER

PROJECT NAME:

SITE LOCATION:

THE COUNTY/OWNER: Barnstable County, Massachusetts

VENDOR:

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Original Contract Value:	\$ _____
Payments Received to Date:	\$ _____
Remaining Contract Value:	\$ _____
Attached Final Invoice/Documentation to be Paid:	\$ _____

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For and in consideration of the sum of \$ \_\_\_\_\_, and for other good and valuable consideration, the receipt of which is hereby acknowledged to the VENDOR by THE COUNTY, THE VENDOR hereby:

1. remises, releases and forever discharges all actions, debts, claims, demands, liens, suits, covenants, damages, equitable actions, and liabilities whatsoever, both at law and in equity against THE COUNTY, the Cape Light Compact and its municipal members, and any of THE COUNTY's customers arising from, in connection with or in any way relating to any work or labor performed and any materials, machinery, equipment, services, insurance bonds or supplies furnished by or through THE VENDOR;
2. certifies and warrants that the following have been paid in full or will be paid in full within seven (7) days of the date hereof: (a) all persons, parties or entities that have furnished materials and performed labor or either to, for or through THE VENDOR in connection with the project; (b) all taxes, benefits, assessments, insurance and obligations of any other descriptive title in connection with labor performed for the project; and (c) obligations for all materials, machinery, equipment, services and supplies to, for or through THE VENDOR;
3. waives and relinquishes all rights whatsoever (a) to lien, by way of any mechanic's lien, materialmen's lien, and any other lien, against and/or attach the property, real estate, buildings and improvements comprising of the project, on account of work, services, equipment, materials supplied;
4. along with its officers, directors, employees, servants, agents, attorneys, designated volunteers, independent contractors, successors and assigns, to the fullest extent allowed by law, indemnifies, defends, and holds harmless THE COUNTY, the Cape Light Compact, the individual municipal members of the Cape Light Compact (and all of the respective officials, officers, directors, employees, servants, agents, attorneys,



designated volunteers, independent contractors, successors and assigns of THE COUNTY, the Cape Light Compact, and its individual municipal members), and THE COUNTY's customers from and against any and all costs, claims, liabilities, damages, expenses (including reasonable attorneys' fees and expenses), side agreements, consent decrees, causes of action, suits, and/or judgments caused by, arising out of, or related to the performance of this Contract by THE VENDOR and its officers, directors, employees, servants, agents, attorneys, designated volunteers, independent contractors, successors and assigns.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

Signature: \_\_\_\_\_

Name and Title: \_\_\_\_\_

COMMONWEALTH OF MASSACHUSETTS

\_\_\_\_\_, ss.

Then personally appeared \_\_\_\_\_, to me personally known and being first duly sworn, took oath that: (1) the certification above are true; and (2) that he/she is authorized to execute the foregoing on behalf of THE VENDOR and she/he signs on his own free will and deed.

\_\_\_\_\_  
Notary Public

My Commission Expires:

EXHIBIT D  
PROJECT SCHEDULE

EXHIBIT E  
CHANGE ORDER FORM

## EXHIBIT F

## REQUIREMENTS FOR VENDOR EMPLOYEE BACKGROUND CHECKS

Any marked requirements set forth below shall apply to any services to be performed by THE VENDOR under the Contract. The individuals who will perform the Work under the Contract, including employees, principals, and subcontractors are referred to herein as "VENDOR EMPLOYEES." If no requirements are marked below, all of the background check requirements set forth in this Exhibit F shall apply to THE VENDOR in the absence of a written waiver from THE COUNTY that states otherwise.

These requirements for background checks represent the minimum requirements for THE VENDOR, to be undertaken at THE VENDOR's sole cost. Additional requirements may be deemed appropriate by THE COUNTY or THE VENDOR, or may be required by law, regulation, or other bodies having jurisdiction over the Work or THE VENDOR. THE VENDOR must comply with any such additional requirements as are known or should reasonably be known by it.

To the extent THE VENDOR finds that any background check requirements marked below are in conflict with State or Federal Statutes, collective bargaining agreements, or other issues that would prohibit compliance, THE VENDOR should notify THE COUNTY so that THE VENDOR and THE COUNTY may discuss appropriate resolution of the issues.

- The VENDOR must complete a background check before any VENDOR EMPLOYEE begins work under the Contract, whether brought on at the outset of the Contract or at any other point in the Contract term. A VENDOR EMPLOYEE may only begin work under the Contract in advance of the completion of background checks with the written approval of THE COUNTY setting forth the number of calendar days for such allowance.
- THE VENDOR must be able to evidence that it has verified the identification of all VENDOR EMPLOYEES working for THE COUNTY and that all such individuals are legally eligible to work in the country where the Work is to be performed.
- THE VENDOR must ensure that all VENDOR EMPLOYEES working under the Contract are subjected to a criminal history background check. Such checks must be conducted on all names, including alias names that are provided or developed, and include County, State and Federal checks based on jurisdictions of work and residence for the past 7 years, as well as international jurisdictions, if available. All checks must include both misdemeanors and felonies. If the VENDOR has had a pre-employment criminal history check process in place and can provide documented evidence to THE COUNTY that VENDOR EMPLOYEES working under the Contract have been subjected to the criminal history check, then additional checks are not necessary. If a VENDOR EMPLOYEE has a felony or misdemeanor criminal record, THE COUNTY reserves the right, in accordance with Section 19 (Vendor Employees) of the Contract, to require THE VENDOR to remove such VENDOR EMPLOYEE from the work site. If at any time during the term of the Contract, THE VENDOR becomes aware of information concerning a criminal conviction of a VENDOR EMPLOYEE that would fit the above criteria for reporting to THE COUNTY, THE VENDOR

shall forward this information to THE COUNTY and THE COUNTY shall determine whether to remove the VENDOR EMPLOYEE from the work site.

- THE VENDOR must be able evidence that all VENDOR EMPLOYEES working for THE COUNTY have been subjected to drug screen checks and be able to provide documented evidence upon request. Any VENDOR EMPLOYEE with positive indication for the presence of the following drugs, that cannot be substantiated to be related to prescribed medical treatment, shall not be allowed to perform work for THE COUNTY: (i) Amphetamines; (ii) Cocaine Metabolites; (iii) Marijuana Metabolites (THC); (iv) Opiates/Metabolites; and (v) Phencyclidine (PCP). In the event that drug screening cannot be legally imposed due to state statutes, union contracts, etc., or if THE COUNTY in its sole discretion so elects, THE COUNTY may consider an exception for VENDOR EMPLOYEES based on work references provided by THE VENDOR.
- THE VENDOR must perform a five (5) year address verification on all new VENDOR EMPLOYEES hired to support the Contract.
- THE VENDOR must perform a three (3) year prior employment history verification on all new VENDOR EMPLOYEES hired to support the Contract.
- All VENDOR EMPLOYEES required to operate a motor vehicle in conjunction with services provided to THE COUNTY must be legally licensed and hold a valid driver's license appropriate to the vehicle being driven. This requirement applies to both VENDOR-owned or leased vehicles and THE COUNTY's owned/leased vehicles. If applicable, a motor vehicle driving record check to include a commercial driver license search must be annually conducted by THE VENDOR to validate this requirement.
- THE VENDOR must maintain a record of all background checks completed in accordance with these requirements and correspondence with THE COUNTY regarding background checks performed during the term of the Contract and shall make all such records available to THE COUNTY upon reasonable notice.

If it is determined at any time during the term of the Contract that a VENDOR EMPLOYEE performing services for THE COUNTY does not meet the background qualifications set forth above, or has falsified a document that is or was part of the background check, THE VENDOR shall immediately notify THE COUNTY. THE COUNTY will determine if the VENDOR EMPLOYEE should be removed from the work site.

In the event THE VENDOR would like to utilize a VENDOR EMPLOYEE to provide services under the Contract despite adverse findings from any background check performed in accordance with these requirements, THE VENDOR must submit a request in writing to THE COUNTY. THE COUNTY shall evaluate all relevant background information and, in its sole discretion, shall make a determination whether the VENDOR EMPLOYEE should be allowed to perform services under the Contract, and shall provide its determination in writing to THE VENDOR.

THE COUNTY reserves the right to perform, at its sole cost, audits of THE VENDOR'S background check program and records for any VENDOR EMPLOYEE performing services under the Contract.

THE COUNTY reserves the right to revise these requirements at any time during the term of the Contract, which THE VENDOR must comply with. Any revisions to these requirements will be provided in writing to THE VENDOR.

Upon written request of THE VENDOR, the COUNTY, in its sole discretion, may provide THE VENDOR with a written modification or waiver of any of the background check requirements marked above.

## EXHIBIT G

## DATA SECURITY POLICY

To the extent THE VENDOR is provided with or has access to personal information about a Massachusetts resident (e.g. a name taken together with a social security number, drivers license number, state identification number, biometric indicator, credit or debit card account number, bank account number, or other account numbers) (collectively, "Personal Information") in connection with any Work performed under the Contract, THE VENDOR shall comply with all applicable federal, state and local laws, regulations, codes and policies regarding the protection of such information, the avoidance of theft or fraud through improper use or disclosure of such information, including but not limited to G.L. c. 93H and G.L. c. 93I. Additional requirements may be required by law, regulation or other bodies having jurisdiction over the Work or THE VENDOR, including, but not limited to, Federal Red Flags Rules set forth at 16 C.F.R. §681.2, which may go into effect on June 1, 2010. THE VENDOR must comply with any such additional requirements as are known or should reasonably be known by it. THE COUNTY reserves the right to revise this data security policy during the term of the Contract, which THE VENDOR must comply with. Any revisions to this data security policy will be provided in writing to THE VENDOR.

During THE VENDOR's performance of Work, in the event that THE VENDOR becomes aware of the unauthorized acquisition or use of data that creates a substantial risk of identity theft or fraud against a Massachusetts resident or that Personal Information about a Massachusetts resident was acquired by an unauthorized person or used for an unauthorized purpose, THE VENDOR shall immediately:

- (i) notify THE COUNTY of any loss or unauthorized disclosure, possession, use or modification of such data or Personal Information or any suspected attempt at such activity or breach of THE VENDOR's security measures, by any person or entity;
- (ii) investigate and take corrective action, at its sole cost, in response thereto;
- (iii) fully cooperate, at its sole cost, with THE COUNTY, any law enforcement, insurance carrier, auditors, attorneys and other parties in the investigation and evaluation of such activities or breach or potential breach;
- (iv) fully cooperate, at its sole cost, with any reporting or notice required by THE COUNTY pursuant to G.L. c. 93H; and
- (v) provide assurance to THE COUNTY's reasonable satisfaction that such activities or breach or potential breach shall not reoccur.

Upon request of THE COUNTY, THE VENDOR shall return any Personal Information that it is provided with or has access to in connection with any Work performed under the Contract, and shall retain no copy or other record thereof, unless THE COUNTY directs THE VENDOR to destroy such Personal Information.

In the event THE COUNTY directs THE VENDOR to destroy Personal Information, THE VENDOR shall comply, at its sole cost, with the following minimum standards regarding the proper disposal of Personal Information:

- (i) paper documents containing Personal Information shall either be redacted, burned, pulverized or shredded so that Personal Information cannot practicably be read or reconstructed;
- (ii) electronic media and other non-paper media containing Personal Information shall be destroyed or erased so that Personal Information cannot practicably be read or reconstructed; and

THE VENDOR shall implement and monitor compliance with policies and procedures that prohibit unauthorized access to or acquisition of or use of Personal Information during the collection, transportation and disposal of Personal Information.



## 10.4 Non Disclosure Agreement

### CONFIDENTIALITY AGREEMENT

between  
THE CAPE LIGHT COMPACT  
and

\_\_\_\_\_ [Company]

This CONFIDENTIALITY AGREEMENT (“Agreement”) is entered into by and between the Cape Light Compact and \_\_\_\_\_, a \_\_\_\_\_ [insert jurisdiction and state of organization] (the “Company”), and is effective as of the date of execution by the Company as set forth below.

WHEREAS, pursuant to G. L. c. 40, § 4A, the towns of Aquinnah, Barnstable, Bourne, Brewster, Chatham, Chilmark, Dennis, Edgartown, Eastham, Falmouth, Harwich, Mashpee, Oak Bluffs, Orleans, Provincetown, Sandwich, Tisbury, Truro, West Tisbury, Wellfleet, and Yarmouth, and the counties of Barnstable and Dukes County (collectively, the “Members”) entered into an inter-governmental agreement to act together as the Cape Light Compact (the “Compact”);

WHEREAS, the Compact, through its agent, Barnstable County, issued a request for proposals [insert project description] (the “RFP”);

WHEREAS, the Compact, for itself and for its Members, desires to supply certain confidential information to the Company so that the Company may submit a proposal in response to the RFP;

WHEREAS, the Company may also disclose certain confidential information in its proposal; and

WHEREAS, the parties desire to maintain the confidentiality of such information to the greatest extent allowed by law.

NOW THEREFORE, the parties hereby agree and state as follows:

1. *Confidential Information.* The term “Confidential Information” means all trade secrets or confidential, competitively sensitive or other proprietary information provided [NOTE - This language mirrors the statutory language contained in the new “trade secrets” exemption to the public records definition] by either party in connection with the RFP and/or the execution or performance of the [INSERT ACTIVITY DESCRIPTION] that the parties may enter into (the “Energy Activity”), whether disclosed directly or indirectly, in writing or orally, and which, if in tangible form, is marked by the disclosing party with the words “Confidential” or “Proprietary” or marking of similar import, or if disclosed orally, is identified as confidential at the time of disclosure and in a written notice delivered to the nondisclosing party promptly following disclosure. Confidential Information does not include:

- (i) information already in the possession of the nondisclosing party at the time of disclosure by the disclosing party, as long as such information was not provided by the disclosing party;
- (ii) information that is now or later becomes publicly available, unless such information becomes publicly available as a result of any action or inaction on the part of the nondisclosing party;
- (iii) information received by the nondisclosing party from a third party, unless such third party was under a duty of confidentiality with respect to such information;
- (iv) information for which disclosure is required under the Massachusetts Public Records Act, including without limitation, G. L. c. 4, §7, cl. 26 and G. L. c. 66, §10; or
- (v) information that is not designated or identified by the disclosing party as “Confidential” or “Proprietary” at the time of its initial submission. Such information shall be presumptively subject to disclosure under the Public Records Act.

2. *Use of Confidential Information.* The parties shall use the Confidential Information exclusively in connection with the Energy Activity. Each party shall receive all Confidential Information in strict confidence and shall protect the Confidential Information against disclosure using the same degree of care, but no less than a reasonable degree of care, that each party uses to protect its own confidential information.

3. *Disclosure to Third Parties.* The nondisclosing party agrees that it will not disclose any Confidential Information to any third party without the prior written consent of the disclosing party. After having obtained the written consent of the disclosing party, the nondisclosing party agree(s) that it will: (i) advise the third party of the terms of this Agreement; (ii) advise such party that it will be bound by the terms of this Agreement; and (iii) have such party execute a Non-Disclosure Certificate in the form attached to this Agreement as Exhibit A. The nondisclosing party may disclose Confidential Information only to consultants and contractors and other agents of the nondisclosing party who execute Non-Disclosure Certificates.

4. *Ownership of Confidential Information; No Implied License or Warranty.* Each party acknowledges that it has no ownership or proprietary rights in the disclosing party’s Confidential Information, and that the Confidential Information is the sole property of the disclosing party. Nothing in this Agreement will be construed as granting as rights to the receiving party by license or otherwise, to any of the disclosing party’s Confidential Information, except as specifically stated in this Agreement. Neither party makes any warranty or guaranty as to the accuracy of Confidential Information disclosed hereunder, nor is any assurance provided that Confidential Information is fit for any particular intended use or purpose. Each party shall rely on Confidential Information only at its own risk.

5. *Notes, Copies and Abstracts.* To the extent necessary to carry out the Energy Activity, the receiving party may make notes, copies or abstracts of the Confidential Information, provided that all such notes, copies and abstracts themselves are marked as confidential and

provided that the receiving party maintains a written record of the distribution of all such copies and abstracts.

6. *Return of Confidential Information.* Within fourteen days of receiving notice that it is not the winning bidder, the Company will return to the Compact all copies of Confidential Information, and will destroy all notes, copies, abstracts, documents, computer files and other media that contain Confidential Information, and will provide to the Compact a written certification of an officer of the receiving party that it has done so. If the Company is the winning bidder, within fourteen (14) days after the Company has ceased to provide services to the Compact, the Company will return to the Compact all copies of Confidential Information, and will destroy all notes, copies, abstracts, documents, computer files and other media that contain Confidential Information, and will provide to the Compact a written certification of an officer of the receiving party that it has done so. If requested in writing, the Compact will return any Confidential Information received from any bidder (including the winning bidder), upon expiration of the relevant document retention period under Massachusetts Law. **[NOTE- The current municipal retention obligation for Contracts and Bids for Contracts is SEVEN years after fulfillment of the Contract. This provision cannot be mutual due to the requirements of the Public Records Law. The Compact may have to compel return of Confidential Information by the Company because the Compact may be providing CI that it has received from another party (such as NStar). ]** Each party agrees that upon the return of the Confidential Information, it shall continue to be bound by the terms of this Agreement.

7. *Scope of Agreement.* This Agreement is binding upon the employees, officers, directors, agents, representatives, attorneys, contractors and consultants and affiliates of each party. The Company understands and agrees that certain Confidential Information disclosed by the Compact may be owned by its Members and that the Compact is disclosing such information in its role as agent for the Members. The Company understands and agrees that such information shall be entitled be treated as Confidential Information under this Agreement.

8. *Consent of the Disclosing Party.* As to any instance under this Agreement whereby the nondisclosing party is required to obtain the consent of the disclosing party prior to taking certain actions, the disclosing party reserves the right to withhold consent for any reason.

9. *Term.* This Agreement shall become effective when executed by both parties and shall continue in effect until either: (i) in the event that the Company is the successful bidder, two (2) years after the Company has ceased to provide services to the Compact, or until sooner terminated by the written agreement of both parties hereto, or (ii) the event that the Company is not the successful bidder, two years after termination of the solicitation process. The obligations of confidentiality contained herein shall survive and continue following the expiration or termination of this Agreement, unless otherwise agreed to in writing by both parties hereto.

10. *Required Disclosures.* Anything in this Agreement to the contrary notwithstanding, the nondisclosing party may disclose Confidential Information to the extent that it is required to do so by law, a court, or other governmental or regulatory authorities; provided, however, that the nondisclosing party shall give the disclosing party written notice of such a required disclosure prior to making such disclosure so that the disclosing party may seek a protective order or other relief with respect to such Confidential Information, and shall limit the disclosure to the minimum required to comply with the law, court order, or governmental or regulatory authority. Supplier acknowledges that the Compact and its Members are subject to public records laws, including without limitation, G. L. c. 4, §7, cl. 26 and G. L. c. 66, §10.

11. *Representations and Warranties.* The Compact hereby represents and warrants to the Company as follows: (i) the Compact shall use the Confidential Information only in connection with the Energy Activity; (ii) this Agreement constitutes the legal, valid and binding obligation of the Compact enforceable in accordance with its terms; and (iii) the Compact has taken all necessary action to authorize and approve the execution and delivery of this Agreement and the performance of the obligations hereunder. The Company hereby represents and warrants to the Compact as follows: (i) the Company shall use the Confidential Information only in connection with the Energy Activity; (ii) this Agreement constitutes the legal, valid and binding obligation of the Company enforceable in accordance with its terms; and (iii) the Company has taken all necessary action to authorize and approve the execution and delivery of this Agreement and the performance of the obligations hereunder. The representations and warranties contained in this Agreement shall survive execution and delivery of this Agreement.

12. *Governing Law; Enforcement.* The validity, construction and performance of this Agreement shall be governed by the laws of the Commonwealth of Massachusetts without regard to its choice of law rules. The parties agree that venue for judicial enforcement of this Agreement shall be Barnstable County Superior Court. The parties acknowledge and agree that the extent of damage to the disclosing party in the event of a breach by the nondisclosing party of any of the covenants contained in this Agreement will be difficult or impossible to ascertain and that there may be no adequate remedy at law available to the disclosing party. The parties therefore agree that, in the event of such breach, the disclosing party, in addition to receiving damages for breach, shall be entitled to enforce any and all of the covenants contained in this Agreement by injunctive or other equitable relief.

13. *Notices.* Except for any notice required by law to be given in another manner, all notices, waivers, demands, or other communications required or permitted by this Agreement to be effective shall be in writing, properly addressed, and shall be given by: (i) personal delivery; (ii) established overnight commercial courier delivery service, with charges prepaid or duly charged by the sender; or (iii) registered or certified mail, return receipt requested, first class, postage prepaid and addressed as follows:

FOR THE COMPACT:

Margaret T. Downey, Administrator  
 Cape Light Compact  
 P.O. Box 427  
 3195 Main Street  
 Barnstable, MA 02630  
 (508) 375-6636 (phone)  
 (508) 362-4136 (facsimile)  
 mdowney@barnstablecounty.org (email)

FOR THE COMPANY:

**[insert contact information]**

With a copy to:

**[insert contact information]**

Any party may additionally provide notice by electronic mail, facsimile, or telephone communication, but this shall not relieve the party of the obligation to provide notice as specified above.

14. *Waiver.* No waiver of any provision of this Agreement shall be effective unless in writing and signed by the party against whom such waiver is sought to be enforced. No failure or delay by any party to insist upon strict compliance with any term of this Agreement shall be deemed a waiver of such term. No waiver or relinquishment of any right under this Agreement at any one or more times shall be deemed as a waiver or relinquishment of such power or right at any other time.

15. *Assignment; Successors and Assigns.* No party may assign any of its rights or delegate any of its obligations under this Agreement to any third party without the prior written consent of the other party. This Agreement shall be binding upon and inure to the benefit of the successors and permitted assigns of the parties hereto.

16. *Entire Agreement; Amendments.* This Agreement constitutes the entire agreement between the parties hereto with respect to the subject matter hereof and supersedes all prior oral or written agreements and understandings between the parties relating to the subject matter hereof. This Agreement may only be amended or modified by a written instrument signed by both parties hereto.

17. *Further Agreements.* Nothing contained in this Agreement shall be deemed, by implication or otherwise, to convey to the nondisclosing party any rights in any Confidential Information, nor shall this Agreement be deemed a commitment of any kind by the Compact or the Company to enter into any further agreements with respect to any Confidential Information.

18. *Severability.* If any of the provisions of this Agreement shall be adjudged by a court of competent jurisdiction to be void or unenforceable for any reason, the same shall in no way affect the validity or enforceability of any other provision of this Agreement to the maximum extent permissible by law.

19. *No Joint Venture.* Nothing in this Agreement is intended or shall be deemed to make the Compact a partner or joint venturer of the Company.

20. *Counterpart Execution; Scanned Copy.* This Agreement may be executed in several counterparts, each of which, when executed, shall be deemed to be an original, but all of which together shall constitute one and the same instrument. The parties agree that a scanned or electronically reproduced copy or image of this Agreement bearing the signatures of the parties hereto shall be deemed an original and may be introduced or submitted in any action or proceeding as competent evidence of the execution, terms and existence of this Agreement notwithstanding the failure or inability to produce or tender an original, executed counterpart of this Agreement and without the requirement that the unavailability of such original, executed counterpart of this Agreement first be proven.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the dates written below.

FOR THE COMPACT:

FOR THE COMPANY:

\_\_\_\_\_  
Name: Margaret T. Downey  
Title: Administrator/Chief Procurement Officer  
As authorized by the Barnstable County Commissioners  
Dated: \_\_\_\_\_

\_\_\_\_\_  
Name:  
Title:  
Dated: \_\_\_\_\_

## EXHIBIT A

## NON-DISCLOSURE CERTIFICATE

I hereby certify my understanding that the Confidential Information, as that term is defined in the Confidentiality Agreement between the Cape Light Compact and the [Company] dated \_\_\_\_\_, 2010 (the "Agreement"), is being provided to me pursuant to the terms and restrictions of the Agreement. I also certify that I have been given a copy of the Agreement, have read its terms and conditions, and agree to be bound by them. I understand that the contents of the Confidential Information and any parts of notes, abstracts, memoranda, or any other form of information that contains such Confidential Information shall not be disclosed to anyone nor copied other than in accordance with the Agreement, and shall be used only for the limited purposes stated therein. I also agree to protect the confidential and proprietary nature asserted for the Confidential Information.

I further acknowledge that, in the event that my role as a \_\_\_\_\_ of [the Company] ceases, I shall return all copies of Confidential Information and destroy all parts of notes, memoranda, and other documents that contain such material in accordance with the Agreement, and I shall continue to be bound by the terms and conditions of the Agreement.

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Organization: \_\_\_\_\_  
Representing: \_\_\_\_\_  
Date: \_\_\_\_\_

## **10.5 Mass Save Energy Assessment Standards**



**Mass Save**

**Home Energy Services Energy Assessment Standards Version 2.0**

**March 31, 2012**

By: National Grid

NSTAR Electric & Gas Western Massachusetts Electric Cape Light Compact  
Columbia Gas Berkshire Gas New England Gas UNITIL

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## 1.0 Program Overview

### 1.1 General Overview

#### 1.1.1 Service Description

The focus of the Mass Save® Home Energy Assessment is to deliver on-site services to residential customers and motivate them to implement recommended energy efficiency and renewable energy measures.

A customer can receive the Home Energy Assessment through a variety of mechanisms, including a direct referral by calling the general Mass Save phone number, from a Program Administrator, Program Vendor, trade ally, and/or as a result of marketing.

The Home Energy Assessment (HEA) includes an evaluation of relevant energy efficiency measures and renewable energy measures in the home. The service is fuel-neutral, meaning that end-uses are examined regardless of the fuel used. The HEA uses a whole-house approach based substantially on the Home Performance with ENERGY STAR® model (HPwES) and is intended to evaluate the residence including a review of the building's heating, HVAC and DHW systems, lighting, thermal envelope, and appliances.

At this time, the Program Administrators require that approved Home Energy Assessment Vendors use the Home Energy Assessment software tool selected by the relevant Lead Vendor.

The objective of the Home Energy Assessment is to provide the customer an opportunity to understand the impact of relevant energy efficiency measures and improvements that can be implemented in the home and to motivate them to implement major measures. The Energy Specialist will offer Instant Savings Measure (ISM) incentives, Energy Efficiency Incentives, and Renewable Energy Incentives to eligible customers in conjunction with the Home Energy Assessment. Customer eligibility is dependent on Program Administrator offerings and primary heating fuel.

The program is designed for the customer to accompany the Energy Specialist in the examination of the building as appropriate to allow for explanations and education that occur during the course of the visit. The Energy Specialist shall keep the safety of the customer in mind during the visit and will not unnecessarily put the customer at risk. The customer is provided with a written report or agreement for work that describes the efficiency of the building which lists measures and available incentives based on order of priority. If needed, the Energy Specialist will provide the necessary paperwork to process appropriate incentives.

Third party Quality Control inspections will occur on a percentage of Home Energy Assessments to verify that Energy Specialists are providing the service as specified.

#### 1.1.2 Personnel Qualifications

Energy Specialists must be properly trained and certified to perform a comprehensive assessment of the home. All staff will require ongoing training to update their skills and knowledge of new and evolving program elements as well as sales and presentation skills. Program administrators and/or vendors may require additional training or certifications.

- **Training/Certification**

Staff and contractor training are vital to operating a technically rigorous and effective statewide energy conservation program.

The training/certification objectives for the program will consist of the following:

- Continuous staff training by vendors
- Building Performance Institute (BPI) certification
- Web resources

- **Staff Training by Vendors**

It is recognized that the bulk of the training for Energy Specialists is currently and will continue to be delivered by program vendors. The Mass Save program will have consistent baseline standards and/or certification levels to ensure that HES Energy Specialists are providing a comprehensive whole-house approach, and that those utility customers, regardless of where they reside in the Commonwealth, are receiving consistent information and service.

- **Building Performance Institute (BPI) certification**

The program requires all home Energy Specialists to achieve Building Analyst BPI certification in the interest of supporting a whole-house building science approach to home energy assessing and analysis. Employees of BPI-accredited contractors have 6 months from the time they begin delivering energy assessments to achieve the certification. Employees of companies that are not BPI-accredited must earn the certification before they begin performing energy assessments.

Additionally, at least one person in the energy assessment vendor's company who works in the Massachusetts Home Energy Services program must hold the BPI Envelope Professional certification.

## **1.2 Home Energy Assessment Overview**

The Home Energy Assessment is a whole-house assessment of potential energy efficiency improvements and a screening for any health and safety barriers which may prevent weatherization work from proceeding. It is the Energy Specialist's responsibility to install compact fluorescent light bulbs (CFLs) and other qualified Immediate Savings Measures, as well as to inform the customer of available rebates & incentives for mechanical equipment upgrades.

It is also the Energy Specialist's responsibility to specify potential air sealing work and determine energy saving measures for the home using appropriate diagnostic equipment and techniques.

- **Program Structure and Specifications**

A Mass Save Home Energy Assessment is available to any customer eligible to participate in the program. The visit is focused on determining if the house is a good candidate for weatherization, providing information about program incentives, installing Immediate Savings Measures (ISMs), as well as writing specifications for appropriate weatherization work and presenting these to the customer.

The Mass Save program provides a fuel-blind assessment of a home focused on possible improvements including air sealing, insulation, lights and appliances, water heating, and heating system upgrades. All program-eligible measures must be identified and offered to the customer. The Energy Specialist must be familiar with the "Mass Save Home Energy Services Program Standard for Materials, Installation, and Conduct for Energy Efficient Measure Installation Contractors."

Customers will have spoken to a Mass Save Customer Service Representative (CSR) prior to receiving a Home Energy Assessment. This CSR will ask the customer a series of questions intended to ensure that the customer is eligible for the home energy assessment. However, it is still important for the Energy Specialist to be aware of the following concerns:

- 5+ Unit Buildings  
The Mass Save HES program only serves 1-4 family residences that are not part of a larger site where an association exists (such as a condo association with multiple 4- unit buildings). The Energy Specialist should immediately call the CSR and confirm the customer's eligibility if the Energy Specialist finds him/herself at a building with 5 or more units. In either of the aforementioned cases, the customers should be referred to the Multifamily Energy Services program. The Multifamily Energy Services Program is best suited to treat such sites in their entirety, in that they work with the existing residential association or Property Management Company in the decision-making process.
- Income-Eligible Customers  
The Mass Save HES program is not intended for income-eligible customers (income below 60% of state median income). There is a network of income-eligible agencies that serve these customers, often providing free energy efficiency improvements. Customers should be referred to these agencies for services.
- Correct Program Administrator  
The Mass Save HES program is funded by Program Administrators such as electric and gas utility companies and energy efficiency service providers. The Energy Specialist must verify that the customer is eligible for services based on their primary heating fuel and the Program Administrator funding the home energy assessment as the Energy Specialist has the final opportunity and responsibility to identify if information that may have been obtained during the initial intake and scheduling was inaccurate. If the home's primary heating fuel is natural gas, then the Program Administrator for the customer is the participating gas utility company. If the primary heating fuel is non-metered (i.e. oil, propane, etc.) or electricity, then the Program Administrator is the participating electric utility or energy efficiency service provider. The HEA may only be conducted if the Program Vendor is under agreement to provide services to that PA. If there are any concerns, the Energy Specialist must contact the appropriate CSR or Lead Vendor before proceeding with the Home Energy Assessment.

## **2.0 Home Energy Assessment Visit Specifics**

### **2.1 Customer Interview**

Important information must be gathered about the residence during the initial customer interview. This information must include:

- Property information
- Utility account numbers
- Historical energy use
- Number of occupants

During the customer interview the Energy Specialist will explain to the customer the steps included in the visit and the approximate time it will take to complete those steps. The Energy Specialist will also ask the customer what their specific concerns are for receiving the energy assessment and be sure to address those concerns during the course of the visit.

## **2.2 Refrigerator Assessment**

Homeowners who have qualifying refrigerators may be eligible to receive a rebate toward purchasing a qualified ENERGY STAR refrigerator if replacing the old inefficient one. Energy Specialists shall determine the existing age, make, and model number for all refrigerators located within the house to determine if they meet the qualifying regulations to warrant replacement. If metering the refrigerator, the minimum metering time is 30 minutes but longer readings are preferable. If the refrigerator does qualify, the Energy Specialist must provide a rebate form to the homeowner from the appropriate Program Administrator sponsoring the rebate for that particular home. Refrigerators manufactured after 1995 do not need to be assessed however, the refrigerator information should still be entered into the appropriate Home Energy Assessment Software tool. There is a maximum of 2 rebates per Mass Save participating residential electric account.

## **2.3 Combustion Safety Testing**

A house must successfully pass all applicable combustion safety tests prior to installing weatherization measures in the home. The combustion safety evaluation shall be performed in accordance with current Building Performance Institute Building Analyst standards. This includes testing all combustion heating and hot water systems along with ovens and dryers. A summary of the BPI test procedures are listed below. For more information please visit [www.bpi.org](http://www.bpi.org).

1. Measure the Base Pressure. Start with all exterior doors, windows, and the fireplace damper(s) closed. Set all combustion appliances to the pilot setting or turn off the service disconnect, including: boiler, furnace, space-heaters, and water heater. With the home in this configuration, measure and record the baseline pressure of the combustion appliance zone (CAZ) with respect to outside.
2. Establish the Worst Case. Turn on the dryer and all exhaust fans. Close interior doors that made the CAZ pressure more negative. Turn on the air handler, if present, and leave on if the pressure in the CAZ becomes more negative, then recheck the door positions. Measure the net change in pressure from the CAZ to outside, correcting for the base pressure. Record the “worst case depressurization” and compare to the CAZ Depressurization Limit Table (refer to BPI standards).
3. Test Worst Case Spillage, Draft, CO. Fire the appliance with the smallest Btu capacity first, test for spillage, measure the draft pressure, and then test for CO. Spillage and CO are tested close to the burner, draft is measured close to the chimney. The spillage test fails if it is still spilling after 1 minute. The CO test fails if the levels are still too high after 10 minutes. Carbon monoxide needs to be tested in other gas fired appliances such as gas dryers and gas ovens if present at the home.
4. If Test Fails: Retest Spillage or Draft under Natural Conditions. If spillage or draft fails under worst case, turn off the exhaust fans, open the interior doors, leave the first appliance running and test for spillage and draft under “natural conditions”. If tests pass under natural conditions, try to figure out which change causes the tests to fail.
5. Ambient CO. Monitor the ambient CO in the breathing zone during the test procedure and abort the test if ambient CO goes over 35ppm. Turn off the appliance, ventilate the space, and evacuate the building. The building may be reentered once ambient CO levels have gone

below 35ppm. The appliance must be repaired and the problem corrected prior to completing the combustion safety diagnostics. If the ambient levels exceed 35ppm during the testing under natural conditions, disable the appliance and instruct the homeowner to have the appliance repaired prior to operating it again.

Energy Specialists shall follow any notification protocols set in place by the Program Administrator for combustion failures.

## **2.4 Recommendation for Replacing Heating, DHW, & Cooling Systems**

### Central Heating Systems

Recommend replacement of heating systems if any of the following are true:

- Heating system is estimated to be more than 15 years old
- Heating system is natural gas or propane with atmospheric venting
- Steady state combustion efficiency was measured to be below 80%

### Central Cooling Systems

Recommend replacement of cooling system if any of the following are true:

- Cooling system is estimated to be older than 2005
- Cooling system is determined to be below SEER 10

### Domestic Hot Water Systems

Recommend replacement of domestic hot water system if any of the following are true:

- Water heating is provided by a tankless coil in a boiler whose replacement is recommended
- Water heating is provided by an atmospherically vented water heater

The Energy Specialist shall inform the customer of available rebates and process to obtain them based upon the sponsoring Program Administrator once all system evaluations have been completed.

## **2.5 Recommendation for Replacing Windows**

Recommend replacement of windows using the HEAT loan incentive if the existing windows are single-paned, with or without storm windows. If only some of the windows are single-paned, document the number of single-paned windows. If making the recommendation to replace windows, the Energy Specialist should inform the customer that replacement windows may only be included on a HEAT Loan application if all other program eligible recommended thermal boundary upgrades are completed.

## **2.6 Assessment of the Basement, Walls, and Attic**

The goal of assessing all the major parts of the home is to determine the location and performance of the existing thermal envelope and how it can be effectively improved upon through appropriate air sealing and insulation measures. The thermal envelope is the barrier between conditioned and either unconditioned space or the outdoors. It is important that the thermal envelope continuously encase the entire house when possible because heat loss is always dominated by the areas with the least insulation /air sealing. The Energy Specialist will determine if insulation is needed and is possible through the Mass Save program based on actual depths and measurements that can be reasonably obtained during the assessment. The customer will then be provided a written proposal to install the recommended insulation measures.



### **2.6.1 Assessment of the Basement/Crawlspace**

The Energy Specialist shall evaluate the basement area for potential energy efficiency improvements. If a component is eligible for improvement, the Energy Specialist will measure the area of each component and determine the depth of framing cavities. Refer to Section 2.9 for more information about calculating areas.

The Energy Specialist must determine how the basement is used by the customer and its relation to the building envelope to evaluate the potential for energy improvements. This determination will guide how basement measures will be recommended. Generally, basements are semi-conditioned and should be considered inside the thermal envelope due to the presence of mechanical equipment (heating and DHW equipment) and heating distribution systems. Attempts to reduce heat loss by separating the basement from the home are usually unsuccessful. Exceptions may include some crawlspaces or basements with large openings to the outside. In these rare cases where the basement is outside the thermal envelope, eligible measures to recommend include:

#### **For basements that are clearly outside the thermal envelope (such as a vented crawlspace):**

##### Heating System Distribution Improvements:

- Duct Sealing – Recommend that all ducts located outside the thermal envelope be sealed with mastic or mastic tape to form a durable, tight seal. Duct sealing shall be recommended in conjunction with duct insulation. These improvements should be recommended for implementation by an HVAC contractor.
- Duct Insulation – Recommend fiberglass duct insulation with a foil vapor retarder on all heating ducts located outside of the thermal envelope. Duct insulation shall be recommended in conjunction with duct sealing. These improvements should be recommended for implementation by an HVAC contractor.
- Hydronic and Steam Pipe Insulation - Recommend pipe insulation for all heating pipes located outside the thermal envelope.

##### Basement / Crawlspace Ceiling Insulation:

If the basement is located outside of the thermal envelope, ceiling insulation can be used to complete the thermal envelope.

- Fiberglass Insulation – If the ceiling joists are spaced appropriately, fiberglass insulation shall be recommended. Installation of rigid board insulation in addition to the fiberglass may also be recommended.
- Densepack cellulose – If minimal to no pipes or wiring are present, the basement is very dry, and the joists are unevenly spaced, recommend ceiling densepack cellulose. If the space is already enclosed, recommend densepack cellulose. If the space is not enclosed, reinforced mesh or rigid board insulation would need to be specified in order to hold the cellulose in place. Pay close attention to how difficult it may be to install cellulose in the space and if it is possible.
- Cellulose – If the unenclosed area can be adequately air sealed before insulating then densepack cellulose is not required. Specify reinforced mesh or rigid board insulation and cellulose along with air sealing.

##### Basement Stairwell Insulation:

Insulating the stairwell and door shall be recommended as necessary to complete the thermal envelope if the basement is considered outside of the thermal envelope and basement ceiling insulation is recommended.

- Fiberglass Insulation - If the joists are evenly spaced and open, recommend fiberglass insulation.
- Cellulose - If the joists are unevenly spaced and open, recommend reinforced mesh or rigid board insulation and cellulose.
- Densepack Cellulose - If the stairwell is already enclosed, recommend densepack cellulose.
- Stairwell Door – Insulate the back of the stairwell door with rigid board insulation in conjunction with basement stairwell insulation.

#### Dirt Floors:

All accessible dirt floors shall be recommended for coverage with 6 mil polyethylene plastic sheeting. If a dirt floor area is deemed inaccessible AND insufficiently vented, then sufficient ventilation must be added OR the crawlspace must be made accessible, UNLESS the exposed dirt floor comprises less than 10% of the total footprint of the building.

#### **For basements inside the thermal envelope:**

##### Basement Rim Joist Insulation:

- Fiberglass Insulation – When joists are spaced appropriately, recommend fiberglass insulation for the rim joist area in basements that are within the thermal envelope. A recommendation to air seal the rim joist must be made in conjunction with fiberglass batt insulation to provide an aligned air barrier and thermal boundary.

#### **2.6.2 Assessment of the Exterior Walls and Enclosed Cavities**

All exterior walls, overhangs, and enclosed cavities must be fully insulated in order to create a proper thermal envelope. Determine the existing level of insulation in enclosed cavities by drilling small holes or checking behind light switch or outlet plates. The energy specialist may use an IR camera to help verify the existence or absence of insulation within wall cavities. The Energy Specialist shall measure the area of each component and determine the depth of framing cavities. Refer to Section 2.9 for more information about calculating areas.

Wherever enclosed cavities cannot be accessed, assume that insulation types and depths are similar to the cavities that are accessible.

All enclosed cavities shall be insulated with densepack cellulose. At least three inches of free space must exist for the cellulose hose to fit into the cavity properly in order for an enclosed cavity to be properly insulated. The structure of cavity must be able to withstand the installation of densepack cellulose for the improvement to be recommended. The following measures are the specific types of wall insulation measures available through the Mass Save program.

##### Exterior Wall Insulation:

- Exterior blow – Recommend an exterior blow if the house has removable siding.
- Interior Drill and Blow – Recommend an interior drill and blow if the home has stucco, brick, masonry, or asbestos siding, even if under another type of siding. When specifying wall insulation in homes with brick or other masonry exteriors, make sure there is

sheathing behind the masonry as cellulose should not be installed directly in contact with masonry.

#### Interior Walls:

Recommend that interior walls separating conditioned space from unconditioned space, such as between an apartment and an unconditioned hallway, be insulated with densepack cellulose using the interior drill and blow method.

#### Overhangs:

Recommend any overhangs that are not insulated or are insufficiently insulated, and have at least 3 inches of empty cavity space available, be insulated with dense pack cellulose either from the outside, if possible, or through the floor of the living space above.

#### Garage Ceilings:

Recommend garage ceilings be insulated using densepack cellulose as long as hidden distribution pipes and plumbing will be properly protected from cold temperatures and there is at least 3 inches of empty cavity space available. Proper protection generally involves installing a larger R-value between the pipes and the exterior than between the pipes and the interior of the home.

#### Other Cavities:

Recommend densepack cellulose insulation for uninsulated or insufficiently insulated enclosed cavities as described in the Material & Installation standards when you have at least 3 inches of empty cavity space available. These areas shall be insulated either from the interior living space or from the exterior, depending upon the accessibility.

### **2.6.3 Assessment of the Attic**

Insulating an attic shall be recommended anytime the existing level of insulation is below R-30. The Energy Specialist shall determine all existing types of insulation present in a given attic space and use the most predominant type to establish a base R-value from, referencing BPI standards. The Energy Specialist will base the existing R-value on the most commonly recurring low spot throughout the given attic space. If needed, the attic will be divided into multiple sections to more accurately recommend insulation specifications. The Energy Specialist shall measure the area of each component and determine the depth of framing cavities. Refer to Section 2.9 for more information about calculating areas.

Wherever attics cannot be accessed, assume that insulation types and depths are similar to the attics that are accessible.

The following is a list of eligible attic recommendations:

#### Open Attic Flat and Kneewall Flat:

Recommend blown cellulose for all open attic spaces, including behind the kneewall, as necessary to reach a final insulation level of R-38.

#### Attic Slope:

Recommend densepack cellulose for this space if no insulation is present within an attic slope. Recommend densepack cellulose to fill the entire cavity if the cavity has inadequate preexisting insulation, and there are at least three inches of free space and the cellulose can be applied to the cold side of the assembly.

#### Floored Attic and Floored Kneewall Floor:

The floored cavity can be densepacked with insulation as long as three inches of free space exist. The densepack cellulose will compress any preexisting insulation. If it can be determined that there are no penetrations below the floored area than densepacking is not required and should not be recommended due to the higher cost; a regular drill & blow application can be specified.

#### Attic Kneewall:

Recommend insulating the attic kneewall in conjunction with adequately insulating the kneewall floor if there are no heating or hot water pipes in the kneewall area and the attic kneewall can be effectively sealed off from the living space and vented.

- Fiberglass Insulation – If the kneewall studs are spaced appropriately, fiberglass insulation shall be recommended. Installation of rigid board insulation in addition to the fiberglass may also be recommended.
- Cellulose - If the kneewall studs are unevenly spaced and open, recommend reinforced mesh or rigid board insulation and cellulose.
- Densepack Cellulose - If the attic kneewall is already enclosed, recommend densepack cellulose if there is at least 3 inches of empty cavity space available

#### Attic Kneewall Slope:

Recommend this measure only if the kneewall and kneewall floor cannot be insulated, if kneewall slope insulation already exists, or other existing conditions such as mechanical systems and/or distribution systems exist that warrant bringing the kneewall inside the thermal envelope.

- Fiberglass Insulation – If the kneewall rafters are spaced appropriately, fiberglass insulation may be recommended. Installation of rigid board insulation in addition to the fiberglass should also be recommended if accessibility allows.
- Densepack Cellulose - If the attic kneewall slope is already enclosed and has three inches of free space existing, recommend densepack cellulose so long as existing insulation will not create air pockets on the cold side of the assembly. If the space is not enclosed, reinforced mesh or rigid board insulation would need to be specified in order to hold the cellulose in place.

#### Insulate Attic Hatch or Door:

Recommend that rigid board insulation be applied to the back of all attic hatches and doors present along the thermal boundary to achieve an R-14.

#### Insulate Attic Pull-Down Stairs:

Recommend the installation of an insulated attic-side cover with fastener for all attic pull-down stairs. Additional carpentry may be needed in some cases. If an insulated attic stair

cover cannot be installed given the style of pull down stairs then the pull down stairway should be weather stripped to prevent air and moisture leakage into the attic.

#### Additional Attic Accesses:

Recommend creating additional attic accesses if no existing way of entering the attic area is present. Inform customer of the extent of finish work provided with these accesses, per the M&I standards.

#### Housewrap:

When recommending the installation of fiberglass insulation into kneewalls, housewrap may be recommended to enclose the insulation on all sides. If accessibility allows, the preferred recommendation is rigid board insulation.

### **2.6.4 Attic Ventilation**

Do not recommend insulation in an attic space unless adequate and permanent ventilation is present or can be included in the work scope.

Adequate cross-ventilation shall be maintained above all attic insulation by providing both low and high vents or gable end vents where possible. One square foot of net-free vent area (NFA) shall be provided for every 300 ft<sup>2</sup> of attic area that has a vapor barrier present with 50% to 60% of the vent area located near the roof ridge and 40% to 50% located near the eaves. One level of venting may be used provided that adequate cross ventilation can be maintained.

NOTE: Although the use of window vents is allowed, the vents must be permanently fixed and must meet the minimum requirements for net free vent area as noted above.

Ventilation should be improved wherever reasonable and practical to meet current code requirements when attic insulation is installed. The details of the types of vents and where they may be practically installed on each specific house varies. Consideration should be given to the type and location of vents to provide as much cross ventilation as possible for the specific application depending on existing conditions and retrofit options.

#### **Options for achieving high ventilation include:**

- Ridge Vent
- High Gable Vent
- Window Gable Vent
- Roof Vent

#### **Options for achieving low ventilation include:**

- Soffit Vents
- Low Gable Vent
- Roof Vent –This option should be used as a last resort as roof vents located low are more susceptible to water intrusion from ice dams

Ventilation options may vary by Program Administrator.

#### Ridge Vent:

These vents are installed at the roof ridge and stick up above the roof a few inches. Contractor installation restrictions such as the inability to install ridge vents in slate or tin roofs may apply.

#### Gable Vents:

Gable vents are generally rectangular and made from aluminum, vinyl or wood. Gable vents cannot be installed through asbestos siding. Contractor installation restrictions such as the inability to install gable vents in aluminum siding may apply.

#### Soffit Vents:

Soffit vents are generally made from aluminum. Contractor installation restrictions may apply such as the inability to install soffit vents in aluminum soffits.

#### Propavents:

Recommend at least one propavent with each existing soffit vent and for every proposed soffit vent to allow for proper air transfer. For continuous soffit vents or ventilated drip edges, propavents shall be recommended for every rafter bay. Additional propavents may be required to provide adequate airflow at each soffit vent such as with roof truss or other 24 OC spaced construction.

#### Window Vents:

When attics cannot be ventilated by other means and windows exist, recommend gable vents to be installed in the existing window sash. Plywood will be constructed around the gable vent which is then fitted into the place of one of the window sashes.

#### Roof Vents:

Roof vents are typically made of metal. Contractor installation restrictions may apply such as the inability to install roof vents in slate, tin, or flat roofs. Follow manufacturers' recommendations related to minimal roof pitch requirements for each specific roof vent.

#### Vent Bath Fan to the Outside:

All bathroom exhaust fans venting to the attic must be vented to the outside with insulated duct. Contractor installation restrictions may apply such as the inability to vent the bath fan to the gable end wall if asbestos, stucco, or other prohibitive siding is present or in venting through the roof due to specific roof materials. Whenever possible, venting through the roof is the preferred option.

### **2.6.5 Infrared Camera Scan**

The infrared (IR) scan may be performed to learn more about the insulation present in the home. It is helpful for the customer to watch this part of the home energy assessment so they can see the images on the screen. If the Energy Specialist will be running a blower door test, the infrared camera should be used first so that the blower door does not eliminate the needed temperature difference. An 18-degree temperature difference between the inside of the home and the outside of the home is recommended to get a clear picture of the heat loss. When

using the IR camera from inside the home and the temperature outside is cold, the wall framing should appear warmer than the cavities if there is no insulation in the walls. If the walls are insulated, the wall framing should appear cooler than the cavities. The Energy Specialist must be careful of situations where the walls may be warmed by the sun or other heat source as well as older reflective foil insulation, which could blur or reverse the images. Infrared scans are best done in the morning while it is still cold outside and before the sun shines on the building. Energy Specialists should be especially careful when viewing the south and west wall in the afternoon.

Infrared images of ceilings often do not reveal much because the attic or roofs are often warm compared to the outdoors. Infrared images of metal surfaces or glass surfaces can be meaningless since they tend to reflect other infrared light rather than emit their own. It is important to keep in mind that IR imaging generally does not show the quantity of insulation present, but rather only whether or not there is any.

### **2.6.6 Electric Heat Thermostats**

In the case of electrically heated homes, replacing old thermostats with new, programmable thermostats can provide significant energy savings. A minimum number of electric thermostats may need to be achieved according to Program Administrator requirements. In order to install electric heat thermostats the existing thermostats must be wall mounted.

### **2.7 Assessing Air Sealing Potential**

During the visit, the Energy Specialist must determine the number of hours of air sealing needed in the home to achieve cost-effective energy savings. Most homes could benefit from some amount of air sealing work. Spray foam, caulking, metal flashing, door sweeps, and weatherstripping are used to seal the home. Air sealing must be completed before insulation work can begin if attic insulation is a recommendation. Attic air sealing should be emphasized since that is where air loss and convective heat loss are strongest. Attic air sealing can also have a large impact on energy savings and reducing attic moisture concerns. Below is a list of significant air sealing features:

- open chimney chases
- open wall cavities such as found in balloon framing
- attic kneewalls
- ducts in the attic (requires sealing between duct boots and drywall)
- drawers in attic kneewalls
- open duct chase or other chase
- multiple doors or hatches that need to be weather stripped
- multiple attic spaces or unheated basements
- recessed lights (air tight insulation barrier boxes that meet program Material & Installation Standards can be installed over these)
- floored attic areas and transition areas where densepack cellulose is not going to be installed
- plumbing and electrical penetrations
- rim joist / wall plate seams

If the attic has floored areas that cannot be densepacked than it should be recommended that the floor be removed and air sealed at a minimum to treat all major bypasses such as chimney chases,

plumbing chases, wet walls, dropped soffits, etc. otherwise air sealing would not be considered technically effective or cost effective.

## **2.8 Outside Assessment of the Home**

The goal of an outside assessment of the home and area calculation is to detail a footprint of the home to create accurate calculations of the areas to be insulated. These diagrams and calculations will be used to aid the insulation contractor during installation and need to be as accurate as possible. Performing an outside assessment of the home allows the Energy Specialist to gain a 360 degree view of the home, look at siding and ventilation, and accurately measure the entire home.

After completing an assessment of the inside of the home, the Energy Specialist will complete one full loop around the building. The Energy Specialist will take measurements and draw a diagram of the home at this time. The following shall be checked from the outside of the home:

- Check the siding types on all sides and levels of the building where you are recommending wall insulation. Determine if there are multiple layers of siding by checking at the bottom edge and around windows and asking the customer if there are multiple layers of siding. Check for the possibility of pre-1979 paint.
- If there are attic insulation opportunities and the attic needs more ventilation, look for ways to add ventilation to the attic. Check for ventilation that was unnoticed from the attic.
- Look for evidence of water intrusion into the building, such as steep valleys with brush caught in them, rotten siding or trim, lack of or poorly installed gutters, peeling paint, or incorrectly flashed areas.
- Look for depressions in the ground near the foundation, adequate slope away from the foundation, dampness of the ground around foundation, and type of vegetation (moss, grass, shrubs, etc.).
- Check window wells and bulkhead door for signs of water entry or water damage.
- Condition of siding, grade and other site conditions that may affect installation.

## **2.9 Area Calculations**

The Energy Specialist will draw a diagram of the home and calculate area and volume whenever energy efficiency improvements are recommended. All measurements shall be made to the nearest six inches. Floor area and volume calculations will be needed for all homes where improvements have been recommended. Area calculations will also be needed for any component of the thermal envelope to be improved. Wall insulation measurements will be gross measurements and therefore subtraction of windows and doors will not be needed.

## **2.10 Identifying Health & Safety and Other Barriers**

A primary objective during the HEA is to identify health and safety concerns that may prevent insulation or air sealing work from proceeding. The main health and safety barriers are moisture, knob & tube wiring, asbestos-like material, and combustion safety problems.

### **2.10.1 Moisture**

In order to insulate a home, it is important to determine that the insulation will not become wet and that the insulation will not significantly worsen any existing moisture problems. Moisture can be a barrier for some or all measures in the home, depending on the severity. Here are some guidelines for deciding when there is too much moisture for insulation or air sealing to occur:



General:

If the framing cavities into which we would like to install insulation are wet, we cannot insulate. This is a barrier only for the area of the home that is wet, but typically the entire measure should be put on hold until the problem is resolved. For example, if one wall of the house is too wet to insulate, it is a good idea to leave all the walls uninsulated. Wet framing cavities can be identified by severely peeling paint, mold growth, moss, mushrooms, rot, moisture content, or by touch.

Basements:

All basements have an elevated level of moisture compared to the living space because concrete absorbs moisture from the ground. Excessive levels of moisture in the basement shall stop the installation of insulation in the basement. Signs of elevated moisture include staining, mold growth, and dirt floors. If the level of moisture in the basement is especially high, then no insulation or air sealing should occur in the home. Very moist basements may have pools of water or streams running through them, signs of flooding, or rotten framing.

Attics:

Attic moisture problems are usually caused by one of three things – 1) roof leaks, 2) ice damming, or 3) condensation.

- Roof leaks - Any roof leaks that have not been repaired are a barrier for any insulation work in the attic, including cellulose and fiberglass. In most cases air sealing shall not occur until after a roof leak is addressed by the homeowner. If the source of moisture in an attic cannot be determined, it should be assumed that the source is a roof leak.
- Ice damming - Ice damming is generally caused by excessive heat escaping from the home into the attic and melting the snow on the roof, which then refreezes when the temperature drops or the water reaches a lower point on the roof. The water seeps into the attic from the outside of the roof. Air sealing, insulating, and venting the attic may reduce ice damming and may reduce moisture intrusion. Therefore, ice damming should not be considered a barrier if the measures within the program exist to address the source. The Energy Specialist should assess the source of the heat loss causing any ice dams and specify relevant measures.
- Condensation - Condensation is generally caused by warm, moist air escaping from the home and condensing on the cold roof deck. Liquid water forms on the underside of the roof decking and in severe cases, the water will freeze on the underside of the roof decking and form icicles. Air sealing and venting of bath fans will reduce condensation and may reduce moisture intrusion. Air sealing work must be completed before insulation is added.

**2.10.2 Knob & tube wiring**

Knob & tube wiring should always be suspected in pre-1950 houses. Energy Specialists need to look carefully through the attic and basement and look for rotary, two-button, or porcelain switches. If any evidence of knob & tube wiring is found in the home, no insulation may be installed until the homeowner addresses the wiring. Remember that knob & tube wiring is a concern even if the electrical panel has been replaced. If knob & tube wiring is present it is a

barrier to all insulation in the home except for areas of the home where fully visible, uninsulated open cavities allow the Energy Specialist to visually verify that no knob & tube wiring is present. Air sealing, duct sealing, pipe insulation, and duct insulation can still occur in a home with knob & tube wiring.

When knob & tube wiring is found, the Energy Specialist should inform the customer of how to proceed with getting the knob & tube decommissioned, noting the specific areas where insulation is recommended. The customer will need to have an electrician certify that the wiring has been deactivated or removed before proceeding with any work that may contact the wiring.

### **2.10.3 Asbestos**

If the Energy Specialist finds asbestos-like material on the pipes or ducts in a basement or attic, it is a barrier to any work occurring in that area for fear of disrupting the material. The Energy Specialist must check where pipes go into floors or walls as asbestos-like material is commonly missed in these areas. Embossed or smooth paper on ducts could potentially be asbestos-like material. Basement air sealing and basement ceiling insulation may not proceed if there is a risk of disturbing asbestos-like material on pipes in the basement. Sometimes small amounts of air sealing or rim joist insulation can be completed if the asbestos-like material will not interfere with these measures. The work must be road blocked if there appears to be any risk that a worker would disturb the asbestos-like material.

The Energy Specialist can assume that any vermiculite insulation contains asbestos-like material, even though not all vermiculite contains asbestos. Cellulose cannot be blown into or on top of an attic area that contains vermiculite insulation.

- Vermiculite Insulation - No attic space, wall cavity, or other area containing vermiculite can have additional insulation installed. Any vermiculite found in the home must be assumed to contain asbestos.

Due to health concerns, air sealing technicians must not dig through vermiculite insulation in the attic. Therefore the air sealing estimate for the home shall be reduced based on limitations due to vermiculite.

Asbestos can also be found in board-like form. This would typically be located directly above the heating system and resemble drywall. If a board has been installed near the heating system with asbestos-like material it shall be considered a barrier to any work that would be done within close proximity.

The Energy Specialist should give the customer the appropriate health and safety or other barrier information. When informing the customer, the Energy Specialist should take care to emphasize the need for professional removal, testing, and certification. He or she should avoid saying anything that may give the customer the idea that they can solve the problem on their own. The work can proceed after professional removal or encapsulation of the asbestos-like material. The customer must have a letter from the asbestos removal professional certifying that the asbestos problem has been corrected.

### **2.10.4 Combustion Safety**

Follow all BPI guidelines for checking combustion safety in the home.

Any combustion safety problem that is identified as a “stop work” or “emergency” situation per BPI standards is a barrier to any tightening measures on the home, including air sealing

and insulation. Unvented fossil fuel space heaters will always stop work until they are removed or vented properly.

### **2.10.5 Other Health, Safety, or Other Barriers**

There are others that will prevent work from happening at a customer's home. Some issues listed below are conditional and should be assessed based on the Energy Specialist's best judgment. Additional barriers include:

- Access to house - Occasionally a home is too far from the road or the walls are inaccessible due to trees or shrubbery. Work that requires access to areas that are blocked by shrubbery or trees may not be possible.
- Structural problems - Occasionally the structure to be insulated cannot hold the weight of the insulation. This is true for freestanding ceiling tiles. In this case, the area cannot be insulated or air sealed.
- Inability to vent - Occasionally an attic needs insulation but cannot be ventilated properly (for example, a home with slate roof, asbestos shingles, and aluminum soffits). For more information on this topic, refer to Section 2.5.4 "Attic Ventilation".
- No Carbon Monoxide Detector Present -At least one carbon monoxide detector must be present in the home by the time work is completed in homes with any type of combustion appliance and/or an attached garage. A carbon monoxide detector is not required in entirely electrically heated homes unless the home has an attached garage.
- Unvented Bath Fan, Dryer, and/or Kitchen Exhaust Fan - Any exhaust fan venting directly into the attic must be vented to the outside before work is completed. This must be performed either through the scope of work or means outside of the Mass Save program. Any dryer not vented to the outside is a barrier for work until it is addressed by the homeowner. Filters that recirculate dryer exhaust into the home are not considered to be vented to the outside.
- No Return Ductwork - If a home contains a furnace without return ductwork, work must be put on hold until a return system is installed.
- Minimum Workspace Clearance – All workspaces must have adequate clearance for workers to install the relevant energy efficiency measures.
- Floored Attics – To insulate floored attics, either the floorboards must be removed or the cavities under the floored attics must be densepacked. Removing floorboards allows for the attic to be air sealed and loose blown cellulose to be installed on top of existing insulation. Customer is responsible for floor board removal. To effectively densepack the cavities underneath the floorboard, up to 3" of space may be required to allow room for the cellulose installation hose.
- Heavy Storage Use and Accessibility - Areas containing excessive storage prevent work in that area until the items are moved and access to the particular area is gained. This includes access to areas of the basement and attic where air sealing and/or insulation measures are recommended.

- Overall Safety and Condition of the Home - If the Energy Specialist discovers any issues at a home that are dangerous or an impediment to proceeding with work, work cannot proceed until the issue is addressed by the homeowner. This includes unsafe access to the home, basement, or attic areas, unhealthy living conditions, excessive mold or rot, etc.
- Personal Safety - Personal safety of all field staff should be paramount at all times. Any field staff that feels unsafe at an appointment has the right to leave. Those that choose to leave have the support and understanding of the Program Administrator. Lead Vendors shall document what happened and Home Performance Contractors will document and report to Lead Vendors.

### **2.11 In-Home Installation Measures**

The Energy Specialist will have the opportunity to install items that lead to immediate energy savings during the HEA. These items are referred to as Instant Savings Measures (ISMs). One of the most important ISMs to install is light bulbs; compact fluorescent light bulbs (CFLs) are a very cost effective way to reduce electricity usage. There is no limit to the number of CFLs that can be installed in a home but they should only be installed in fixtures that are used regularly. Please note that CFLs are not to be left at the home uninstalled – **all CFLs provided must be installed and tested by turning the fixture on to make sure the fixture and bulb are working.** Any exceptions must be cleared with the Lead Vendor before leaving the customer's home.

Other installations that save electricity or heating and domestic hot water fuel are also to be installed. This includes programmable thermostats, showerheads, and faucet aerators. In some cases, weatherstripping and other draft-stopping measures may be installed, although these items are better performed during an air sealing visit. However, for a customer that is not getting an air sealing visit, draft stopping measures can be very helpful. For a complete list of approved ISMs, check with your Lead Vendor. Measures shall be installed and verified.

All installed products will meet the warranty guidelines outlined in your participation agreements.

### **2.12 Creation of Reports and Contract**

The Energy Specialist must provide a record of installed measures as required by the Program Administrator to the customer containing a list of installations completed during the visit as well as a report containing recommendations based on the findings. As long as no major health, safety, or other barriers are present, the Energy Specialist should leave an agreement/contract for work with the customer unless otherwise dictated by the customer. If barriers are present the Energy Specialist shall make clear to the customer what needs to be done to resolve the barriers in order to proceed. Once all pre-weatherization barriers are cleared, an agreement for work can be sent to the homeowner to proceed.

If the customer has received this visit based on an IIC referral to the Lead Vendor, follow procedures as dictated by the Lead Vendor for work scope and contracting.

### **2.13 Presentation and Sale of Recommended Work with Incentives**

After all data has been entered and an agreement for work generated the Energy Specialist will present the proposal to the homeowner for completion. The Energy Specialist must clearly explain all recommended measures and leave the customer with appropriate handouts for

proceeding with and preparing for the work. Follow-up information shall be provided to the customer on how to proceed. The Energy Specialist must also clearly explain what incentives are available for the customer. For a comprehensive list of available incentives, contact your Lead Vendor.

### **3.0 Software**

Collected data, proposed measures, receipts, and agreements produced at each Home Energy

Assessment must be entered into appropriate home energy assessment software approved by Program Administrators. An approximate savings in fuel will be generated for each measure proposed.

### **4.0 Reporting**

Information gathered at each home and savings proposed and achieved will be reported to the

participating Lead Vendor per requirements set forth by the Program Administrator. This will be a combination of electronic data recorded in the software and hard copy documentation.

***10.6 Mass Save Materials, Installation and Conduct Standards***

**Mass Save Home Energy Services Program  
Standard for Materials, Installation, and Conduct  
for Energy Efficiency Measure Installation Contractors**

**Initial Publication Date: May 13, 2010**

**Revision Date: January 25, 2012**

**Version 1.1**

This Standard applies to all work performed under the Mass Save Home Energy Services Program for customer contracts entered into **beginning March 1, 2012**. Program Administrators will be establishing a Quality Assurance program to verify that work meets the requirements in this Standard. Proposed changes or additions to the Standard will be considered on a regular basis by the Program Administrators or their designee.

By Program Administrators:

Berkshire Gas  
Cape Light Compact  
Columbia Gas of Massachusetts  
National Grid  
New England Gas  
NSTAR Electric & Gas  
Unitil  
Western Massachusetts Electric

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## 1.0 PROGRAM DESCRIPTION

The primary objective of the Mass Save Program (the Program) is to provide residential customers with energy efficiency recommendations that enable them to identify and initiate the process of installing cost-effective energy efficiency upgrades. The Mass Save Program makes it easy, clear, and compelling for customers to participate in all comprehensive energy efficiency programs by providing information through bold outreach mechanisms, incentives, and multiple financing options.

The Program promotes a house-as-a-system approach and focuses on the home's thermal envelope (shell insulation and air leakage conditions), mechanical systems (HVAC & DHW), and lighting and appliances to identify cost effective energy efficiency improvement and/or replacement opportunities.

This systematic approach to home improvement that addresses all aspects of building systems requires clear standards to maximize energy savings and assure customer satisfaction. It is important to note that the Mass Save Standard for Materials, Installation, and Conduct (the Standards) is primarily focused on traditional weatherization materials and strategies. The Program Administrators ("PAs") view these Standards as a "living document" that will be updated periodically as the Program continues to evolve.

The Program will coordinate with other Massachusetts programs such as GasNetworks and COOL SMART to develop consistent standards across programs as well as to assure consistent customer education and promotion of the house-as-a-system approach.

Future revisions of the Standards may include alternative/new technologies and approaches for new measures (e.g., spray foam in attics). The PAs are in the process of conducting a cost-effectiveness evaluation of new measures, measures packages, and a pay for savings rebate approach to go after deeper savings per house.

The PAs are supportive of more coordinated statewide training as a means to ensure correct installation techniques for the Program. It is expected that training requirements will increase over time in order for contractors to retain their status as an authorized program contractor. The goal is to have a sustainable and experienced workforce that is focused on achievable maximum energy savings ready and able to meet customer demand.

## 2.0 CONTRACTOR QUALIFICATIONS AND RESPONSIBILITIES

The term "Contractor" as used in this document applies to any individual or company performing covered work that is being performed within the Mass Save program. This applies equally to vendors working directly for the PAs and to independent contractors doing work for homeowners.

The purpose of these guidelines and associated information is to codify the requirements of weatherization contractors who participate in the Mass Save Program. They are intended as *minimum* standards for participation in the program.

### 2.1 LICENSES and CERTIFICATIONS

- a. CONTRACTORS must have all licenses and registrations required for their area of work by the Massachusetts Department of Public Safety. Appropriate documentation must be supplied to The Program upon request.
- b. CONTRACTORS must also obtain any certifications or other recognitions required by individual PAs.

## 2.2 MATERIALS

- a. All materials supplied must meet applicable specifications.
- b. All materials must conform to catalog listing.
- c. Material substitutions are not allowed without a written pre-approval by the PAs.
- d. CONTRACTORS will keep a MSDS on the job site for every material used.

## 2.3 PERFORMANCE OF WORK

- a. All labor to be performed in a workmanlike manner.
- b. All work must be performed in a lead-safe manner according to all State and/or Federal Requirements in force at the time of the work.
- c. All work must be performed in conformance with all applicable OSHA requirements and other governmental standards.
- d. All weatherization work must be performed in conformance with applicable BPI standards or other standards as identified by Mass Save.
- e. All work must be performed in compliance with all applicable state and local codes.
- f. All measures installed must be in conformance with the Work Order.
- g. Pre-Approved written Change Orders by the PA vendor are required before any modifications to the original Work Order are made.
- h. CONTRACTORS are *required* to make acceptable repairs for all accidental damages made to a customer's property at the contractor's expense. Both the customer and the PA vendor must be informed when damages occur. The PA vendor will make the final decision as to when acceptable repairs have been made.
- i. CONTRACTORS will treat homeowners and their property in a respectful and professional manner.

## 2.4 JOBSITE CLEAN UP

- a. CONTRACTORS are responsible to remove all construction debris from the jobsite.
- b. CONTRACTORS are responsible to restore every jobsite to its pre-work condition at project completion.

## 2.5 DOCUMENTATION

CONTRACTOR Documentation must conform to the requirements detailed in their program participation agreement including, but not limited to:

- a. Before Starting Work - CONTRACTORS must document that a blower door test and combustion safety testing have been performed and an Order to Proceed has been issued.
- b. After Work Completion - CONTRACTORS must submit documentation (signed by customer and contractor) that the approved Scope of Work is complete.
- c. The Completion document must include:
  - o An itemized confirmation that the Program Audit recommendations were addressed.
  - o An itemized list of each measure, area, R-value, etc, installed.
  - o Document that post-blower door testing and post-combustion safety testing has been performed.

- Proof of approved Change Orders.

## 2.6 COMMUNICATIONS

### 2.6.2 CONTRACTOR communications with CUSTOMER

- a. CONTRACTORS will be courteous to CUSTOMERS at all times.
- b. CUSTOMERS and PA vendor must be notified as soon as possible if an appointment must be rescheduled, according to the terms of the Contractor Participation Agreement.
- c. CONTRACTORS will clearly explain all work procedures and items to be installed to the CUSTOMERS home before and during the work process.
- d. CONTRACTORS will answer all CUSTOMER questions in an honest and straightforward manner. If the CONTRACTOR does not know the answer to a question they will refer the CUSTOMER to PA vendor for an answer. CONTRACTORS will not “make up” answers.
- e. CONTRACTORS will inform CUSTOMERS of any fragile items in the work area and request that the CUSTOMER move those items to a safe location prior to start of work.
- f. CONTRACTORS will ask CUSTOMERS for permission to use a household restroom.
- g. CONTRACTORS will keep CUSTOMERS informed regarding estimated daily arrival, break, and departure times.
- h. CONTRACTORS will document any problems and unusual situations as they occur.

### 2.6.2 CONTRACTOR communications with Mass Save

- a. CONTRACTORS will respond promptly and accurately to communications from Mass Save and PA vendors.
- b. CONTRACTORS will document problems and unusual situations and promptly report those to PA vendors.
- c. CONTRACTORS will respond promptly to address problems as they occur.
- d. CONTRACTORS will notify PA vendor of any changes to staffing that affect authorization to work in the program (certifications, background checks etc.)

## 2.7 CONTRACTOR ACTIONS REQUIRING Mass Save RESPONSE

### 2.7.1 Theft

Theft may result in immediate cancellation or suspension as a Mass Save Approved CONTRACTOR and full legal remedies including but not limited to prosecution. Theft includes but is not limited to:

- a. Charging for materials not installed or labor not incurred.
- b. Inflating the actual cost for services provided.
- c. Unauthorized removal of CUSTOMER personal property.

### 2.7.2 Other Unacceptable Actions

The following CONTRACTOR actions, as examples but not limited to, may result in immediate cancellation or suspension as a Mass Save Approved CONTRACTOR. Additional training may be required before reinstatement as a Mass Save Approved CONTRACTOR.

- a. Charging clients for services while job is open (one year period).

- b. Soliciting or performing work on a customer's home outside the scope or context of rebateable weatherization work, for customers assigned to the CONTRACTOR through the program. (Note: If the CONTRACTOR brings the customer to the program as an IIC referral or through HPC customer acquisition then this clause would not apply but additional services would be required to be on a separate non-program contract with the customer.)
- c. Providing false information to Mass Save, PA vendor, or the CUSTOMER concerning work requirements.
- d. Failure to correct job deficiencies.
- e. Use of inferior materials.
- f. Repeatedly missing timelines.
- g. Repeatedly performing work of poor quality.
- h. Leaving the customer's property in a potentially dangerous condition.

## 2.8 BUILDING PERMITS

CONTRACTORS are required to obtain and to pay for all applicable permits, certificates of inspection, and license fees related to work performed through the Mass Save program.

## 2.9 CONTRACTOR'S INSURANCE

All Mass Save CONTRACTORS shall:

- a. Provide insurance at the coverage amounts listed in the program participation agreements with respect to the work they perform within the Program;
- b. Maintain this insurance at their own expense and in full force and effect for the full term of the contract;
- c. List each Mass Save Program sponsor as "additionally insured" on insurance certificates.

All policies shall be issued by companies authorized to write that type of insurance under the laws of the Commonwealth of Massachusetts.

CONTRACTORS shall provide minimum coverage with respect to the operations performed by any employee, subcontractor or supplier, as detailed in program participation agreements.

## 3.0 HEALTH AND SAFETY

### 3.1 OVERVIEW

The health and safety of CUSTOMERS, PROGRAM staff and CONTRACTORS is of primary concern to the Mass Save Program. It is important that all personnel maintain a high level of awareness concerning the potential hazards associated with the weatherization process. The requirements set forth in this standard provide only general guidelines for health and safety concerns.

CONTRACTORS must familiarize themselves with all the health and safety issues associated with weatherization. More specific information concerning indoor air quality problems can be obtained through the U.S. Environmental Protection Agency (EPA) and the U.S. Consumer Product Safety Commission.

Detailed specifications regarding the health and safety of workers in the construction industry can be found in Construction Industry OSHA Safety and Health Standards (29 CFR 1926/1910) that is available from the U. S. Department of Labor.

[http://www.osha.gov/pls/oshaweb/owastand.display\\_standard\\_group?p\\_toc\\_level=1&p\\_part\\_number=1910](http://www.osha.gov/pls/oshaweb/owastand.display_standard_group?p_toc_level=1&p_part_number=1910) )

The above standards are applicable to all CONTRACTORS, their employee's, associated workers, and all SUB-CONTRACTORS providing services using funding under the Mass Save program.

Each home weatherized under the Mass Save program must be individually assessed to determine the existence of potential hazards to CONTRACTORS or CUSTOMERS.

If unsafe conditions exist that would endanger the health or safety of the CUSTOMERS or weatherization CONTRACTOR, and those conditions cannot be corrected, no Mass Save work may be started on that home.

A Mass Save energy assessment must be completed prior to CONTRACTOR'S work. It is the CONTRACTOR'S responsibility to complete Combustion Safety Testing in accordance with the Building Performance Institute (BPI) Technical Standards for the Building Analyst Professional both prior to the work commencing and after the work is completed (test in and test out).

CONTRACTORS, their employee's, associated workers, and all SUB-CONTRACTORS are required to take all reasonable precautions against performing work on homes that will subject occupants to health and safety risks.

CONTRACTORS shall maintain a copy of their Health and Safety Policy, and train all employees accordingly. They shall supply Material Safety Data Sheets (MSDS) for products and materials used by their crews and have these documents available on all jobsites.

Adherence to worker health and safety and applicable OSHA standards are required for all jobs performed by CONTRACTORS their employee's, associated workers, and all SUB-CONTRACTORS.

CONTRACTORS shall comply with all state and federal lead safe work policies and practices. (See Appendix 16.1)

CONTRACTORS shall fully document and communicate to the PA vendor all health/safety related problems and concerns that might inhibit the installation of specified measures to program standards or could result in injury or property damage.

### 3.2 CONFIRM COMBUSTION APPLIANCE OPERATION

A. CONTRACTORS must confirm through documentation that a Carbon Monoxide test and complete combustion appliance inspection was performed before beginning work, and that a working CO alarm is in place. Before October 1, 2011, an Order to Proceed from the Program will be sufficient to meet this requirement. Beginning October 1, 2011, CONTRACTORS will be responsible for conducting this "test in" in accordance with the BPI Technical Standards for the Building Analyst Professional and providing the documentation.

B. Before leaving the site, the CONTRACTOR or other entity approved by the Program Administrator, shall perform combustion safety tests in accordance with the BPI Technical Standards for the Building Analyst Professional. Beginning October 1, 2011, CONTRACTORS will be responsible for conducting these tests and providing the documentation.

C. Individuals performing these tests shall either hold the appropriate BPI certification, as determined by the Program Administrator, shall be an employee of a BPI Accredited company, or shall have other credentials approved by Mass Save such as a combustion safety module supplementing Boot Camp Authorization.

D. Results of these tests must be reported by CONTRACTOR in the completion documentation.

E. If systems fail the combustion safety tests in the BPI Technical Standards for the Building Analyst Professional, CONTRACTOR must immediately notify occupants and the Program.

Exceptions:

Tests are not required:

- 1) On direct vent or power vented appliances. CO testing should still be done whenever the exhaust port is accessible.
- 2) Where equipment is located in an isolated mechanical room with all combustion air from outside including from a vented attic or crawlspace. Note that all equipment in open basements must be tested.
- 3) When residents in a multi-unit dwelling are not being served by the Program, equipment belonging to those units does not need to be tested. However, visual inspection of that equipment should be made to identify potential health and safety concerns. If any potential concerns are noted, or if the results for the equipment that is tested may be adversely affected by including the other equipment, disclosures must be made to the customer and the building owner.

#### **4.0 MEASURE INSTALLATION GUIDELINES**

Through the Mass Save program, thermal shell improvements may be installed only after a comprehensive whole house assessment is conducted by a program-approved entity and an approved Scope of Work has been developed.

It is only through a whole house assessment that site-specific appropriate recommendations can be made. While a home may benefit from thermal shell improvements in theory, there may be existing conditions that would preclude safe implementation of the possible energy saving improvements.

Examples of such conditions include, but are not necessarily limited to

- Existing moisture problems
- Mold or the appearance of mold like substance
- Structural concerns
- Active knob-and-tube wiring
- Existing conditions of specific building components
- Combustion safety issues
- Indoor air quality
- Inaccessibility
- Infestation

Correcting these conditions is outside the scope of the Mass Save program.

Conditions precluding implementation of thermal shell improvements must be documented and explained to the individual customer. If the customer corrects the noted concerns at their own expense, then the recommended thermal improvements may be able to be implemented. Such corrections must be made prior to program work, and must be documented in writing to the satisfaction of the program.

Not every condition will be found before work. If any of the above is discovered during the course of approved work, the CONTRACTOR must contact the PA vendor for instructions to:

1. Disclose and leave specific areas unaltered
2. Disclose and suspend work until alterations are made by others
3. Disclose conditions to homeowner and proceed with work
4. Disclose and alter the work scope to account for conditions

## 5.0 MATERIALS

All materials shall be installed according to manufacturers' instructions and the standards in this section.

### 5.1 IMPERMEABLE AIR BARRIER MATERIALS

Materials must be durable, and restrict airflow through the material to no greater than 0.004 CFM<sub>75</sub> per square foot as tested in accordance with ASTM E283 or E2178. Such materials include:

- Plywood,
- OSB,
- ½" gypsum board,
- Rigid closed cell foam boards meeting ASTM C578 and ICC ES AC12,
- Rigid fiberglass board with flame spread 25 FSK facing,
- Sheet metal flashing and aluminum coil stock,
- Foil faced bubble wrap,
- Peel-and-stick flashing membranes,
- Other air barrier materials as listed in Canada Mortgage and Housing Corporation Research Highlights Technical Series 98-109, "Air Permeance of Building Materials" (<http://www.cmhc-schl.gc.ca/publications/en/rh-pr/tech/98109.htm>)
- Spray applied foams that meet ICC ES AC 377 including:
  - 2-part open cell polyurethane foam (0.5pcf),
  - 2-part medium density closed cell spray polyurethane foam (2.0pcf)

### 5.2 SEALANTS

All caulking materials must be rated for a minimum 20-year life. Acceptable sealants used to join materials and block airflow include:

- Foam sealants that meet ICC ES 377 and ASTM C1642-07 such as:
  - 1-part urethane foam, low CFC (e.g. Great stuff, Pur-fil, Insta-foam, or equivalent)
  - 1-part urethane fire-block foam rated for sealing gaps in wood fire blocking
  - 2-part urethane foam kits 1.75pcf density, 2-part Flame Spread 25 foam kits 1.75pcf,

- Siliconized latex sealants meeting ASTM C834,
- Silicone, 1-part gun grade urethane and other elastomeric sealants meeting ASTM C 920, ("Silicone" refers to 100% silicone caulk, clear or pigmented—not acrylic)
- Water based duct sealant meeting UL 181A-M, UL 181B-M ("RCD #6" or equivalent)
- Sealants rated for contact with chimneys and combustion vents such as:
  - Non-combustible fire barrier caulk or furnace cement meeting ASTM E 136
  - Silicone high temp RTV listed for use on gas vents to 500 degrees F, meeting ASTM C920

### 5.3 WEATHERSTRIPPING

- Windows: Schlegel (PF-524-AB, PF-512-AB, PF-102) or equivalent vinyl
- Door, interior: Schlegel "Q-Ion" strips, or equivalent other product approved by PA vendor.)
- Doors, exterior: Schlegel "Q-Ion with carrier" or equivalent other product approved by PA vendor.
- Door sweeps will be aluminum & vinyl, Dennis 905, Pemko P307-AV or equivalent
- Weatherstripping will have a deflection range of at least 1/4". Weather-stripping will remain compliant in cold weather

### 5.4 ACCESSORIES AND MATERIALS RELATED TO ATTIC PREP

- Glass or mineral fiber insulation as a backer for other sealants, meeting ASTM 665,
- Backer rod (preformed closed cell foam rope) as a backer for other sealants,
- 6 mil (0.150 mm) polyethylene sheet (used for ground cover or winter-warm side application only)
- Moisture permeable air impermeable house wrap, flame spread 25 (cold side cover),
- Netting to hold blown insulation in open cavity,
- FSK or vinyl faced duct wrap insulation R-8 nominal 3" meeting ASTM C1290, and C1136 (facing)
- Soffit ventilation air chutes (prop a vent or equivalent) for 16 or 24 inch rafter spacing,
- Insulated flex duct 4 and 6 inch diameter for exhaust fans

### 5.5 INSULATION MATERIALS

- Cellulose (blown-in) loose fill insulation meeting ASTM C739, 16 CFR 1209, 1404,
- Specific Cellulose ICC ES reports required for fire rated details (e.g. ESR-1996 US Greenfiber, ESR-2217 NuWool),
- Mineral fiber batt and blanket insulation meeting ASTM 665,
- Mineral fiber (blown-in) loose fill insulation meeting ASTM C764,
- Fiberglass wool engineered for resisting airflow to less than 3.5cfm/sq ft @50pa, and tested to ASTM C522 (e.g. JM Spider, Knauf Perimeter Plus)
- Rigid closed cell foam boards meeting ASTM C578, ICC ES AC12,
- Specific foam board ICC ES reports required for uncovered use (e.g. NER-681 Thermax, ESR 2142 Dow XPS),

Rigid Fiberglass faced insulation boards meeting ASTM C553, C612, and C 1136 for facing

## 6.0 INSTALLATION

### 6.1 AIRSEALING



Installation of air sealing materials shall follow the manufacturers' instructions, Massachusetts Building Code (780 CMR), and all other appropriate codes.

Prior to installation, test results shall be provided to PA vendor in ICC ES reports or UL listed detail where specific testing is required by code for a specific use. (For example, low density foam left exposed in an unoccupied attic space, cellulose fiber installed as an air retarder and fire-stop in a rated wall between units.) Approval by the local code authority having jurisdiction must be obtained in writing prior to installation for uses beyond the specific listing.

#### 6.1.1 Performance Criteria

CONTRACTORS will clearly define where the pressure and thermal boundaries of the home are to be, and insure that access hatches, framing voids and chimney, plumbing and wiring chases between the conditioned space and unconditioned attics, knee walls and other buffer zones are tightly sealed.

Air sealing measures at all openings between intact building materials shall be continuous, durable, able to support all expected loads and impermeable to airflow as indicated by chemical smoke at a pressure difference of 50 Pascals.

#### 6.1.2 Conditions for Materials Use

- a. Air impermeable barrier materials and sealants shall be used within their listing and installed in conformance with all applicable codes and manufacturer's recommendations.
- b. Sealant materials applied to exposed joints in interior or exterior finish shall meet all performance requirements, blend in with adjacent materials, and be acceptable to the owner.
- c. Backing shall be provided for any sealant installed in gaps wider than 3/8" whether exposed or covered and all joints shall be tooled.
- d. Rigid barriers shall be cut to friction fit openings with gaps not more than 1" for foam sealant and extra material on edges for fasteners.
  - I. Support shall be provided to prevent sagging.
  - II. Larger enclosures of rigid foam or fiberglass board barrier material for pipes, whole house fans, or fold down stairs shall be fastened and sealed at all edges with weatherstrip provided at operable joints and edges sealed to the substrate where fixed.
- e. Only non-combustible rigid barriers such as sheet metal or cement board shall be used to bridge the clearance space to heat sources such as chimneys and metal combustion vents.
- f. Only non-combustible sealants such as furnace cement or E 136 rated caulk shall contact solid fuel chimneys or oil vents; for gas vents high temp (500 F, 600F) silicone RTV approved for gas vents may be used to seal the gap between the rigid barrier and heat source.
- g. In addition to the airtight non-combustible barrier and seal at the opening, a clearance dam is required to maintain 3" or greater clearance around the chimney or vent for the full height of the insulation. Unfaced mineral fiber meets this criteria but a folded metal collar 2-4" taller than the final height of the insulation, folded into the vent to close the top space and fastened at the bottom and vertical seam is recommended.
- h. A minimum 6" clearance to single walled metal flue pipes shall be maintained to comply with BPI standards and code requirements. This includes kitchen exhaust ducts.

- i. 1 part sealant foam is listed for sealing gaps and annular spaces around penetrations of up to 1-5/16" in width and 1.5" full depth of wood plate for firestop. *Firestop foam is combustible and not allowed for use in contact with heat sources.*
- j. 2-part sealant foam requires backing for openings from 2" to 4" wide and infill of rigid barrier material for openings wider than 4"
- k. Insulation must be kept 3" or more away from the sides of a non-IC rated recessed light fixture (including any wiring box or ballast) and no insulation is allowed above the fixture. Unless otherwise approved by the PA vendor, all recessed fixtures shall be treated as non-IC rated. (PA vendors that allow different treatment for IC rated fixtures will provide additional requirements for treatment and documentation.)
  - i. If an air tight box is installed to limit air leakage, it shall be sized for clearance from the fixture, taller than the adjacent insulation and with a non-insulating moisture permeable top of gypsum board or equivalent material.
  - ii. If access does not allow installation of the box, 3" clearance from insulation is still required with no insulation allowed above.
  - iii. The gap between the fixture and ceiling may be sealed with silicone or joint compound.
  - iv. For air tightness and insulation continuity, replacement with an airtight IC rated fixture or infill of the opening and replacement with a flush mount fixture are preferred recommendations.
- l. Dimensional limits:
  - i. Siliconized acrylic shall not be used in openings or cracks over 3/16" without a backer, and generally should not be used in openings or cracks more than 3/8".
  - ii. Pure silicone shall not be used in openings or cracks over 3/8" without a backer, and generally should not be used in openings or cracks more than 1/2".
  - iii. Foam shall not be used to span gaps or openings more than 1 1/2" without a backer material.
- m. Flexible air barrier or other sheeting materials approved for air sealing use shall not span gaps larger than 24" without the use of framing for support.
- n. Foam sealant will not be used where exposed to sunlight or other ultraviolet sources. It will not be used near any heat producing device unless a clearance of 3" can be maintained for double walled flue pipes and masonry chimneys, and 6" for single walled flue pipes.

### 6.1.3 Typical Air Sealing Locations

In every specified work area: locate, uncover and seal all building air leakage pathways between conditioned and unconditioned areas, as defined by each PA vendor.

These areas can include accessible attics, side attics, crawlspaces, unconditioned basements, attached garages, and leakage from basement to outside; gaps, penetrations and fixture openings that allow interior air into inaccessible roofs, slants and outside wall cavities; and major direct openings between conditioned space and outside.

Basements are typically semi-conditioned spaces, and air sealing between the basement and the living space is therefore not warranted in the scope of work.

### 6.1.4 Common air leakage details include but are not limited to:

- Dropped soffits, dropped ceilings and ceiling height changes
- Plumbing wet walls, duct chases, duct seams, joints and boot leaks

- Chimney and combustion vent chases
- Openings behind and under tubs, showers, and tub/shower enclosures
- Wall tops open into attic, gaps between gypsum ceiling and wall plates
- Annular space at wiring, pipe penetrations through plates, and at ceiling fixtures
- Floors open under kneewalls, walls open at level changes and gable ends
- 2<sup>nd</sup> story floors open to attached roofs over porches and additions or garages
- Inside framing open into attic stairs and landings,
- Pocket door framing open into floor above and exterior walls
- Seams and openings in walls and ceilings between attached garages and house
- Non-IC recessed light fixtures
- Bath and kitchen fans venting into the attic
- All joints seams and penetrations in surfaces without an air retarding membrane
- Gaps in tongue in groove paneling where angles change at hips, valleys, and where walls meet slants and ceilings.
- Acoustical tile and suspended ceilings with no gypsum
- Missing gypsum behind decorative ceiling light trays; built in cabinets in kneewalls
- Missing gypsum or open joints above decorative ceiling beams
- Gaps below baseboard and behind carpet nailing strip at subfloor joint to exterior wall
- Common wall openings between dwelling units
- Attic access openings, operable doors and hatches without tight weatherstrip
- Pull down attic access stair covers
- Rim joist junctions and gaps between sill and foundation.
- Utility penetrations and direct openings through foundation walls
- Openings in gypsum board above suspended ceiling and behind cabinets
- Openings between window and door assemblies and their respective jambs and framing

#### 6.1.5 Confirmation of Air Sealing Effectiveness

Confirmation that air sealing is continuous across all openings in a specified area shall be performed by visual inspection of air leakage locations, and one of the following methods:

- Visual inspection aided by a chemical smoke test during blower door operation,
- Whole building air leakage test.
  - Whole building air leakage test results as specified by PA vendor. The air leakage test shall be made following equipment manufacturer's instructions and in conformance to Standard CAN/CGSB 149.10-1986, ASTM E-1827-07, or ASTM E-779-03,or
- Infrared inspection of the area aided by blower door operation.
  - When performed on a specified area or whole house, infrared inspection shall be done in accordance with ASTM C1060 (1997) and air leakage pathways determined using ASTM E1186 (2009).

#### 6.2 DUCT SEALING/ DUCT INSULATION

Duct sealing and insulation improvements are currently approved measures through the Mass Save's COOL SMART program if installed per that program's technical and administrative requirements by an approved contractor. See <http://www.masssave.com/about-mass-save/programs/cool-smart/> for details.

### 6.3 ATTIC INSULATION

Installation must meet or exceed the Massachusetts Building Code. Criteria for the installation of insulation include but are not limited to the additional standards set forth below.

#### 6.3.1 Attic Air Sealing Confirmation

Before insulating the attic, the CONTRACTOR will confirm that all bypasses at chimneys, soil stacks, perimeter walls, dropped ceilings, kneewall floors and wall openings, non-IC recessed light enclosures, other attic air sealing is complete per section 6.1 above. If these areas are not properly sealed, CONTRACTOR must notify program to determine next steps before proceeding.

Recessed light fixtures shall be protected from contact with insulation as noted in section 6.1.2.k.

#### 6.3.2 Attic Preparation

Confirm attic prep per ASTM C1015-06 and MA Basic Insulation Authorization including:

- a. Clearance dams that maintain 3" space confirmed installed at all masonry or double walled metal combustion venting systems. Clearance dams must maintain 6" space confirmed installed at all single wall pipe combustion venting systems.
- b. Clearance dams installed at attic access, bath fans, air handlers and between blown and storage areas.
- c. Permanent damming shall be installed around all attic hatch covers in a manner that will not interfere with the opening of the hatch cover, and that when opened will prevent insulation from falling into the living area, and that will allow safe access into the attic.
  - i. The dam shall be made of ½" thick or greater wood and be tightly sealed at the base and seams, or fiberglass batt laid flat on all four sides around the hatch, or other materials approved by PA designee.
  - ii. Insulation surrounding the dam must equal the R-value of the rest of the attic space;
  - iii. Insulation should not taper to the damming or be less because of the height of the dam.
- d. Install vent chutes at all soffit vents and provide wind baffles or block under chutes,
- e. Ensure that all exhaust equipment ducting is terminated to the outside of the structure. Provide insulation thickness markers 1/300 sq ft for open blow area.

#### 6.3.3 Attic Access Doors

- a. Insulate and tightly weather-strip all attic access doors.
- b. Fasten rigid insulation to access hatches. If infeasible, fiberglass batts may be used.
- c. Provide minimum R-14 to hatches and R-10 enclosure at pull down stairs (with air seal gasket, e.g., Thermadome or equivalent) and behind walkup doors.
- d. Rigid foam used shall be rated for exposed use in attics on ICC ES report, and meet Sections R-316.5.4 and 316.6 requirements of IRC 2009.
- e. Provide latch, hook fastener, or other mechanical closure on vertical access doors to keep them tight against weatherstrip when closed.

#### 6.3.4 Attic Venting

- a. Provide attic venting per code if included in the approved Scope of Work.
- b. Provide access openings to inaccessible attics where feasible.

#### 6.3.5 Flat Attic Insulation

- a. Blow in attic insulation level over entire area specified at the depth required to give the required settled R-value.
- b. Use the number of bags to meet listed coverage per manufacturers' specifications.
- c. Provide attic information card per ASTM C1015-06 and 16CFR 460 requirements.
- d. The program will provide a form which the installer must sign, date and post in an easily visible location (on the electrical panel or a framing member adjacent to the attic access) showing the following information:
  - i. Insulation material installed,
  - ii. Installed thickness,
  - iii. Coverage area,
  - iv. Installed R-value,
  - v. Number of bags used or pounds installed per FTC Rule 16 CFR 460.

#### 6.3.6 Sloped Ceiling Insulation

Sloped ceilings (between kneewall and upper attic flat) may be dense packed per section 6.5.3 using cellulose.

Exception: Where interior surface will not support dense pack, reduced density is allowed.

#### 6.3.7 Open Cavity Insulation

- a. Install mineral fiber batt or blanket insulation in all open wall cavities or open floors to R-value in work scope.
- b. Installation of blanket or batt insulation shall conform to ASTM C1320 with cavities completely filled with no voids, gaps or compressions.
- c. Batt insulation MUST always be installed in full contact with the warm side air barrier.
- d. Batt insulation installed in walls MUST always have a solid air barrier on all six sides of the cavity when access allows.
- e. Batt insulation with a kraft or foil covering must be "face stapled" to the framing or friction fit.
- f. Loose fill insulation (cellulose or mineral fiber) is allowed in open walls, floors open to below, when sprayed in or blown behind netting, rigid foam, drywall, or other barriers.

#### 6.3.8 Rigid Foam Board

Where rigid foam board is installed over mineral fiber batt insulation or on another attic surface, use foam board listed for uncovered use in attic. As an alternative, install a thermal barrier or prescriptive ignition barrier per IRC 2009 R316.5.3 and MA code. In all cases follow manufacturer's installation requirements.

#### 6.3.9 Floor Blocking

Where present, the kneewall floor joist opening from the attic floor to conditioned space under the kneewall shall be blocked airtight with a barrier sealed in place below the interior face of the kneewall.

#### 6.3.10 Dense Pack Floor Insulation

At floored areas inaccessible to air sealing using barrier materials, CONTRACTOR shall densepack to retard airflow. Acceptable materials include:

- a. Cellulose insulation at 3.5 lbs/cu ft or greater density;

- b. Fiberglass wool tested for air resistance at 2.2 lbs/cu ft or greater density. If fiberglass wool is used, a product information cut-out from the bag must be included with the certificate to verify that material was tested to ASTM C522.

Methods can include lifting one floorboard to gain access to each cavity and inserting a 2 to 2-1/2" insulation hose into the floor for faster production. Material use shall be confirmed to match bags used per unit area to achieve density targets.

Flooring that has been removed for access to install insulation shall be replaced to match original site condition. Flooring that has been drilled shall be repaired with wooden plug matching the hole diameter and set flush to the top of the floor.

#### 6.4 ATTIC VENTING

6.4.1 Provide attic venting per code with roof, soffit, gable, ridge vent or a combination. Provide soffit vent chutes for each soffit vent.

6.4.2 Follow all manufacturer's instructions and applicable codes. Flash properly, seal and fasten to maintain roof and cladding drainage.

6.4.3 CONTRACTOR shall provide documentation showing the manufacturer's net free air rating for any products used.

#### 6.5 CLOSED SIDEWALL INSULATION

##### 6.5.1 Performance criteria

In existing closed cavities where air sealing is not feasible, densepack insulation into every cavity to prevent settling with no voids or escape routes for heat and get an extra benefit of reduced hidden airflow and protection that wraps around the whole house and connects to the airtight attic.

##### 6.5.2 Pre-Work Inspection Criteria

Pre inspections are to be performed in compliance with ASTM C 1015 and MA Insulation Authorization. Inspect all walls for pre existing hazards including:

- Moisture entry and buildup,
- Weak or damaged interior finish materials,
- Hazardous wiring, and
- Potential heat sources in or adjacent to wall cavities.

Confirm that cavities are intact and openings into the house are blocked.

##### 6.5.3 Wall Insulation Procedure

- a. Gain access to every wall cavity.
- b. Pack insulation uniformly into all corners.
- c. Confirm the number of bags and pounds of material used for a specified area of 4" wall cavities is consistent with:
  - i. 3.5 lbs/cu ft (1lb/sq ft) for cellulose, or
  - ii. 2.2lbs/cu ft (0.6lb/sq ft) for fiberglass wool tested for airflow resistance per ASTM C 522.
- d. In cases where wall finish is intact but will not support 3.5 lbs/cu ft density, use material listed for densepack at 2.2 lbs/cu ft., or contact PA designee.

- e. Repair holes that have been drilled.
  - i. Interior holes shall be plugged and an initial coat of suitable patching material shall be applied.
  - ii. Exposed exterior holes in wood siding shall be made weather tight with a wooden plug and patched with exterior grade filler.
  - iii. Hidden holes (beneath siding) shall be plugged and covered to make the existing drainage plane and other weather barriers complete.

#### 6.5.4 Wall Cavity Confirmation

Confirm cavity pack is effective and the machine adjustment is within limits by:

- a. Testing airflow at 50 pa with smoke at a completed but uncovered installation hole, or
- b. Testing airflow with chemical smoke at first application hole in completed cavity while blowing adjacent cavity.

#### 6.5.5 Inspection

- a. Void areas greater than 10 sq ft per 1000 sq ft of achievable wall area, as determined by Program quality assurance procedures, shall be filled by the CONTRACTOR at no additional cost to the homeowner or the program. When instructed to do so by the Program inspector, the CONTRACTOR will return to correct job deficiencies within 14 days of notification.

### 6.6 FLOOR INSULATION

Floor systems that are determined to be the thermal boundary will be insulated and air sealed in accordance with Massachusetts Building Code and Mass Save Application Details.

#### 6.6.1 Performance criteria

An air barrier shall be created across subfloor by sealing large gaps and openings including any ducts in unconditioned space. Floor insulation shall cover all exposed subfloor to level specified for as continuous a thermal barrier as possible.

#### 6.6.2 Preparation

- a. Air sealing of a crawlspace or basement ceiling shall be performed per section 6.1 above and the MA Basic Air sealing Authorization.
- b. Inspection before installation shall be made in conformance with ASTM C1320-09.
  - i. Inspect the attic, crawlspace, or other area to be insulated, postpone installation until:
    - Potentially faulty wiring is corrected and confirmed OK by a licensed electrician
    - Moisture damage and/or entry is corrected and sources controlled
    - Ground cover is in place over exposed soil in crawlspaces wherever accessible. Uncovered conditions must be disclosed to customer.
      - If an accessible dirt floor area is vented per code, a vapor barrier is still recommended.
      - If a dirt floor area is deemed inaccessible AND insufficiently vented, then sufficient ventilation must be added OR the crawlspace must be made accessible, UNLESS the exposed dirt floor comprises less than 10% of the total footprint of the building.
    - All openings allowing air between conditioned space and attic are sealed
- c. Confirm that caulk, gasket, or other sealant is installed at penetrations of the interior wall or floor including plumbing, electrical, heat registers, and grills.

### 6.6.3 Installation

- a. Installation of mineral fiber batt or blanket insulation in open cavities shall be made in conformance with ASTM C 1320 and MA code. Exception, facing if any shall be in direct and complete contact with interior surface - no inset stapling allowed in floor.
- b. Installation of cellulose or fiberglass blowing wool into closed cavities shall be made in conformance with attic floor insulation methods above 6.3.11 or wall insulation in 6.5.
  - access shall be gained into every cavity with least damage possible and lead safe process in place for painted surfaces in homes built prior to 1978.
  - material use per unit area shall match weight required to give target densities of 3.5lbs/cu ft for cellulose and 2.2lbs/cu ft for fiberglass wool tested for airflow resistance
- c. Install batt or blanket insulation to:
  - Maintain 3" clearance from non-IC rated lights and heat sources, none placed above
  - Completely fill every cavity to required depth or more
  - Where double layers are installed over floors, cross the layers with no gaps between layers
- d. Where batt fiberglass is installed beneath floors, insulation shall be in full contact with floor above using wire, screen, nylon mesh fastened in place
  - Fit to length and placed snug to edges without gaps, voids or compressions
  - Cut and fit around all cross-bracing, outlets, wiring, into narrow cavities
  - No exposed facings rated higher than flame spread 25 left
  - Where vapor retarder is installed, place to warm-in-winter side
  - Never place insulation between piping and the warm surface, to prevent freezing.

### 6.6.4 Rim Joist Insulation

- a. When approved within the scope of work, rim joist framing determined as the thermal boundary shall be insulated to a minimum of R-10 with spray polyurethane foam or rigid foam board and be sealed as defined in the air sealing section of this document. Where spray foam or rigid board are infeasible, other insulation materials may be used, such as 1-part foam with fiberglass batt.
- b. CONTRACTOR will confirm no insulation is placed between piping and the warm side of the rim joist framing to prevent freezing.

## 6.7 FOUNDATION INSULATION

When approved within the scope of work, foundation walls that are determined as the thermal boundary may be insulated to a minimum of R-10 and be sealed as defined in the air sealing section of this document. Prior to application, confirm that roof runoff, surface water, and ground water are drained properly.

### 6.7.1 Performance criteria

Basement or crawlspace shall be brought inside the thermal/pressure boundary by installing rigid insulation at inside of foundation wall, sealed from subfloor to below grade.

### 6.7.2 Preparation



Primary air leakage shall be substantially reduced by sealing gaps at the rim joist, sill and surface of the foundation wall.

### 6.7.3 Installation

- a. For basements attach R-5 or higher foil faced isocyanurate board listed for uncovered use to foundation wall, full height; and cut pieces to fit into rim joist and across sill. Seal gaps in foam board edges at rim and sill; and tape seams in foam board on wall
- b. For crawlspaces attach R-5 or higher XPS rated for uncovered use in crawlspaces to foundation wall, to 24 inches below grade; and cut and fit pieces to fit into rim and across sill. Seal gaps in foam board edges at rim and sill and tape seams in foam board on wall.
- c. If XPS foam board is installed in a basement beyond the listing for uncovered use, follow a. and cover foam with thermal barrier

## 6.8 WEATHERSTRIPPING

Approved window weatherstripping shall be attached as per manufacturers' instructions to meeting rail, sill & sash channels. (Note: if applicable, PF-524-AB may be stapled to the sash itself instead of sill & sash channels.) Door weatherstripping installed on interior of doors will be stapled to top and both sides of door. Approved door sweeps shall be attached as per manufacturers' instructions to bottom of door.

## 7.0 WINDOW REPLACEMENT

Windows shall be installed according to manufacturer's instructions to assure proper operation and moisture protection. Rough openings shall be air sealed to be air tight prior to installation of casings and sills. Newly installed windows shall be inspected and verified for proper operation of all hardware and locking mechanisms.

Refer to EPA guidelines and local codes for requirements for retrofit window installations in locations where lead and/or asbestos may be present.

## 8.0 HEATING SYSTEM REPLACEMENT

The furnace or boiler that is to be installed must meet the minimum AFUE ratings set by the Mass Save program. Installation is to be completed in accordance with the manufacturers' instructions while following the State and Local Codes. Any questions should be communicated with the PROGRAM and/or Authority Having Jurisdiction.

## 9.0 AIR CONDITIONING SYSTEM MEASURES

The air conditioning system that is to be installed must meet the minimum energy ratings set by the Mass Save program. Installation is to be completed in accordance with the manufacturers' instructions while following the State and Local Codes. Any questions should be communicated to the PA vendor and/or Authority Having Jurisdiction.

## 10.0 MECHANICAL VENTILATION

Contractor is responsible for ensuring that the house meets BPI standards for fresh air ventilation.

## 11.0 LIGHTING MEASURES

The lighting unit that is to be installed must meet the maximum energy use set by the Mass Save program. Installation is to be completed in accordance with the manufacturers' instructions and fixture restrictions.

## **12.0 DOMESTIC HOT WATER MEASURES**

The domestic hot water unit that is to be installed must meet the minimum Energy Factor ratings or energy efficiency ratings set by the Mass Save program. Installation is to be completed in accordance with the manufacturers' instructions while following the State and Local Codes. Any questions should be communicated with the PROGRAM and/or Authority Having Jurisdiction.

## **13.0 QUALITY ASSURANCE**

### **Quality Assurance (In-field Quality Assurance Inspections)**

- Customer Discussion
- Visual Inspections and Diagnostic Tests
- Inspection Documentation
- Contractor Follow-up

***The program has the goal of performing on-site in-process and post installation quality assurance inspections where major measures have been installed.***

Any issues identified during on-site inspections will need to be successfully addressed prior to release of CONTRACTOR payment.

### Contractor Evaluation

CONTRACTORS will be evaluated on an ongoing basis throughout the Program Year based on work quality, customer service, and quality of program documentation. CONTRACTORS should expect random and unannounced quality control evaluations on a minimum of 10% of their jobs. This is in addition to the standard Final Inspections performed on all work. Evaluations will be performed by Final Inspectors, Field Supervisors, Program Managers, and/or the Quality Control Department, using a standard evaluation format (see Evaluation Form Attachment).

CONTRACTORS who repeatedly perform poorly on evaluations, and CONTRACTORS who repeatedly receive fails (excluding Assessor fails) on jobs, are subject to probationary actions and additional training as determined by the PA Vendor. CONTRACTORS who fail to improve after their probationary period are subject to suspension and/or termination as UTILITY Approved CONTRACTOR.

In addition, CONTRACTORS who repeatedly fail to meet timelines, generate an undue number of CUSTOMER complaints, and fail to adequately fulfill warranty obligations are eligible for suspension and/or termination.

## **14.0 Program Sponsors**

Columbia Gas of Massachusetts  
Berkshire Gas

Cape Light Compact  
National Grid  
New England Gas  
NSTAR Electric & Gas  
Unitil  
Western Massachusetts Electric

## **15.0 REFERENCES:**

Documents Published by the Canadian General Standards Board (CGSB)  
Place du Portage, III, 6B1Gatineau,  
Québec, K1A 1G6 Canada  
Telephone: (819) 956-0425; Fax: (819) 956-5740; [www.pwgsc.gc.ca/cgsb](http://www.pwgsc.gc.ca/cgsb)  
CAN/CGSB 51.71-2005 Depressurization Test

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NFPA 54-2006, ANSI Z223.1-2006 National Fuel Gas Code

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International Residential Code - 2006

## **16.0 INFORMATIVE APPENDICES**

- 16.1 Health and Safety Guidance
- 16.2 K &T Form 2008
- 16.3 Application Details

These Appendices provides general information about safety issues for the Contractor and homeowner, as well as sample documentation that contractors may use.

## APPENDIX 16.1

### HEALTH AND SAFETY GUIDANCE

#### **ASBESTOS**

**Health/Safety Concerns:** The US Environmental Protection Agency's description is: "The most dangerous asbestos fibers are too small to be visible. After they are inhaled, they can remain and accumulate in the lungs. Asbestos can cause lung cancer, mesothelioma (a cancer of the chest and abdominal linings), and asbestosis (irreversible lung scarring that can be fatal). Symptoms of these diseases do not show up until many years after exposure began. Most people with asbestos-related diseases were exposed to elevated concentrations on the job; some developed disease from exposure to clothing and equipment brought home from job sites."

**Sources in Homes:** Until its use was strictly limited in the 1970s asbestos was used in a large number of building products. The most common applications that could involve interaction with weatherization personnel include:

- Boiler insulation
- Furnace insulation
- Pipe insulation
- Duct insulation
- Asbestos cement sidewall shingles
- Vermiculite insulation
- Floor tiles
- Acoustical materials

To minimize exposure:

- Learn to recognize suspected asbestos containing materials.
- Avoid disturbance of possible asbestos containing material that is friable. Friable asbestos is "any material containing greater than one percent asbestos by weight or volume that hand pressure can crumble, pulverize or reduce to powder when dry, or any asbestos containing materials that can reasonably be expected, as a result of the demolition or renovation to be undertaken, to become pulverized through breaking, chipping, crumbling, crushing, or other means of rendering fibers available to the ambient air."
- DO NOT CONDUCT A BLOWER DOOR TEST ON A BUILDING WHERE **FRIABLE** MATERIALS SUSPECTED OF CONTAINING ASBESTOS IS PRESENT.
- When Asbestos Cement sidewall shingles are removed and reinstalled as part of a wall insulation procedure, the CONTRACTOR must complete the work in compliance with the requirements of the Massachusetts Department of Environmental Protection.

**This information is a general program guidance for Weatherization personnel and does not provide the detailed specifications for the proper handling of possible asbestos containing material. State law concerning asbestos abatement can be found in Commonwealth of Massachusetts Department of Public Health Asbestos Abatement Regulation; CMR 410.353**

and 453 CMR 6.00, THE REMOVAL, CONTAINMENT OR ENCAPSULATION OF ASBESTOS (<http://www.alewife.org/asbestos/453cmr6.txt>)

## **LEAD**

**Health/Safety Concerns:** Ingestion or absorption of lead into the blood stream is a serious health hazard causing brain damage over a period of time. This can be a particularly serious problem with small children, who may ingest paint chips or flakes, or dust contaminated with lead products. Serious learning disabilities can result from excessive lead levels in the bloodstream. Workers can be contaminated in the same way as children, but are most likely to be exposed by breathing dust contaminated by sanding or planing surfaces that contain lead based paints.

**Sources in Homes:** Lead paint is the primary source of lead in a home that was built prior to 1978, when lead became prohibited as an ingredient in paints. Contamination occurs when lead paint is disturbed by drilling, sanding, chipping, or flaking. Lead is also present in the solder used in plumbing pipe joints. Lead can leach into potable water, particularly when water is stagnant in the pipes for a length of time. To a lesser degree, lead contamination can result from inks used in newspapers and magazines.

To minimize risks to CUSTOMERS and Weatherization personnel:

### **DO NOT DISTURB LEAD PAINT UNLESS ABSOLUTELY NECESSARY AND THEN ONLY BY INDIVIDUALS CERTIFIED TO COMPLETE WORK USING LEAD-SAFE PROTOCOLS.**

CONTRACTORS should assume that any paint on windows and doors in homes built before 1978 contains lead unless it has been verified otherwise. **WHEN THERE IS A POSSIBILITY OF DISTURBING LEAD DURING THE WEATHERIZATION PROCESS, CONTRACTORS MUST COMPLETE THE WORK IN A LEAD-SAFE MANNER IN ACCORDANCE WITH EPA AND MASSACHUSETTS DIVISION OF OCCUPATIONAL SAFETY REGULATIONS.**

**Worker Protection:** Detailed specifications regarding the health and safety of workers in the construction industry can be found in Construction Industry OSHA Safety and Health Standards (299CFR 1926/1910) and the specific worker safety requirements in the EPA's "Lead; Renovation, Repair, and Painting Program" (LRRPP) Final Rule. **Also refer to Section 5.13 Lead- Safe Weatherization within the Northeast Weatherization Field Guide.**

**ALL CONTRACTORS WORKING IN THE MASS SAVE PROGRAM MUST RECEIVE LEAD-SAFE WEATHERIZATION TRAINING, BECOME CERTIFIED PER USEPA REGULATIONS, AND FOLLOW ALL RELEVANT TECHNICAL AND ADMINISTRATIVE PROCEDURES pursuant to 40CFR Part 745.225.**

## **LEAD SAFE WEATHERIZATION INFORMATION**

EPA and Massachusetts Division of Occupational Safety are the guiding authorities for Mass Save work.

### ***When Should Lead-Safe Practices be followed?***

According to the U.S. EPA, Lead-Safe practices shall be followed when all three components of the following set of criteria are met:

1. The dwelling was constructed before 1978
2. The dwelling has not been determined to be lead-based paint free, and
3. Either, the amount of disturbed lead-based painted surface exceeds six square feet per room of interior surface or twenty square feet of exterior surface.

### ***Renovation Notice About Lead Safety***

Federal law requires that owners and occupants of a house or apartment built before 1978 receive the EPA pamphlet, "Renovate Right Important Lead Hazard Information for Families, Child Care Providers and Schools", prior to the start of the renovation work. A written notification of receipt from an adult resident of the home must be received. If this receipt can not be obtained, this requirement can be satisfied by sending the occupant the pamphlet by certified mail with the receipt included in the client file.

### ***Post Weatherization Cleanup***

Clearance testing is not a requirement for weatherization work and is not an allowable expenditure of DOE funds. Cleanup at the completion of Lead-Safe Weatherization work requires the use of a HEPA vacuum, (a HEPA filter in a standard vacuum is NOT an acceptable alternative) wet cleaning methods, a visual inspection and the collection and disposition of any dust, debris or chips with the rest of the jobsite waste.

### ***Certification***

All Weatherization Contractors must complete an EPA approved Lead- Safety RRP training and certification prior to participating in the Mass Save program. Per USEPA requirements, a certified individual must be on site to ensure proper work.

### ***Pollution Occurrence Insurance Coverage***

The following is DOE's most recent guidance concerning Lead-Safe Weatherization. While many of the mandatory regulatory requirements do not begin until April 1, 2010, DOE considers this guidance a "Best Practice" for Lead-Safe Weatherization work and the techniques outlined must be used as a guideline for working safely in homes that may contain lead.

## **WIRING**

### **Safety Concerns:**

- Electric shock while working around wiring in all areas of homes.
- Fire resulting from arcing between loose wiring connections.
- Fire resulting from lack of dissipation of heat due to insulation around heat producing sources (i.e. recessed light fixtures).
- Integrity and safety of knob and tube wiring.

### **To Minimize Risk:**

- Workers must demonstrate caution when working around wiring.
- Verify proper wiring connections and proper fusing.
- Verify proper blocking out of insulation around heat producing sources.

**APPENDIX 16.2  
KNOB & TUBE WIRING**

During the Energy Survey of your home, indications of “knob and tube” wiring were found. This old style of wiring involves individual wires that are run through walls and ceilings in a house, with ceramic “knobs” and “tubes” to prevent contact with wood framing. The knob and tube wiring that has been noted *may or may not appear to be active*. Even if the observed wiring appears to be inactive, there may still be active knob and tube circuits hidden inside walls or other inaccessible areas of the house.

Program guidelines require that you have the home checked by a licensed electrician and certified as being **free of all active knob & tube wiring**, before insulation and/or air sealing work can be done. Your electrician should fill out and submit a copy of this document to Program Designee in order to verify the absence or inactivity of the knob and tube wiring in the areas of your home where we are proposing insulation to be installed. **Due to the liability involved in signing such a form, we suggest you show or describe this form to your electrician before hiring him to inspect your home to be sure he/she is willing to sign it.** Your home could benefit from insulation and/or air sealing in the:

- Attic
- Walls
- Basement

**\*\* Only after this certification is received by Program Designee can a Contract be issued for energy saving insulation and/or air sealing work. \*\***

**Electrician’s Certification**

**(This form is invalid when any qualifications or alterations are added.)**

Company Name & Address \_\_\_\_\_

Electrician’s Name \_\_\_\_\_ License # \_\_\_\_\_

I have performed an inspection of the wiring at the home of:

\_\_\_\_\_ at \_\_\_\_\_ in \_\_\_\_\_

(Owner’s Name) (Street Address) (City)

Upon completion of my inspection I have found that there is no active knob and tube wiring in the area(s) noted below.

- Attic
- Walls
- Basement

Electrician’s Signature \_\_\_\_\_ Date \_\_\_\_\_



## APPENDIX 16.3

### APPLICATION GUIDANCE

This Appendix is provided for additional guidance to the Contractor, and offers general information about materials and installation procedures. It is provided for informational purposes.

#### Caulks and Sealants

1. Locations and use of caulks and sealants are governed by cost-effectiveness standards and procedures. The proper caulk will be matched to the location where it is applied. Consideration will be given to durability, paintability, adherence, color, toxicity, flammability, etc.
  - i. Siliconized acrylics will generally only be used in interior locations or where paintability is important. When used in visible areas, customer must approve the application, and see a sample before continuing. Clear acrylics, due to their shiny appearance, must be used only where appropriate, and should be approved by the customer prior to use in visible areas. Clear acrylics should be avoided where possible due to greater shrinkage.
  - ii. Pure silicone will generally be used in exterior applications, unless paintability is needed. Pure silicone will be used anywhere that sealants are needed between wood and metal, wood and concrete, or other materials with differential expansion as moisture and temperature vary, or where greater flexibility is needed.
2. Caulking is performed on the interior of the dwelling for general air leakage and to prevent moisture penetration into wall cavities.
3. Caulking is performed on the exterior of the dwelling to prevent bulk moisture from entering the envelope of the building and to seal areas of air leakage.
4. When appropriate, windows will be caulked along the full perimeter of the interior (or exterior), including sill area, side stops, apron, and casings.
5. When appropriate, doors will be caulked along the interior (or exterior) casings and door jambs/stops.

#### Cellulose Insulation

1. Cellulose insulation from most manufacturers is available in at least two grades that are characterized by the fire retardant added to the insulation. The fire retardants are usually 1) a mix of ammonium sulfate and boric acid or 2) boric acid only (termed "borate only"). Mass Save currently accepts both grades.

#### Insulation Baffles

1. When soffit vents are installed or existing, baffles shall be installed in the space connected to the soffit vents in such a way that the top plate can be insulated. Where possible, a clearance of 2" from the top of the baffle to the underside of the roof sheathing shall be provided in accordance with local building codes. Blocking should be permanent, mechanically fastened at sides and at bottom, and ensure the free movement of air through soffit vents into the attic, but not allow the air to "wind wash" the insulation and reduce its effectiveness. It should be rigid enough to restrain loose-fill insulation from congesting the soffit vents at the eaves and obstructing ventilation.
2. Baffles should be installed per work scope. These should allow air to flow from soffit or kneewall area into peak. Baffles must be mechanically fastened at sides and at bottom and be carefully fit with insulation packed in place at the bottom to prevent wind intrusion into or under insulation. Flexible Styrofoam baffles may be used for very low pitch roof areas.

#### Attic Access

1. When ready access to the attic is not available through an existing opening, access to attic areas should be gained from the exterior through attic vent openings when possible. If this is not feasible, then the following criteria shall be used for access openings:
  - a. Surface Openings: Cut existing wall board halfway on two studs (preferably through a closet). When closing the opening, the new materials must be flush with existing wall material and taped and covered with one coat of joint compound.
  - b. Plywood Openings: Cut existing wall between two studs. Close opening with 1/2 plywood (G1S/AC) with four (4) 1 1/2" x 8 flat head wood screws secured into studs.
  - c. Finish Openings: Cut existing ceilings. Head off opening. Install 2 1/2 casing around rough opening. Allow a 3/8" reveal into opening to receive 1/2" plywood (G1S-AC) to complete opening. Plywood cover to be weather-stripped and insulated. Casing to be mitered neatly.
2. In attics with existing fiberglass batts, remove the batt in the last joist bay on any gable end or other perimeter configuration that runs perpendicular to strapping ends. This space should be dense packed with blown-in cellulose or fiberglass wool tested for air resistance to reduce cavity air movement at the inaccessible floor wall joint.

#### Attic Ventilation

1. Do not install insulation in an attic space unless adequate and permanent ventilation is installed.
2. Adequate cross-ventilation shall be maintained above all attic insulation by providing both low and high vents or gable end vents where possible. One square foot of net-free vent area (NFA) shall be provided for every 300 ft<sup>2</sup> of attic area with 50 to 60% of the vent area located near the roof ridge and 40 to 50% located near the eaves. One level of venting may be used provided that adequate cross ventilation can be maintained.

NOTE: Although the use of window vents is allowed, the vents must be permanently fixed and must meet the minimum requirements for free vent area as noted above.

3. Ventilation should be improved wherever reasonable and practical to meet current code requirements when attic insulation is installed. The details of the types of vents and where they may be practically installed on each specific house varies. Consideration should be given to the type and location of vents to provide as much cross ventilation as possible for the specific application depending on existing conditions and retrofit options.

#### Sidewall Insulation

1. Pre-Installation Requirements: Prior to starting a job, an interior and exterior inspection must be conducted by Contractor to determine any potential problem areas. These problem areas must be identified and addressed prior to working on that area. Examples of some problem areas are recessed radiators, duct work in wall cavities, recessed bookshelves, stairways on exterior walls, loose or cracked plaster on walls, poor siding, pocket doors, chimneys, etc. Check wall areas for wall hangings that should be removed prior to working on walls. The process and the work that is to be performed should be explained to the CUSTOMER. Any potential problems discovered should be discussed with a CUSTOMER before commencing work.

2. Inspect cavity or framing detail for wiring, piping or ductwork. Do not densepack ductwork or space containing unsealed ductwork, or isolate plumbing from house – provide a sealed barrier continuous to adjacent airtight cavities or building element. Provide wood or foam plugs in sheathing. Repair openings made in weather barrier, replace siding and refasten with matching or larger fasteners. Touch up nail holes with silicone based sealant.
3. Installation Procedures
  - a. All wall insulation shall be installed through holes with minimum diameters of 2 1/8" or greater, i.e. large enough to accommodate a fill tube. Exception: wall cavities less than 12" in height.
  - b. Use of a fill tube to ensure consistent insulation coverage and density is strongly encouraged. Usually one hole is required per cavity, located to allow the fill to reach both ends of the cavity, with additional holes required if there are obstructions in the wall cavity.
  - c. Contractor shall only use equipment compatible with the insulation material used or an all fiber machine. Contractor shall follow the manufacturer's recommendations for air pressure and density to achieve dense pack standards. Most small airlock machines are suitable if designed and maintained to provide at least 80 inches of water column or 2.9 PSI static air pressure when operated at full air with the outlet blocked and no feed. Dense pack requires at least 3.5 pounds per cubic foot or higher with a cavity depth over 4".
  - d. Keep a record of the number of bags used to insure the installed insulation conforms to the manufacturer's recommended coverage shown on the material label, 1 pound per square foot for 2x4 wall framing. Certificate of Insulation that lists the bag counts for each area that was insulated must be posted upon completion of work.
  - e. Do not leave open holes in wall overnight. Any holes must be plugged before Contractor leaves work site. All drilled wood surfaces must be plugged with a wooden plug. Other drilled holes may be plugged with Styrofoam plugs.
4. Drill and Plug (D&P) Applications.
  - a. Exterior drill and plug applications on painted surfaces must be completed in the following manner:
    - i. After installation, a plug must be inserted so it is flush or slightly (1/16") recessed. At edge irregularities apply one or two coats of an exterior rated filler (Durham Rock Hard wood putty, DAP exterior vinyl spackling or equivalent.)
    - ii. This procedure also applies to drill and plug applications on windowsills, frieze boards, and entrances. Note: drilling window sills creates a serious water intrusion risk if not made watertight and should not be performed where a pan flashing or sill wrap is in place. Do not drill sills on homes built since 1990. Foam or urethane sealant below the surface plug may reduce water entry but cannot return integrity of pan flashing.
  - b. Exterior drill and plug applications on stained surfaces must be completed in the following manner:
    - a. After installation, insert a plug so that is it flush with the existing siding. The plug should be installed by placing a block of wood over the plug and tapping it until the plug is flush with the siding.
  - c. Interior drill and plug applications must be completed in the following manner:
    - a. After installation, insert a plug so that it is (3/8") recessed. Apply 1-2 coats of setting joint compound, Durabond 90 or equal, patching material or a plaster repair product filling just flush to the existing surface.
    - b. Some examples of this application would be exterior walls (not done from the outside), stairway walls, garage ceilings, and slopes.

### Post-Installation Procedures

The Contractor shall review the entire job to ensure that all aspects of the job are completed. Before leaving the work site, the Contractor shall assure:

1. All the siding repaired and/or reinstalled
2. Shutters are reinstalled
3. The outside work area and yard are cleaned up to pre-existing conditions
4. The basement/house is cleaned of all debris
5. The client is satisfied with the quality of the work
6. The Program incentive application is complete with all documentation attached

### Weatherstripping

1. All weatherstripping will be permanently installed with fasteners (tacks, staples, brads, etc.) and will make positive contact between surfaces to prevent air leakage.
2. Window weatherstripping
  - a. "Three-sided:" LOWER sash channels, & sill; or, if window has spring loaded channels: top, bottom and meeting rail.
  - b. "Four-sided:" LOWER sash channels, meeting rail & sill
  - c. "Seven-sided:" UPPER & LOWER sash channels, meeting rail, sill & head jamb
3. The weatherstripping will form an air tight seal when the window is closed and latched. A small bead of caulk will be applied as necessary to prevent air leakage behind the weatherstripping
4. The weatherstripping will not interfere with the smooth operation of the door or window.
5. Attic hatch or scuttle openings
  - a. Weatherstripping will be permanently affixed to hatch or framing. Generally "Q-lon with carrier" or equivalent is preferred.
  - b. A positive closing mechanism will be installed on the hatch if needed.
  - c. Existing access to the attic will be maintained.
  - d. In the case of drop down folding stairs, an air tight, insulated cap will be built over the opening
  - e. Kneewall access doors will be treated like attic hatch doors whenever possible.

### Floor Insulation

1. Locate and note the pathways that plumbing, wiring, heat runs, air return runs and gas lines take through the enclosed floors. Also note any recessed light fixtures in these floors or in nearby floor areas which share the same joist cavities. Take steps to assure that the installation of insulation will not damage or in any way hinder the normal function of those services. In some cases, cavities or groups of cavities may have to be left uninsulated.
2. Insulation should be blown into enclosed floors to capacity.
3. When the drill and plug method is used on garage ceiling, the holes must be plugged and finished with a spackle type compound flush with the ceiling.
4. When the drill and plug method is used on exterior floor overhangs, the holes must be plugged and finished with an exterior wood filler flush with the exterior surface.