CAPE LIGHT COMPACT JPE

RFP FOR ENERGY RELATED SERVICES

Energy Efficiency Program Management

I. GENERAL OVERVIEW

A. Background

The Cape Light Compact JPE (the "Compact") is a regional energy services governmental organization comprised of and serving its twenty-one towns of Cape Cod and Martha's Vineyard. The Compact is a joint powers entity and municipal aggregator pursuant to Massachusetts General Laws Chapter 40, §4A ½ and G.L. c. 164, §134. More information about the Compact is available at https://www.capelightcompact.org.

The Compact's mission is to serve its 200,500 customers through the delivery of proven energy efficiency programs, effective consumer advocacy and renewable competitive electricity supply.

The Compact is operating an Energy Efficiency Plan which is reviewed and approved by the Massachusetts Department of Public Utilities.

The Compact seeks energy related services related to implementation of its energy efficiency programs.

B. Project Overview/Scope of Work

The Compact's Chief Procurement Officer hereby requests the submittal of proposals from qualified professionals to provide services for the program described in Attachment A (the "Project").

See Attachment A to this RFP for more details on the Project and scope of the work requested.

The Compact is strongly committed to ensuring that the Project provides opportunities for businesses and individuals who historically have been underrepresented in the energy efficiency contracting field. In accordance with applicable laws, the Compact seeks proposals that incorporate participation by minority-owned and women-owned business enterprises (M/WBEs) in as many aspects of the Project as possible. In issuing this RFP, the Compact reviewed the state Supplier Diversity Office list of certified businesses to identify potential Proposers.

II. RFP SCHEDULE AND RELATED MATTERS

A. RFP Schedule

The following is a tentative schedule noting target dates for phases and tasks to be completed:

March 25, 2021	Publication of RFP advertisement
March 25, 2021	RFP issued
April 01, 2021	Informational conference call
April 06, 2021	Written inquiries due
April 09, 2021	Responses to inquiries posted
April 20, 2021	Proposals due at 12:00 p.m. ET. No exceptions will be allowed.
April 26, 2021	Vendor selected
April 30, 2021	Kick-off meeting
May 01, 2021	Project implementation

B. Questions and Clarifications

Questions or clarifications related to this RFP must be submitted to the Chief Procurement Officer in writing prior to the deadline stated above in order to afford the Compact adequate time to respond with a correction or additional information prior to the deadline for submission of Proposals. Should it be found necessary or useful, a written addendum will be incorporated into this RFP. Parties who have received a copy of this RFP will be notified of issuance of an addendum.

C. Contract Award

All Proposers will be notified of the contract award decision within seven days of the date Proposals are due to the Compact unless otherwise notified by the Compact. In no case will the award be made beyond forty-five (45) days unless Proposer agrees to extend the period of time in which its Proposal is valid.

If a contract is not executed by the chosen Proposer by April 26, 2021 the Compact reserves the right to negotiate with alternative Proposer(s) in order to execute contracts by April 30, 2021.

III. GENERAL QUALIFICATIONS

The following general qualifications apply to all vendors engaged by the Compact and Proposers who cannot meet these requirements should not submit Proposals:

A. Proposer must be organized or registered to do business in Massachusetts, and in good standing with the Secretary of the Commonwealth.

B. Proposer must be an individual or established business, corporation, partnership, sole proprietorship, limited liability company, joint venture, firm, agency, or other entity engaged in the regular practice of providing such services as the principal business for which the entity was organized.

C. Proposer must have all necessary current licenses and registrations required to perform the requested services.

D. Proposer cannot be debarred under M.G.L. c. 149, § 44C, or disqualified under M.G.L. c. 7, § 38H, as applicable.

E. Proposer must be able to demonstrate that it is financially solvent.

IV. SPECIFIC QUALIFICATIONS

The Compact has identified the following specific qualifications that are unique to the Project. Proposers who cannot meet these requirements should not submit proposals

- Proposer must have a minimum of two (2) similar projects or equivalent experience during the past five (5) years in Massachusetts.

- The winning Proposer will be responsible for implementation of the program described in Attachment A (the "Program"). This means it will manage and operate the Program, including management, supervision and control of all subcontractors and independent contractors participating in the Program. The winning Proposer will be required to fully indemnify the Compact from the acts and/or omissions of the subcontractors and independent contractors, and from any third-party claims relating to same. The winning Proposer will need to ensure that it has adequate insurance to cover these responsibilities. In addition, the winning Proposer will be responsible for entering into and managing the contractual relationships with the subcontractors and independent contractors and ensuring that such subcontractors and independent contractors understand, acknowledge, and agree that the Compact has no liability to them in connection with winning Proposer's management and operation of the Program.

- The Proposer must be Building Performance Institute (BPI) accredited

V. CONTRACT

The Compact's standard form of agreement is set forth as Attachment B to the RFP (the "Contract"). The Compact reserves the right during Contract negotiations to expand, modify, supplement and/or add to the form of agreement.

The Contract has a term of 3 years and 8 months or until December 31, 2024 with option to

renew for two one year extensions.

The following Contract terms are considered to be material and are generally non-negotiable:

1.2 Termination
1.3 Termination or Suspension Due to Changes in Funding
2.5 Conflicts of Interest
2.7 Safety
3.1 Prevailing Wage (applicable sentences)
3.6 Bonds (to be determined by Compact staff)
7 Indemnification
8 Choice of Law and Dispute Resolution
11.7 Solicitation

If a Proposer believes that a mandatory Contract term will affect its liability risk, it should adjust its contract price accordingly.

Non-mandatory Contract terms may be modified and expanded through negotiations. Proposer must identify the specific language in the Compact's form of agreement that it would like to modify, and submit with its Proposal all requested edits to the form of agreement.

Proposers may not submit its own standard contract form as a response to this RFP.

VI. PROPOSAL FORMAT AND CONTENTS

A. Cover Letter

Proposer must submit a cover letter which includes its business name(s), address and telephone number, signed in ink by someone authorized to sign such documents. Proposer must acknowledge any addenda, if any. All responses must include a statement that the Proposal is in accordance with this RFP and that Proposer has read and understands all sections and provisions herein.

B. General Background Information

Proposer must provide its full official business name, any other names that it uses to conduct its business, tax identification number, and its main office address. Proposer must provide a company profile including length of time in business and core competencies.

Proposer must provide the following statements: (i) statement as to whether business or affiliate has commenced, or been forced into, any insolvency proceeding within the last five (5) years; (ii) statement as to whether business or affiliate has been subject to any litigation in the last five (5) years; (iii) statement as to whether business or affiliate has been subject to any investigation by a state or federal agency within the last five (5) years; and (iv) statement as to the number, if any, of consumer complaints filed with a state, federal, or local agency, against the business or affiliate

within the last five (5) years.

C. Staffing and Facilities Requirements

1. Proposer should identify the Project managers, and all individuals to be assigned to Project. Describe what each individual's role will be, their duties and responsibilities.

2. Proposer must provide resumes for specific key staff to be assigned to the Project that include education, relevant past experiences, qualifications, licenses, current projects being worked on and any other pertinent information that will assist the Compact in making the selection.

3. Proposer must briefly describe its organizational capacity to provide the services to be rendered in connection with the Project. More specifically, it should briefly describe the percentage of staff that would work on these services relative to its entire staff (using full time equivalents). For example, if Proposer would use one full time staffer on the Project and Proposer has a staff of ten (10), the percentage would be ten percent (10%).

4. The Proposal must include resumes, experience, and qualifications of any proposed subcontractors or consultants that would be utilized by Proposer in the performance of the Contract.

5. Proposer must provide a schematic diagram showing organizational overview including identification of key staff and any supporting vendors or sub-contractors, if applicable.

6. If Proposer intends to hire additional staff in order to provide requested services, a description of its approach to hiring and the qualifications it will require of prospective employees should be included.

7. Proposer should describe the sales training provided to field staff (if none, please provide a plan to provide sales training).

8. Proposer should describe its current call center operational capacity including the number of full-time and part-time call center staff, current hours of operation and call volume.

9. Proposer is required to have/obtain suitable office, dispatch and warehouse facilities and vehicles as necessary, located within easy access to all parts of the Compact's service territory. Proposer should describe 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 stated in its response.

D. Proposed Scope of Work and Related Experience

1. Scope of Work.

Proposer should provide a general explanation of its proposed plan/approach to the services requested by the Compact in this RFP related to the Project.

A draft Scope of Work is attached as Attachment A. Proposer must submit its proposed edits to the Scope of Work. Proposers may include enhancements, improvements and additions to the Scope of Work. This proposed Scope of Work will be used as the basis for negotiating the final Scope of Work for inclusion in Exhibit A of the Contract, Attachment B to this RFP.

Questions on the draft Scope of Work shall be submitted in accordance with Article II(B) above.

2. Related Experience.

Proposers should submit statements regarding the following:

a. Number of energy assessments performed in the previous twelve month period;
b. Number of quality assurance visits performed in the previous twelve month period and proposed percentage of weatherization project quality assurance visits;
c. 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);
d. Detailed description of the proposed approach to ensuring an exceptional customer experience (i.e., initial scheduling, implementation scheduling, backlog management);
e. 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);
f. 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);
g. Complete description of Proposer's technological capabilities in the areas of Information Management Systems hardware and software, electronic data transfer, rebate processing capabilities and Residential Coordinated Delivery Program (RCD) related technology;
h. 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 Program;
i. Assurances that the Proposer has the capability to be in the field at the appropriate start up time given the proposed service(s), such that Compact's anticipated delivery projections will not be adversely delayed;
j. Complete description of Proposer's ability to provide robust marketing support in order to meet Program goals (also provide specific plans to address hard-to-reach properties and customers who speak English as a second language);
k. Detailed description of quality control policies and procedures (energy

assessment delivery services, measure installations and post-installation inspections);

j. Customer scheduling policies and procedures (describe a proposed approach for allowing assessments to be scheduled from the field);

k. Protocols for resolving customer dissatisfaction, either at the time of the site visit, or after Quality Assurance Plan, including criteria to judge auditor and subcontractor performance;

l. Current warranty policy, if applicable; and

m. Description regarding its diagnostic tools, as well as the technical capability necessary to comprehensively assess and address efficiency opportunities in all facility sizes which can vary from five units to a few hundred units and may be: (i) condominium complexes comprised of several small (2-4 unit) buildings; (ii) condominium complexes comprised of several large (5+ unit) buildings; (iii) condominium complexes comprised of several single detached units; (iv) mixed use facilities (condominiums or apartments); (v) residential units with common areas; (vi) residential units with commercial space; (vii) timeshares; (viii) remodeled homes, converted into an apartment building.

E. Pricing

Proposals must include a pricing schedule for each service being proposed, with all labor, overhead, travel, other direct costs associated with the services (Attachments I and J). All general and administrative costs must be included in hourly labor rates and direct expenses. These terms apply to subcontractor costs as well. Proposals should also state if the same hourly rates would apply for out-of-scope work relating to the requested services which may be contracted for during the original Contract term.

F. References

Proposer must provide a list of clients that is has performed similar work for in the past three (3) years and any other relevant references with the names and telephone numbers of contact persons for each client.

G. Redlined Contract or Contract Acceptance Letter

Proposer must provide a redlined Microsoft Word version of any requested changes to the form of Contract set forth in Attachment B. It may not request changes to the non-negotiable provisions listed in Article V. If Proposer is not requesting any changes to the form of Contract, it should submit a letter to the Compact with its Proposal stating that it accepts all of the terms and conditions of the Contract as set forth in this RFP.

H. Supplier Diversity.

The Compact encourages supplier diversity among its vendors. Proposers should provide

information on its effort to encourage supplier diversity in its workforce and in the selection of subcontractors when permitted.

I. Ancillary Documents

Proposer must have signed the Certificate of Non-Collusion (see Attachment C) and all other required Proposal forms (including the Proposal Checklist set forth in Attachment D), and have included them in the Proposal submittal.

J. Other

Any other information that Proposer considers relevant for the purpose of evaluating its qualifications for the Project.

K. Signature Requirements

The Proposal must be signed by an officer or authorized representative who has authority to bind Proposer to a firm price.

VII. SUBMISSION PROCEDURES

A. Number of Copies and Format

Proposer must submit one (1) electronic, one (1) original and one (1) copies of the proposal. Proposals must be typewritten on 8 1/2" x 11" paper and each page must be numbered.

B. Proposal Due Date and Labeling

Proposals must be signed and delivered to the Compact within the time set forth in Article II of this RFP. Proposals must be enclosed in sealed envelopes and marked as follows:

RFP Title:	Residential Coordinated Delivery RFP
Proposer's Name:	[insert]
Delivered to:	Cape Light Compact JPE 261 Whites Path, #4 South Yarmouth, MA 02664 Attention: Margaret Downey mdowney@capelightcompact.org Cape Light Compact JPE Chief Procurement Officer

C. Modification or Withdrawal of Proposals

A Proposer may correct, modify or withdraw the its original Proposal on or before the date and time set forth in Article II. Corrections or modifications must be in sealed envelopes, clearly

marked to indicate the contents, with the name and address of Proposer. Any late correction or modification to the Proposal will not be accepted. Proposers who wish to withdraw a Proposal must make a request in writing.

D. Late Proposals

Any Proposal received after the due date and time stated in Article II will be deemed non-responsive and will not be opened. Unopened Proposals will be returned to Proposer.

E. Offer to Provide Services

Proposer understands and agrees that its Proposal to the Compact to provide services will remain valid for forty-five (45) days past the submission deadline.

VIII. SELECTION PROCESS

The final selection of the winning Proposer will be based on the following set of minimum evaluation criteria:

1. Responsiveness to the Project goals and desired outcomes as set forth in this RFP.
2. Satisfaction of all qualifications set forth in Articles III and IV.
3. Proposed plan/approach to manage and perform the requested services.
4. Team qualifications and experience.
5. Quality of references.
6. Proposed edits to the form of Contract.
7. Proposed edits and enhancements to the scope of work.
8. Submission of all required documentation and certifications detailed in Article VI (Proposal Contents).
9. A minimum of five (5) years related experience in the energy efficiency field.

The Chief Procurement Officer will review all Proposals to make sure minimum requirements are met. Proposals that meet all of the minimum requirements set forth in this RFP, and are determined to be both responsive (those that offer all of the services requested in the RFP and contain all of the required information and completed forms) and those that are responsible (those with the capability, integrity, and reliability to perform under the Contract) will be further reviewed by the Chief Procurement Officer.

The Chief Procurement Officer will make a preliminary determination of the most advantageous proposal from a responsible and responsive Proposer taking into consideration price and the evaluation criteria set forth above. Proposals will be evaluated on each criteria set forth above; each criterion will be assigned a rating of "highly advantageous," "advantageous," "not advantageous" or "unacceptable. The Chief Procurement Officer may negotiate all terms of the Contract not deemed mandatory or non-negotiable with such Proposer. If after negotiation with such Proposer the Chief Procurement Officer determines that it is in the best interest of the Compact, the Chief Procurement Officer may determine the proposal which is the next most

advantageous proposal from a responsible and responsive Proposer taking into consideration price and the evaluation criteria set forth above, and may negotiate all terms of the Contract with such Proposer. The Chief Procurement Officer will award the Contract to the Proposer who submitted the most advantageous proposal taking into consideration price, the evaluation criteria set forth above, and the terms of the negotiated Contract.

Proposals which are incomplete, conditional or obscure, will be rejected. No award will be made to any Proposer who cannot satisfy the Compact that it has sufficient ability and resources to enable it to meet the requirements of this RFP. The Compact's decision or judgment on these matters shall be final, conclusive and binding.

IX. CONFIDENTIALITY/RETENTION OF RFP SUBMITTALS

Each Proposal will be held confidential by the Compact until such time as the evaluation and selection process has been completed.

If any proprietary information is contained in the Proposal and Proposer wishes that the Compact treat such information as confidential, it should be clearly identified. The Compact will take commercially reasonable efforts to protect such information. Under Massachusetts law, the Compact cannot assure the confidentiality of any material or information that may be submitted by a Proposer in response to this RFP.

Proposers who choose to submit confidential material or proprietary information do so at their own risk. The Compact is not liable for any action taken or omitted to be taken related to such proprietary information.

In general, proposals are public documents available for inspection by interested parties after the completion of this procurement. Upon completion of the evaluation and the award of the Contract, all proposals and information submitted in response to this RFP are subject to the Massachusetts Public Records Law, M.G.L. c. 66, § 10, and to M.G.L. c. 4, § 7, cl. 26. Any statements in proposals that are inconsistent with these statutes will be disregarded.

Further, as the Compact is a public entity it may become necessary to provide Proposer or Contract information to regulatory agencies for review. At Proposer's specific request, and if commercially reasonable, the Compact will request that such information be treated confidentially by the regulatory agencies.

X. MISCELLANEOUS

A. Supplementary Information

The Compact may request that supplementary information be furnished to assure the Compact that a Proposer has the technical competence, and the business and financial resources adequate to successfully perform the requested services.

B. Proposal Costs

All costs involved in preparing the Proposal will be borne by Proposer. Proposer must be familiar with all state, local and other laws relating to these services and must obtain all permits required and must pay all expenses for same.

C. Cancellation

The Compact may cancel this RFP, in whole or in part, or may reject all Proposals, or may procure only some goods and/or services outlined in this RFP whenever such action is determined to be fiscally advantageous to the Compact, or if it is otherwise in the best interest of the Compact.

ATTACHMENTS

A Project Overview/Scope of Work
B Form of Contract
C Certification of Non-collusion
D Proposal Checklist
E Data exchange invoice format sample
F Detailed Assessment Specifications
G Program Materials & Installation Standards
H MA DOER Reporting Requirements
I Single Family Pricing
J ALR / AHR Pricing

ATTACHMENT A

Project Overview/Scope of Work

SCOPE OF WORK

1. *Program Description*. The Compact is seeking lead vendor services in connection with its Residential Coordinated Delivery program (the "Program"). Under the Program, the Compact provides services to single family and multi-family homes. Multi-family homes are also referred to as attached low rise ("ALR") or attached high rise ("AHR") facilities.

There are five components to the Program: (i) incentives; (ii) energy assessments; (iii) renter and landlord effort; (iv) enhanced residential offerings; and (v) the Mass Save HEAT loan.

2. *Objectives/Goals.* Lead Vendor (also referred to as "LV") understands and agrees that the Compact's objective is to engage a Lead Vendor to provide turnkey services for management, operation, supervision and expansion of the Programs. Lead Vendor understands that goals of the Programs are to:

a. Achieve a maximum level of cost-effective energy savings per dollar spent;
b. Provide cost and value added services not provided in basic Program pricing;
c. Achieve persistence of energy savings through effective and appropriate choice of energy efficiency measures;
d. Deliver cost effective energy efficiency measure installations rather than number of audits completed; and
e. Improve Program participants comfort, health and safety.

Further objectives are set forth in the description of services below.

3. *Services*. The Services to be performed by Lead Vendor in connection with the Compact's Programs consist of: (i) Program management; (ii) designing and implementing a merit based allocation of weatherization work orders; (iii) scheduling/follow-up/technical assistance services; (iv) energy assessments; (v) implementing efficiency measures; (vi) promoting, distributing and processing incentives; (vii) heat loan administration; (viii) quality assurance tasks; (ix) data transfer and reporting functions; (x) marketing support; and (xi) financial accounting services.

A. Program Management

The Lead Vendor (LV) is responsible for overall Program management. The LV's Program management duties include:

1. Technical assistance to contractors that are part of the Programs (independent installation contractors who perform weatherization work (IICs) ,home performance contractors (HPCs), and LV's permitted subcontractors).
2. Managing multiple contractual relationships. The LV will enter into contracts with IICs, HPCs and permitted subcontractors governing the terms and conditions of their Program participation. The LV will also be responsible for verifying proof of insurance from IICs, HPCs and permitted subcontractors prior to commencing any work under the Program.

3. Supervising and enforcing Program requirements.

4. Supervising and managing IICs, HPCs and permitted subcontractors.

5. Developing all forms and other printed materials necessary for successful and efficient implementation of the Program, including IIC, HPC, and customer participation agreements. All LV-developed forms must be submitted to Compact for approval and finalized prior to Program implementation.

6. Maintaining a computerized database tracking system that meets all necessary regulatory and Program Administrator (PA) specific reporting requirements. The LV's system, interface, or software will be capable of aggregating all information provided by the IICs and HPCs, the LV's permitted subcontractors, and the LV's internal work crews for Program participant reports/invoices and reporting to Compact.

7. Maintaining a data tracking system capable of tracking recommendations and implementation of work that may be completed over a multi-year period and that will allow for appropriate follow up with Program participants.

8. Developing and maintaining a list of ALR and (AHR facilities located within the Compact's service territory to track participation and identify future opportunities.

9. Implementing a systematic process for following-up with Program participants 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 marketing strategy.

10. Other than as expressly specified herein, internal personnel recruitment, management and training of its own staff, the IICs, HPCs, and permitted subcontractors.

11. Procuring all equipment and materials necessary for Program implementation for internal responsibilities.

2. Providing storage for all Program materials to directed by the Compact for Program participant education and implementation.

13. Participant recruitment and intake.

14. Reasonably ensuring eligibility of participants (in case Program participants are assigned incorrectly).

15. Coordinating and identifying the resources available through the existing market infrastructure which includes private sector energy product and services vendors.

16. Collecting all data necessary for continuing Program management, monitoring, and evaluation needs.

17. Performing ongoing Program development and refinement, in conjunction with Compact and other PAs.

18. Complying with, implementing and enforcing (i) Mass Save Energy Assessment Standards; and (ii) Mass Save Home Energy Services Program Standards. The LV understands and agrees that these standards may be updated and amended from time to time and agrees to comply with, implement and enforce such revised standards.

19. Coordinating all on-site crews performing work related to the Program.

B. *Designing and Implementing a Merit Based Allocation of Weatherization Work Orders*

The LV will design and implement a quality of work verification system to ensure weatherization work meets Program standards. The LV's system will include the following categories (at minimum):

1. Safe work practices including compliance with all local, state and federal codes.
2. Technically sound installation practices conforming to the Building Performance Institute (BPI) approach.
3. Installation consistent with energy efficient upgrades offered at the time of the energy assessment.
4. Repair work resulting from failed QA/QC or other designation that requires a return visit.
5. Program participant satisfaction. The LV will monitor Program participant satisfaction via follow QA/QC visits, phone surveys, written surveys, etc. and will measure Program participant satisfaction with the following metrics at a minimum: (i) reliability (cancellations, adherence to scheduled appointments); (ii) employee and contractor professionalism; (iii) complaint resolution; (iv) prompt service; (v) cleanliness of the worksite; and (vi) overall Program participant satisfaction.

The LV will distribute weatherization installation work orders to qualified IICs using equitable and transparent merit-based methodologies.

The LV will require the following with respect to submittals from participating IICs relating to weatherization installation including: (i) timeliness; (ii) accuracy; and (iii) comprehensiveness of data.

The LV will take disciplinary action towards non-complying HPCs, IICs and permitted subcontractors, up to and including dismissal from the Program.

Weatherization work orders for all ALR or AHR facilities containing more than 20 dwelling units will be put out to bid. For 20 units and under, the LV will install all measures based on an approved pricing schedule either with internal crews or designated subcontractors.

C. Scheduling/Follow-up/Technical Assistance Services

The LV's scheduling, follow-up and technical assistance services will consist of the following:

1. Supporting the Compact's Program participant intake process.

Compact staff will be responsible for Program participant intake. Program participants that call either the toll-free Mass Save or Compact Intake Line will be interviewed by the Compact in order to determine their need and reason for calling.

2. Staff and train Program participant Customer Service Representative (CSR) positions.

The Lead Vendor will staff CSR positions that will support the Compact's Program participant intake process. The CSRs will use the information obtained during the Program participant intake call to determine the most appropriate means of addressing the Program participant's needs. The CSRs will also determine whether the Program participant can benefit from initiatives not related to energy efficiency, such as services offered through other Compact

vendors, or programs. The LV will ensure that CSR training and qualifications include: (i) Program participant service and telephone experience; (ii) general knowledge of energy efficiency, renewable technology and demand response; (iii) knowledge of all residential energy efficiency, demand-side management and program offerings; and (iv) knowledge of information resources available to Program participants during initial intake

3. Schedule Energy Assessments

The LV will schedule eligible Program participants for the appropriate Energy Assessment or provide a platform to allow Compact staff this capability. For those Program participants that have completed an assessment within the last 12 months, appropriate follow-up action must be determined by the LV. The LV will be responsible for scheduling the assessment with the Program participant.

4. Providing a single point of contact for internal crews, IICs, HPCs and permitted subcontractors performing Program related work.

5. Providing Program participants with Program and educational materials regarding energy use and efficiency opportunities.

6. Staffing and training technical assistance representatives who will perform some aspects of the energy assessments. The LV will ensure that its technical assistance representatives possess: (i) extensive knowledge of energy efficiency and applicable renewable technology including but not limited to an energy services auditing background, house as a system training, and diagnostic experience (e.g. blower door, infrared technology); (ii) additional training in the area of heating system fundamentals for a wide array of systems including high efficiency residential equipment; (iii) knowledge of all residential energy efficiency, demand-side management, renewable energy and demand response program offerings; (iv) familiarity with "whole house as a system" approach; (v) in-field audit experience and (vi). knowledge of all ALR / AHR energy efficiency and demand-side management program offerings

D. Energy Assessments

The LV understands that the objective of the energy assessments is to provide Program participants with the opportunity to understand the impact of all major energy efficiency measures and improvements that can be implemented in their homes.

The LV represents that it has the diagnostic tools, as well as the technical capability necessary to comprehensively assess and address all efficiency opportunities from a whole-house perspective.

The LV will complete energy assessments either in person or virtual within reasonable time from date of original Program participant request (subject to Program participant availability) unless special circumstances arise. If the LV is unable to meet this request with internal staff, the use of additional HPCs or permitted subcontractors should be implemented

where applicable. If the use of additional subcontractors is required, the energy assessments should be distributed using the merit based allocation system.

The LV is responsible for facilitating, scheduling, and coordinating energy assessments, coordinating work schedules for installation of measures implemented by the IICs, and the energy assessment activities of the Program participant for the HPCs, for both assessments and installation by the HPCs.

The LV will perform an assessment of all applicable energy efficiency opportunities including thermal measures, HVAC system efficiency, combustion safety, cost-effectiveness of major measures, and address all health, safety and indoor air quality issues. The LV will use a blower door, infrared thermography as well as installation of instant savings measures (e.g. LEDs, smart strips, faucet aerators) during appropriate energy assessments. This educational process is meant to motivate Program participants to implement major measures.

The LV will perform energy assessments using an energy assessment software tool approved by the Compact.

The LV will provide Program participants with an energy assessment report at the time of the assessment. The report will provide the Program participant with energy efficiency opportunities in an easy to understand and an appealing format. The report must include (at minimum) recommended/installed individual efficiency measures, the estimated costs, and the payback and savings, additionally LVs will need to work towards offering the DOE Scorecard. The LV will distribute Program materials to Program participants and any other materials that the Compact requests, including a list of Program approved contractors when applicable.

The Compact offers two levels of single family energy assessments to Program participants: (i) Special Home Visit (SHV) and (ii) Comprehensive Assessment (in person or virtual). The LV will conduct and implement these assessments in accordance with Mass Save Energy Assessment Standards as set forth in Attachment F. These visits are designed to assist those Program participants who have a concern about high-energy use and request a site visit in order to address their concern. The SHV is also used to qualify a Program participant for a specific incentive or assist with questions about a particular piece of equipment or home efficiency measure or provide access to the HEAT loan, alternative ways to verify are also acceptable (virtual screenings). The LV will offer Instant Savings Measures (ISM) to Program participants for installation during the SHV.

The LV will provide one or more of the following energy assessments to ALR or AHR customers. (i) comprehensive facility assessment; (ii) single unit assessment; (iii) comprehensive assessment coupled with Natural Gas Assessment.

To increase the adoption of major measures, the LV will develop and implement a systematic process for encouraging Program participants to follow through with actions recommended through the Program including: (i) additional diagnostic services; (ii) contracts issued for air sealing and/or insulation; and (iii) recommendations for high-efficiency heating systems and/or energy-efficient refrigerators.

The LV will use various communication channels including telephone, mail, email, and chat function and other means to accomplish these functions.

The LV will take appropriate action upon identification of any potential hazards at Program participant home (e.g. improperly vented combustion equipment, gas leaks, etc.).

E. Implementing Efficiency Measures

Through the energy assessments, the LV will provide Program participants with a comprehensive review of their energy usage as well as recommendations to improve their properties within Program guidelines. The LV will select energy efficiency measures for installation on the basis of cost-effectiveness, appropriateness and Program participant acceptability. The LV will make all selections on a case-by-case basis. In order to achieve the Program goal of maximum implementation while controlling costs, the LV'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 LV will provide software to guide field staff assessments to determine, while on site, the appropriateness of energy efficiency measures given site-specific circumstances and installation costs.

The LV will ensure that weatherization measures are implemented in accordance with the Mass Save Program Materials & Installation Standards (Attachment G). The LV understands and agrees that this document provides basic Program approved weatherization protocols and is continually modified by PAs and industry experts.

The LV will provide warranties to Program participants covering the materials and labor for a period of time which is the greater of one year, or the warranty periods customarily provided by the LV to its Program participants, commencing on the final date of installation. In addition, all manufacturers and other applicable warranties shall accrue to the benefit of the Program participant, and the LV shall provide to such Program participants 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 LV will require the same level of warranty be provided by IICs, HPCs and LV's permitted subcontractors, and will dismiss any contractors from the Program who fail to honor warranty obligations.

The LV will work with the Compact to incorporate any cross promotions that may enhance the Program participant experience. If the Compact receives grants which provide for additional enhanced incentives and services (e.g. DOE's Home Energy Score), the LV will implement such incentives on behalf of the Compact.

F. *Promoting, Distributing and Processing Incentives*

The LV will promote all available/applicable incentives offered via applicable statewide residential energy efficiency programs. The LV understands and agrees that electric and gas PAs work together in order to offer all available energy efficiency measures on a fuel-blind basis. The LV will "piggyback" measures with lead vendors engaged by other PAs to ensure seamless delivery to the Program participants. The LV will contract with the gas PA(s) sharing Compact electric service territory in order to provide electric incentives for those Program participants that elect to be served by the LV.

The Compact maintains and updates a list of Program incentives which the LV will use to establish Program participant pricing. The LV understands and agrees that the Compact reserves the right to change the incentive pricing at any time. The LV will provide input to the Compact on pricing related to weatherization installation for IICs, HPCs, and LV's permitted subcontractors. The LV understands and agrees that as the Program continues to evolve, additional incentives are likely to be changed and that the incentive structure may also change in the future, based on regulatory or evaluation results. The LV understands that the Compact also continues to collaborate with PAs in order to investigate the opportunity for LVs, IICs and HPCs to offer ancillary services and/or deeper shell measures to Program participants, and the LV agrees to cooperate with the Compact in implementing such offerings.

The LV will be responsible for timely incentive payment directly to subcontracting IICs, HPCs, and permitted subcontractors for qualified/completed installations. The LV understands and agrees that IIC and HPC installation of weatherization measures are provided as an instant, up-front incentive to participating Program participants and will ensure incentives are paid accordingly.

G. HEAT Loan Administration

The LV will implement the HEAT Loan Program on behalf of the Compact.

The LV understands that participation in the HEAT Loan Program is open to Massachusetts consumers that are owners of one to four family homes and ALR customers who own a condominium unit, that have a current residential electric account, and whose electricity is provided by an electric utility that collects/administers System Benefits Charges under Section 19 of Chapter 25 of the General Laws. The HEAT Loan was included in the Green Community Act of 2008 as a financing component of the Mass Save Home Energy Services Program. The LV understands that enhancements and changes to the HEAT Loan Program may be added throughout the contract term. The LV will adopt processes/procedures in accordance with modifications to the HEAT Loan Program. The LV will provide HEAT Loan authorization for complete applications within 5 business days of receipt of HEAT Loan Intake Form.

As part of its HEAT Loan Program administration duties, the LV agrees to perform the following:

1. Collaborate with Program Administrators (PAs) to develop HEAT Loan forms, collateral materials, and operational workflow processes.
2. Provide approved forms and collateral materials to the Program participants.

3. Provide necessary materials related to the HEAT Loan Program for inclusion on the Mass Save website.
4. Provide training on Program details and process to all internal and external staff providing energy assessments.
5. Support a toll free phone line to provide information and support to Program participants and contractors about the program process and requirements.
6. Review applications and proposals and required supporting documentation from IICs, HPCs, and permitted subcontractors to verify Program eligibility including any required follow up if documentation is missing or for clarification.
7. Prepare and process HEAT Loan Authorization Forms for eligible submissions.
8. Follow-up with Program participants who indicate that they will be applying for the HEAT Loan, but never do.
9. Assist Program participants in the resolution of any issues relating to the HEAT Loan Program.
10. Track workflow process including interactions with Program participants, job status and required project data.
11. Conduct on-site verification inspections.

H. Quality Assurance Tasks

The LV will provide effective project-level Quality Assurance/Quality Control (QA/QC) procedures for weatherization projects.

The LV will implement the following QA/QC policies and procedures: (i) documentation and record keeping (paper or electronic) protocols; (ii) regular and consistent supervision of Program work, including work performed by IICs, HPCs work and permitted subcontractors; (iii) review and inspection of Program work; and (iv) preparation of quarterly quality assurance reports to Compact.

The LV understands that the Compact will periodically evaluate its performance in the following areas: (i) program participant relations and service; (ii) data collection; (iii) Program participant education; (iv) testing and diagnostic procedures; (v) measures installed; (vi) materials used; (vii) sales and presentation; (viii) rebate processing; (ix) Program participant problem resolution; (x) scheduling and backlog; (xi)accuracy of work measures and costs; and (xii) timeliness of services.

The LV shall require the same level of quality assurance from IICs, HPCs and permitted subcontractors that it requires of its own employees.

The LV understands that the Compact and other PAs have engaged a statewide QA/QC Vendor to perform additional quality assurance inspections of Program services and installations based on Compact requirements. These will include both in-field, pre and post evaluations. The LV will ensure that any areas of concern identified by the statewide QA/QC Vendor are resolved and reported to Compact.

The LV will promptly respond to any Program participant complaints or inquiries and third-party QA/QC results.

I. Data Transfer and Reporting Functions

The LV will provide the Compact with all Program participant data, assessment information, work order records and other reports in a timely manner in accordance with Attachment E for more information. The LV will maintain these records in a database environment that is (at minimum) capable of fulfilling all data requirements for Tier I and Tier II services as defined by the Department of Energy Resources (DOER) in accordance with Attachment H.

The LV will provide the Compact with the information that it needs to provide updates to the MA Energy Efficiency Advisory Council. The LV will provide information related to metrics such as overall savings achieved, time to serve, implementation conversion rates, QA/QC issues/ratings, etc. and any other information requested by the Compact.

The LV will be responsible for continuous Program activity tracking and monitoring. The LV must collect and manage data necessary for its own monitoring and project management, PA oversight of the Program, required reporting to DOER and for Program evaluations to be conducted by outside evaluation vendors engaged by Compact.

The LV will establish data collection and tracking procedures at Program initiation, and submitted to Compact for approval prior to Program delivery. The LV will develop and maintain a computerized data tracking system which will at a minimum:

1. Monitor Program progress (number of participants, installations, costs, etc.).
2. Meet regulatory reporting requirements.
3. Support the Compact's ability for early identification of major issues that would jeopardize the ability of the Program to meet its goals.
4. Support the calculation of energy impacts, by measure and for the Program, using acceptable engineering algorithms.
5. Track lead generation.
6. Track participant and non-participant (no shows or Program participants that decline a visit, contact name, address, building type, owner/renter, household size, etc.).
7. Track the number of site visits made, by whom, when.
8. Track detailed information on all measures recommended and installed, including size, location, number of units, usage, type and model of equipment removed and installed.
9. Track information relating to efficiency measures that were recommended to the Program participant, but were not installed.

Specific data needs and inputs may be expanded, at the request of Compact.
Upon the Compact's request, the LV will perform periodic and ad hoc electronic transfers of any or all of these computerized data tracking systems. The LV understands and agrees that the

timing, format, and contents of these transfers will be specified by the Compact and may be changed for any reason at any time at no additional cost to the Compact.

The LV will upload (at least monthly), a detailed file including all energy efficient measures installed, services provided and an invoice for reconciliation with the Compact's internal database. The LV will ensure that the data transfers will be of the highest integrity in order to avoid additional administrative burden and payment requests on the Compact.

J. Marketing Support

The LV will design and implement a marketing plan that will help to support participation and installation of measures in the Program which is subject to the Compact's approval. The LV's plan will include marketing mechanisms designed to increase Program participation and major measure adoption among hard-to-reach sectors including rental properties and Program participants who speak English as a second language.

The LV will conduct Program marketing in order to maximize program participation. The LV will maintain an open line of communication with the statewide residential marketing team in order to avoid duplicating outreach channels, thus expanding outreach efforts.

The LV will participate in specific marketing efforts to increase whole-facility enrollment (the installation of additional energy efficiency measures).

K. Financial Accounting Services

The LV agrees that it will be responsible for the financial management of the Program. It will use accounting systems 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 LV understands and agrees that it is solely responsible for developing compensation systems between itself and (the IICs, HPCs and permitted subcontractors), as well as with its own staff. The LV understands that the Compact may audit the LV's financial and accounting records pertaining to the Program at any time.

4. *Deliverables/Work-Product; Timing*. Lead Vendor shall deliver the work-product set forth in the description of Services above, including developing Program forms, creating and maintaining certain database systems, designing and implementing a merit based allocation of work system, developing a marketing plan. The timing of such deliverables/Work-Product is set forth in the description of Services above.

5. *Reports*. Lead Vendor shall deliver the work-product set forth in the description of Services above, including monthly implementation and management reports, home energy assessment reports, bimonthly reporting to the Statewide Interest Subsidy Payment Agent, quarterly quality assurance reports, as well as any additional reports deemed necessary or useful by the Compact.

6. *Additional Training, Required Certifications and/or Performance Standards.* In addition to the requirements set forth in the Agreement, the following additional training, required certifications and performance standards apply:

a. The LV must be Building Performance Institute (BPI) accredited to manage all aspects of the Program. The Program requires BPI certified auditor training (Building Analyst, Certified Multifamily, etc.) for all internal LV field staff, and at least one person with Building Envelope. The Compact will not compensate the LV for any auditor training costs associated with auditor certification, unless otherwise specified in advance. The LV shall also be responsible for ensuring that Independent Insulation Contractors (IICs) and Home Performance Contractors (HPCs) also possess the BPI Analyst certification. The LV shall also ensure that one person on staff should also have BPI Envelope certification for each IIC, HPC and the LV. These initial requirements are collected in the contractor enrollment process, which is handled by the LV.

b. The LV will adhere to BPI procedures for identification and testing for all potential health and safety issues, as appropriate.

c. If a federal standard is implemented or the Residential Management Committee or other residential working groups require statewide software, the LV will also ensure that all Home Energy Service providers will be expected to utilize software that falls into the acceptable category.

d. In performing the Services, the LV will comply with the following materials and work site standards and will ensure that IICs, HPCs and permitted subcontractors also comply:

(i) Materials will not be installed without prior approval of the Program participant or landlord.

(ii) All installed materials shall be consistent with the application Mass Save Program Materials & Installation Standards and be sufficiently durable to ensure measure performance.

(iii) The Program participant work site free will be kept 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 or vacuumed to its original condition.

(iv) 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 will be properly, safely , and lawfully disposed of.

(v) Upon request, the LV will (i) advise Compact and the applicable Program participant(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 Program participant's location in the course of the work, and (ii) provide the Compact with documentation (including, without limitation, certificates and manifests) evidencing proper use, storage, treatment, transportation, handling, and disposal or such material and associated property and equipment.

(vi) Domestic Hot Water ISMs must have a maximum flow-rate no greater than 1.5 gpm, at 80 psi, as tested in accordance with ANSI A112-18-1M. All flow restrictor installation shall not lead or cause "water-hammer" at the time of installation, and shall be hand tightened only.

7. *Quality Controls*. Quality Controls and Quality Assurance standards are set forth in the description of services above.

8. *Project Team*. The Services to be performed by staff meeting the qualifications set forth in Section 6 above.

9. *Compact Responsibilities*. In general, the Compact anticipates a limited role in Program implementation, and is contracting for the LV provide virtually "turn-key" program delivery. Broadly, the Compact responsibilities can be assumed to be:

a. Providing customer information for those likely to be eligible for the Program including names, addresses, account numbers, telephone numbers, and referrals from other programs;

b. Ongoing Program development and refinement, in conjunction with PAs and vendors;

c. Monitoring and oversight of LV performance, including: (i) reviewing and approving any change orders or modifications to program implementation procedures; (ii) reviewing and approving all forms, program materials, procedures, protocols and software proposed for use by the LV in implementing the Program; (iii) reviewing all reports from the LV; (iv) reviewing the quality and conduct or work performed, including conducting random site inspections through a third-party quality control vendor; and (v) monitoring and tracking the resolution of Program participant complaints or inquiries;

e. Program participant intake; and

f. Program participant qualification for 61% - 80% or less for affordable designation.

ATTACHMENT B
Form of Contract

BCK DRAFT 3/9/21

ENERGY EFFICIENCY FIELD SERVICES AGREEMENT

This ENERGY EFFICIENCY FIELD SERVICES AGREEMENT ("Agreement") is made by and between the Cape Light Compact JPE, a joint powers entity organized pursuant to G.L. c. 40, §4A½ and the organizational successor to the Cape Light Compact (the "Compact"), and [insert] ("EE Vendor"). The Compact and EE Vendor may be referred to herein collectively as the "Parties," or either singularly as a "Party." This Agreement is effective as of [insert].

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, entered into an inter-governmental agreement, as amended from time to time, to act together as the Compact;

WHEREAS, in 2017, the Compact undertook a reorganization and began fully operating as a joint powers entity as of July 1, 2017;

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 administering an energy efficiency plan that advances consumer awareness and the adoption of a wide variety of energy efficiency measures and that also utilizes and encourages demand side management;

WHEREAS, the Compact is operating an Energy Efficiency Plan which is periodically updated and approved by the Massachusetts Department of Public Utilities;

WHEREAS, the Compact issued a [insert as applicable: request for proposals, invitation for bids, etc.] on [insert date] for the performance of [insert program name];

WHEREAS, the Compact seeks to enter into an agreement with EE Vendor for certain services which are defined in Section 2.1 in connection with the energy efficiency programs that it operates or will operate under the Energy Efficiency Plan; and

WHEREAS, EE Vendor has the expertise required to provide the Compact with the EE Vendor Services required pursuant to this Agreement.

NOW THEREFORE, in consideration of the promises and mutual covenants set forth herein, EE Vendor and the Compact do hereby agree as follows:

SECTION 1 TERM OF AGREEMENT AND TERMINATION

1.1 **Term**. This Agreement is effective as of the date set forth above and shall continue in force and effect until [insert], unless this Agreement is terminated before such date under the

provisions of Section 1.2. In addition, the Compact may, in its sole discretion, extend the term of this Agreement for an additional [insert] year(s).

1.2 **Termination**. The Compact shall have the right to terminate or suspend this Agreement for any reason, including, but not limited to, in the event that the EE Vendor is in default under another EE Vendor Services or consulting agreement between EE Vendor and the Compact, or for convenience. EE Vendor may terminate this Agreement only if the Compact materially breaches its obligations under this Agreement. The terminating Party shall provide written notice to the other Party of any such termination or suspension, specifying the effective date thereof. If the terminating Party is the Compact, such notice shall be given at least fifteen (15) calendar days before such effective date; if the terminating Party is EE Vendor, such notice shall be given at least ninety (90) calendar days before such effective date. In addition, if the Compact terminates this Agreement for cause, the Compact shall be entitled to deduct and/or be reimbursed any costs of cure and transition costs (including reasonable attorneys' fees) that it, a Member[1] or a Customer (as defined herein) incurs related to engagement of a substitute EE Vendor.

1.3 **Termination or Suspension Due to Changes in Funding**. This Agreement 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 Agreement will become null and void, effective immediately upon notice to EE Vendor. The Compact shall provide written notice of such termination or suspension to EE Vendor. In the event of such termination or suspension, EE Vendor shall be paid for all authorized, satisfactory (in the reasonable discretion of the Compact) EE Vendor Services performed up to and including the date of termination or suspension.

1.4 **Obligations upon Termination**. Following termination of this Agreement, the Parties shall each discharge by performance all obligations due to the other Party that arose up to the date of termination of this Agreement.

SECTION 2 SCOPE OF SERVICES AND RELATED MATTERS

2.1 **EE Vendor Services**. EE Vendor agrees to provide the expertise, labor, materials and supplies necessary to perform the services and deliverables described in Exhibit A attached hereto from time to time and such other services as may be specifically requested by the Compact from time to time (the "EE Vendor Services"). All such EE Vendor Services and deliverables shall be designed to achieve the anticipated outcomes specified in the description of EE Vendor Services and shall be provided in accordance with the terms and conditions of this Agreement.

2.1A **Program Management Services**. EE Vendor agrees that the Services include management and operation of the Programs described in Exhibit A, including management,

[1] For the purposes of this Agreement, the term "Member" means 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, Yarmouth, Dukes County, and any other governmental unit that becomes a member of the Compact during the term of this Agreement.

supervision and control of all subcontractors and independent contractors participating in such Programs. EE Vendor agrees that it is responsible for entering into and managing the contractual relationships with the subcontractors and independent contractors and that it will ensure that such subcontractors and independent contractors understand, acknowledge, and agree that the Compact has no liability to them in connection with EE Vendor's management and operation of the Programs. Consultant understands and agrees that its indemnification obligations set forth in Section 7 include indemnifying the Compact from the acts and/or omissions of the subcontractors and independent contractors, and from any third-party claims relating to same.

2.2 **Changes**. The Compact may, from time to time, require changes in the scope of the EE Vendor Services to be performed hereunder. Such changes must be evidenced in written amendments to this Agreement. Any EE Vendor Services performed or proposed by EE Vendor shall not be reimbursed unless they are approved in writing by the Compact prior to their rendering.

2.3 **Timing of Performance**. EE Vendor shall commence and complete the EE Vendor Services in accordance with the project milestone schedule incorporated into Exhibit A if applicable. If no schedule is incorporated, EE Vendor shall begin to render the EE Vendor Services on the effective date of this Agreement and shall continue to render the EE Vendor Services in a prompt and timely manner.

2.4 **Staffing; Background Check Requirements**. The Compact may require EE Vendor to remove from its project team such employees of EE Vendor or subcontractors of EE Vendor as the Compact, in its reasonable discretion, deems objectionable, or whose continued employment in connection with the EE Vendor Services is deemed by the Compact, in its reasonable discretion, to be contrary to the best interests of the Compact. EE Vendors working in the field having contact with Compact customers or program participants ("Customers") must comply with the Compact's background check requirements set forth in Exhibit B.

2.5 **Conflicts of Interest**. EE 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 EE Vendor Services. EE Vendor agrees to diligently serve and endeavor to further the best interests of the Compact, as known or made known to EE Vendor. EE Vendor further agrees not to undertake activities that conflict, or are not in accordance with, the best interests of the Compact, and will disclose any other employment or engagements that could conflict with its obligations under this Agreement. EE Vendor further covenants that it shall comply with all relevant provisions of G.L. c. 268A.

2.6 **Points of Contact**. EE Vendor names [insert], as the day-to-day point of contact for the Compact for all issues arising under this Agreement and the person responsible for ensuring over the entire term of this Agreement that the EE Vendor Services are performed and completed in a manner satisfactory to the Compact and in accordance with the terms of this Agreement. The Compact names [insert] to be the day-to-day point of contact for EE Vendor for all issues arising under this Agreement.

2.7 **Safety**.

If EE Vendor is performing installation or construction related services, the provisions in this Section 2.7 shall apply.

To the fullest extent allowed by law, EE Vendor shall assume responsibility for the general and overall safety of the work site, including the safety of any employee, client, guest, representative, contractor or subcontractor of EE Vendor, the Compact, and Customers. Systems that have been disabled or otherwise affected in the course of performance of the EE Vendor Services will be left in a safe condition. Out of service systems will be tagged by EE Vendor in a manner accepted by OSHA, state and local authorities, and the Compact. EE Vendor shall at all times exercise reasonable precautions for the safety of its employees, subcontractors and the general public and will be responsible for the performance and maintenance of any appropriate safety procedures pursuant to which it, its subcontractors and its employees shall act. Further, EE 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 EE Vendor must be corrected immediately. The Compact reserves the right, but has no obligation, to take corrective action and charge the costs associated with the same back to EE Vendor.

EE Vendor shall immediately notify the Compact of any accident or damage to persons or property and, within forty-eight (48) hours, file a written report of the accident with the Compact. If EE Vendor encounters any asbestos or other hazardous substances in the course of the EE Vendor Services, EE Vendor shall immediately notify the Compact and any agency required by state or federal law, and shall stop any EE Vendor Services that may disturb, damage or cause a release of asbestos or hazardous substances until EE Vendor receives written instruction from the Compact. If any hazardous substances are to be handled in the execution of the EE Vendor Services, EE 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 COMPACT BE LIABLE FOR ANY INJURY TO a) EE VENDOR, b) ANY EMPLOYEE, CLIENT, GUEST, REPRESENTATIVE, CONTRACTOR, OR SUBCONTRACTOR OF EE VENDOR, c) ANY CUSTOMER, ANY EMPLOYEE, CLIENT, GUEST, REPRESENTATIVE, CONTRACTOR, OR SUBCONTRACTOR OF ANY CUSTOMER, OR d) 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.

2.8 **Storage and Clean-up**.

If EE Vendor is performing installation or construction related services, the provisions in this Section 2.8 shall apply.

EE Vendor shall, at the end of each work day, leave the work area in a clean and safe

condition, and shall comply promptly with any instructions from the Compact relating thereto. As the EE Vendor Services covered by this Agreement are completed, EE Vendor shall remove from the work sites, to the Compact's satisfaction, all of EE Vendor's rubbish, debris, materials, tools and equipment, and if EE Vendor fails to do so promptly, the Compact may remove the same to any place of storage, or any dumping ground, at EE Vendor's risk and expense and without incurring any responsibility to EE Vendor for loss, damage or theft. All storage and removal costs thus incurred by the Compact shall be deducted from any payment or balance due to EE Vendor, and any excess shall be immediately due from EE Vendor to the Compact.

SECTION 3 COMPENSATION AND RELATED MATTERS

3.1 **Rates of Compensation; Prevailing Wage**. EE Vendor shall be compensated by the Compact for the EE Vendor Services in accordance with the terms and rates set forth in Exhibit C hereto. The Compact may reject any invoices using billing rates that are not consistent with Exhibit C, unless the Compact has previously accepted such substitute rates in a written amendment to this Agreement. To the extent that it applies to the EE Vendor Services (e.g., in the implementation of energy efficiency services that result in physical alterations to public buildings), EE 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 the EE Vendor Services are performed under prevailing wage rates, EE 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. EE Vendor shall keep accurate records showing the name, craft or trade, and actual hourly rate of wages paid to each worker employed by it in connection with the EE Vendor Services, and such records shall be preserved at least two (2) years from the date of payment.

3.2 **Invoicing and Payment**. EE Vendor shall submit monthly invoices to the Compact by the 10th day of each month, unless otherwise authorized in writing by the Compact. The Compact will remit payment within forty-five (45) calendar days of the Compact's receipt of each monthly invoice in accordance with applicable municipal finance laws. Payment may be contingent upon final inspection and/or acceptance of the EE Vendor Services. Upon request, EE Vendor shall provide to the Compact all backup documentation required to establish the value of the EE Vendor Services performed to date as represented by EE Vendor's monthly invoices.

3.3 **Effect of Payment**. The Compact shall not be deemed to have accepted any improper EE Vendor Services, materials or performance by virtue of any payment made to EE Vendor. Payments shall be deemed advances and are subject to adjustment for errors, overpayments, or the Compact's good faith determination that the remaining balance of payments may be insufficient to ensure completion of the EE Vendor Services. EE Vendor shall not be entitled to any payment for any partial performance except for progress payments made in accordance with this Agreement. EE Vendor understands that the Compact is contracting for nothing less than full, complete and timely performance of the EE Vendor Services, and with the express agreement that the Compact shall be obliged only upon final completion of the EE Vendor Services.

3.4 **Withholding**. The Compact may withhold a payment of all or a part of any invoice to the extent as may be necessary to protect itself from loss caused by: (i) defective EE Vendor Services not remedied; (ii) claims filed or reasonable evidence indicating probable filing of claims by other parties against EE Vendor or the Compact in connection with the EE Vendor Services; (iii) EE Vendor's failure to make payments properly to subcontractors for materials, labor or equipment; (iv) unsatisfactory performance of the EE Vendor Services; (v) EE Vendor's failure to pay any amounts due to the Compact; or (vi) EE Vendor's failure to perform any of its obligations under this Agreement. In addition, if the Compact has a reasonable indication that the unpaid balance will be insufficient to cover the cost to complete the EE Vendor Services or that the EE Vendor Services will not be completed within the project milestone schedule (if any), the Compact may withhold payment of all or a part of any invoice to the extent as may be necessary to protect itself from such anticipated losses. The Compact shall notify EE Vendor of the grounds for any withholding. When EE Vendor provides performance assurance satisfactory to the Compact that will protect the Compact for the amount withheld, payment will be made. When deemed reasonable by the Compact, the Compact may use such withheld funds to undertake remedial measures.

3.5 **Credits**. EE Vendor may not claim any governmental or other energy efficiency credits, tax credits, forward capacity payments, carbon offsets, rebates or incentives of any kind as a result of or in connection with the EE Vendor Services performed under this Agreement (collectively, the "Credits") without the written consent of the Compact in its sole discretion. To the extent any Credits are allocated to the Compact, a Compact project or Customer by operation of law or regulation, EE Vendor shall, upon request and without charge, cooperate fully with the Compact 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 Compact.

3.6 **Bonds.**

If EE Vendor is performing installation or construction related services, the provisions in this Section 3.6 shall apply.

Upon request by the Compact, EE Vendor shall provide performance and payment bonds from a surety company in amounts, form and substance acceptable to the Compact, naming the Compact as a direct beneficiary of the surety's obligations under such bonds. Such bonds shall fully protect the Compact against any and all breaches by EE 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 EE Vendor Services and the warranty period described below. Failure to provide the requested bonds, prior to the commencement of the EE Vendor Services or cancellation of requested bonds during the term of this Agreement or the warranty period, shall entitle the Compact to terminate this Agreement without recourse by EE Vendor.

Performance Bond	[ ] required	[ ] not required
Payment Bond	[ ] required	[ ] not required

Premium(s) for requested bond(s) may be added to the Agreement price through a written request seeking approval from the Compact without additional markup by EE Vendor (except as specifically approved, in writing, by the Compact in advance of the EE Vendor Services). EE Vendor must present to the Compact a copy of the invoice for the bonds signed by the agent with power of attorney for the bonding company. The Compact 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 Compact. EE 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 Compact, in its discretion. The Compact reserves the right of final approval of EE Vendor's surety companies.

SECTION 4 PERFORMANCE STANDARDS

4.1 **General Performance Standard and Warranty**. EE Vendor assumes professional and technical responsibility for the performance of the EE Vendor Services in accordance with the terms of this Agreement and Good Industry Practice, and any additional guarantee or warranty specified in the description of EE Vendor Services as set forth in Exhibit A. If, during the performance of the EE Vendor Services or within one (1) year following completion thereof, the EE Vendor Services fail to meet such standards, EE Vendor shall promptly and timely (no more than five business days) furnish all remedial services and materials necessary to correct such deficiencies at EE Vendor's sole cost and expense. EE Vendor shall also be responsible for reimbursement of the Compact's losses related to such defective EE Vendor Services during the warranty period. For purposes of this Section 4.1, the term "Good Industry Practice" means the practices, methods and acts (including, but not limited to, the practices, methods and acts engaged in or approved by a significant portion of the energy efficiency industry in the performance of evaluating and installing energy efficiency measures) that, at a particular time, in the exercise of reasonable judgment in light of the facts known or that should have been known at the time a decision was made, would have been expected to accomplish the desired result in a manner consistent with law, regulation, reliability, safety, environmental protection, economy and expedition. Good Industry Practice is not intended to be limited to consideration of any one practice, method or act, to the exclusion of all others, but rather, is intended to require the consideration of a spectrum of possible practices, methods or acts.

4.2 **Representations, Warranties and Continuing Covenants**. In performing its obligations hereunder during the term of this Agreement, EE Vendor represents and warrants that it shall: (i) exercise reasonable care to assure that its operations are prudently and efficiently managed; (ii) employ an adequate number of competently trained and experienced personnel to carry out the EE Vendor Services; (iii) spend such time in performing the EE Vendor Services as is reasonable and necessary to fulfill effectively its obligations under this Agreement; (iv) comply with all relevant industry standards and practices for the delivery of EE Vendor Services to the Compact; (v) comply with applicable laws and professional licensing requirements; (vi) ensure that it validly owns or licenses all intellectual property used in the performance of the EE Vendor Services, with a right to sublicense to the extent necessary, and that such licenses are maintained at all times during the term of this Agreement; and (vii) provide the required notice under Section 7.5 (Notice of Claims) of this Agreement.

4.3 **Correction of the EE Vendor Services**. EE Vendor is required to correct in a prompt and timely fashion any EE Vendor Services rejected by the Compact. EE Vendor shall correct at its own cost and bear the expense of additional services performed to correct non-conforming EE Vendor Services. If EE Vendor fails to cure the default or produce a plan acceptable to the Compact (in its reasonable discretion) to cure the default in a prompt and timely fashion, the Compact may take over the EE Vendor Services or any separable part thereof, and complete the same or have the same completed at EE Vendor's expense. In taking over, the Compact shall have the right, for the purpose of completing the EE Vendor Services, to take possession of all equipment, supplies and materials belonging to EE Vendor and purchased or leased for the performance of the EE Vendor Services. For such purpose, this Agreement shall be construed as an assignment by EE Vendor to the Compact of said equipment, supplies and materials.

4.4 **Periodic Reporting**. Upon the request of the Compact, the EE Vendor shall promptly submit a report detailing the status of the EE Vendor Services including the progress toward achieving completion of any deliverables or project milestones. Additional reporting requirements may be set forth in Exhibit A.

SECTION 5 INTELLECTUAL PROPERTY MATTERS

5.1 **Intellectual Property Rights; Work for Hire**. EE Vendor agrees that any work of authorship created or developed by EE Vendor during performance or delivery of services to the Compact, either individually or jointly with others, in the course of the rendering the EE Vendor Services to the Compact shall be deemed a "work for hire," and the exclusive property of the Compact. To the extent not deemed a "work for hire" by operation of law, with respect to any invention, trade secret, or work of authorship created or developed in the course of the rendition of services to the Compact, EE Vendor hereby irrevocably assigns, transfers, and conveys to the Compact all of EE Vendor's right, title and interest in such property, including but not limited to, all rights of patent, copyright, trade secret or other proprietary right in such property. Further, EE Vendor agrees to execute any documents or take any action reasonably requested by the Compact to perfect the Compact's ownership of any such property. EE Vendor further agrees that, to the best of its knowledge, all work created or developed by EE Vendor will be original and non-infringing.

5.2 **Dissemination of Information**. EE Vendor shall not disseminate any information, reports, information, data, etc., created, prepared, assembled or obtained in performance or delivery of EE Vendor Services to any third-party without the prior written consent of the Compact. EE Vendor shall not issue publicity, advertising, news releases, grant press interviews or create or distribute social media regarding the EE Vendor Services or the Compact during or after the performance or delivery of the EE Vendor Services without the prior written consent of the Compact.

SECTION 6 INSURANCE

EE Vendor shall, at its sole expense, procure and maintain, the following insurance:

(a) Until completion of the EE Vendor Services:

i. Workers' Compensation and Employers' Liability Insurance covering *each and every worker employed in, about or upon the EE Vendor Services*, as provided for in each and every statute applicable to the 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 Agreement), 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 EE Vendor Services 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 EE Vendor's errors and omissions relating to the EE Vendor Services if the EE Vendor Services involve 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. Such insurance may be maintained on a "claims made" basis but in such case it shall always be subject to a retroactive date that is effective prior to the effective date of this Agreement.

(b) After the EE Vendor Services are complete:

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 three years.

ii. Professional Liability Insurance if the EE Vendor Services involves rendering of professional advice or consultation, including designs, surveys, drawings, approval of maps, etc. with a limit of at least $1,000,000 for three years.

The Compact 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 Compact. EE 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 Compact, in its discretion. The Compact reserves the right of final approval of EE Vendor's insurance companies.

EE Vendor agrees to waive any rights of subrogation against the Compact, the Compact's Customers, Member Municipalities, and their respective employees, subcontractors, engineers, workers and agents. EE Vendor shall name the Compact and its officials and employees as additional insureds on its commercial general liability insurance, automobile liability insurance and umbrella liability insurance policies.

EE Vendor shall not begin rendering EE Vendor Services without first submitting to the Compact the insurance certificate(s) that indicate the coverages required by this Agreement. The insurance certificate(s) shall provide that there will be no cancellation or reduction of coverage without thirty (30) days prior written notice to EE Vendor and EE Vendor shall in turn provide at least (thirty) 30 days advance notice of cancellation to the Compact. If the policy expires prior to completion of the EE Vendor Services, EE 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 Agreement. EE Vendor shall be solely responsible for tracking and reporting to the Compact the expiration of the policies shown on the insurance certificate(s) provided.

EE Vendor shall be solely responsible for any damage to or loss to its property, equipment or materials regardless of its insurance coverage.

SECTION 7 INDEMNIFICATION BY EE VENDOR[2] AND DAMAGES FOR BREACH

7.1 **Indemnification**. To the fullest extent allowed by law, EE Vendor (and its officers, directors, employees, servants, agents, representatives, attorneys, independent contractors, successors and assigns) shall indemnify, defend, and hold harmless the Compact, each Member (and all of the respective officials, officers, directors, employees, servants, agents, representatives, attorneys, independent contractors, successors and assigns of the Compact and each Member), 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 EE Vendor (and/or its officers, directors, employees, servants, agents, representatives, attorneys, independent contractors, successors and assigns) related to this Agreement, including, but not limited to, any failure on the part of EE Vendor (and/or its officers, directors, employees, servants, agents, representatives, attorneys, independent contractors, successors and assigns) to perform or comply with any of the covenants, agreements, terms, or conditions contained in this Agreement on its part to be performed or complied with. EE Vendor's indemnification obligation includes claims related to the unauthorized use of any trade secrets, patent infringement, or trademark or copyright violation. EE Vendor's indemnification obligation is not limited in any way by the amount or type of damages or compensation payable by the Compact. EE Vendor agrees to pay all costs relating to indemnification claims, including reasonable attorneys' fees incurred in investigating and responding to claims, within thirty (30) days of receipt of a payment request.

[2] Note to EE Vendor: In accordance with guidance issued by the Massachusetts Office of Attorney General, the Compact cannot indemnify private parties.

7.2 **Duty to Mitigate**. Each Party agrees that it has a duty to mitigate damages and covenants that it will use commercially reasonable efforts to minimize any damages it may incur as a result of the other Party's performance or non-performance of this Agreement.

7.3 **Limitations**. NO PARTY HERETO SHALL BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, PUNITIVE, EXEMPLARY OR INDIRECT DAMAGES, LOST PROFITS OR OTHER BUSINESS INTERRUPTION DAMAGES, BY STATUTE, IN TORT OR CONTRACT. Notwithstanding the foregoing, EE Vendor acknowledges that the preceding sentence shall not limit the Compact's rights to seek indemnification from EE Vendor for consequential, punitive, or incidental damages or other such losses claimed by third-parties.

7.4 **No Cap on EE Vendor's Liability**[3]. EE Vendor's liability under this Agreement shall not be limited to the value of the EE Vendor Services rendered under this Agreement; further, EE Vendor's liability shall not be limited by the availability of its insurance coverage.

7.5 **Notice of Claims**. EE Vendor will provide formal written notice to the Compact in the event that EE Vendor receives notice of pending or threatened litigation, claims or assessments against the EE Vendor or the Compact in connection with the EE Vendor Services rendered by the EE Vendor under this Agreement.

7.6 **Acknowledgment of JPE Status**. EE Vendor understands that the Compact is a governmental entity, specifically a joint powers entity, and that its members are the governmental units set forth in footnote 1 of this Agreement. EE Vendor understands and agrees that the Members assume no liability whatsoever for any of the debts and liabilities of the Compact, including, but not limited to, any obligations under this Agreement. EE Vendor further agrees and covenants that it will not sue or otherwise make any claim against any of the Members for any obligations, debts or liabilities of the Compact that may exist or accrue as a result of its obligations under this Agreement, or any acts or omissions related to the performance of such obligations.

7.7 **Governmental Immunities**. EE Vendor understands that the Compact is a governmental entity, and certain legal privileges, defenses and remedies are available to it at law. Nothing in this Agreement shall be construed to waive any of these privileges, defenses or remedies.

SECTION 8 CHOICE OF LAW AND DISPUTE RESOLUTION

This Agreement shall be construed under and governed by the laws of the Commonwealth of Massachusetts, without regard to its rules regarding choice of laws. Any dispute that arises regarding this Agreement that cannot be resolved by informal negotiations shall be submitted to nonbinding mediation. If the Parties cannot agree upon a mediator, the Parties shall request that the American Arbitration Association, Boston, Massachusetts, appoint a mediator. Each Party shall bear its own mediation costs. Injunctive relief may be sought by either Party without resorting to mediation to prevent irreparable harm.

[3] Note to EE Vendor: The Compact does not accept liability caps as a matter of public policy, and the constitutional prohibition on providing private parties with indemnification rights may also apply to such caps.

Exclusive venue for any judicial proceeding involving a dispute arising from this Agreement shall be Barnstable County Superior Court, Massachusetts. In any judicial action, 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 arising from the civil action. "Prevailing Party" means the Party who most substantially prevails in its claims or defenses in the civil action. EE Vendor shall diligently carry on the EE Vendor Services and maintain the project milestone schedule during any dispute resolution proceedings, unless otherwise agreed to by the Compact in writing.

SECTION 9 ASSIGNMENT AND SUBCONTRACTING

Except as expressly permitted in Exhibit D, none of the EE Vendor Services shall be subcontracted or assigned, in whole or in part, without the prior written approval of the Compact, in its sole discretion. No subcontract or assignment shall relieve or discharge EE Vendor from any obligation or liability under this Agreement except as specifically set forth in the instrument of approval, and EE Vendor shall continue to be liable, jointly and severally, with the assignee for the fulfillment of all of the terms and conditions arising under this Agreement subsequent to the assignment. EE Vendor shall provide prompt notice to the Compact of any such permitted subcontract or assignment, together with the name and address of the assignee, and a copy of the subcontract or assignment instrument.

EE Vendor agrees that it retains full liability for the acts and omissions of its subcontractors (regardless of whether such subcontractors have been approved by the Compact). In addition, EE Vendor must ensure that any subcontractor who has been subcontracted, assigned or delegated thirty percent (30%) or more of the EE Vendor Services must abide by all of the terms and conditions of this Agreement, including, but not limited to, insurance requirements. The Compact reserves the right to impose these requirements on subcontractors performing less than thirty percent (30%) of the EE Vendor Services.

SECTION 10 CONFIDENTIALITY AND CUSTOMER INFORMATION

10.1 **Confidentiality**. Through the term of this Agreement, the Parties may share certain confidential or proprietary information with each other. The Parties agree not to use this information for any purposes other than as needed to meet their respective obligations under this Agreement and to protect such information to the same standards as each Party holds its own confidential or proprietary information. The disclosure and use of such information shall also be governed by the Non-Disclosure Agreement entered into by the Compact and the Commonwealth Electric Company d/b/a NSTAR Electric dated May 10, 2001 (attached hereto as Exhibit E),and any subsequent non-disclosure agreements in which the Compact is a party and that involves the Services or obligations under this Agreement. Consultant agrees to submit the acknowledgment form set forth as Exhibit E concurrently with execution of this Agreement.

10.2 **Customer Information**. To the extent EE Vendor (or its subcontractors or any other party acting by or on behalf of EE Vendor) is provided or has access to Customer information, the following provisions apply: EE Vendor warrants and represents that the EE Vendor and its subcontractors and all other persons or entities having access to the Customer information by or

through the EE Vendor have the appropriate safeguards in place to prevent the disclosure or use of any Customer information received from the Compact or its Customers, and further agrees to use such information solely for the purpose of performing EE Vendor Services for the Compact under this Agreement. Such safeguards shall include, without limitation, security policies, tools and processes restricting access to such Customer information to persons on a need-to-know basis, adequately training and notifying its employees and contractors of the restrictions associated with such information, identifying and correcting any impermissible use or disclosure, and immediately reporting any such use or disclosure. EE Vendor also agrees to comply with all applicable state, federal and local laws, regulations, codes and policies regarding the protection of Customer information, and the avoidance of theft or fraud through the improper use or disclosure of such information, including, without limitation, G.L. c. 93H and the regulations promulgated thereunder (including, without limitation, the maintenance of a Written Information Security Program in accordance with 201 C.M.R. 17.00 et seq.). Upon the request of the Compact, the EE Vendor shall provide the Compact with detailed information and documentation regarding such safeguards, and with certifications regarding the same by an authorized officer of the EE Vendor, and the Compact shall have the right to monitor and audit the compliance of the EE Vendor at any time with the requirements of this provision. All such Customer information shall be returned to the Compact upon the Compact's request (or destroyed if so directed by the Compact), and the EE Vendor shall retain no copy or other record thereof. EE Vendor shall give immediate notice to the Compact of any incident that may cause such Customer information to be disclosed or otherwise used in an unauthorized manner. Such notice shall set forth all relevant information regarding the incident, including the specific nature and extent of the disclosure/use, the measures taken and to be taken to retrieve and restore the Customer information and/or to otherwise prevent the unauthorized use or disclosure of the Customer information. EE Vendor shall, at its sole cost, cooperate fully with the Compact and, as necessary, any law enforcement, regulatory authority, insurance carrier, auditors, attorneys and other parties in the investigation and evaluation of such incident, and shall implement at its sole cost any remedial measures recommended by any such parties as approved by the Compact. Customer information shall remain confidential in all circumstances.

SECTION 11 MISCELLANEOUS

11.1 **Notices**. All notices, demands, requests, consents or other communications required or permitted to be given or made under this Agreement shall be in writing and

if to EE Vendor to:

[insert]

if to the Compact to:

Margaret T. Downey
Cape Light Compact JPE Administrator
Cape Light Compact JPE
261 Whites Path, Unit 4
South Yarmouth, MA 02664

mdowney@capelightcompact.org (email)

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. 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.

11.2 **Entire Agreement; Amendments**. This Agreement (including any addenda) 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. To the extent any of the exhibits to this Agreement contain terms that conflict with the terms set forth in the main body of this Agreement or impose additional obligations on the Compact, the language in the exhibits shall be disregarded and shall be of no force and effect. This Agreement may only be amended or modified by a written instrument signed by both Parties hereto.

11.3 **Independent Contractor; No Joint Venture**. EE Vendor will perform all EE Vendor Services under this Agreement as an independent contractor. EE Vendor understands and agrees that none of its employees are Compact employees by virtue of entering into this Agreement. Nothing herein contained shall be deemed to constitute either Party a partner, agent or legal representative of the other Party or to create a joint venture, partnership, agency or any relationship between the Parties. The obligations of the Compact and EE Vendor hereunder are individual and neither collective nor joint in nature.

11.4 **Joint Workproduct; Independent Counsel**. This Agreement shall be considered the workproduct of both Parties hereto. Each Party acknowledges that it has been represented by independent counsel or has had the opportunity to seek counsel in connection with this Agreement and all matters pertinent to it, and each Party waives the benefit of the rules of construction providing that an agreement should be construed against its drafter. Notwithstanding the foregoing, EE Vendor agrees that if Exhibit A (Services) is primarily drafted by EE Vendor, any ambiguous terms contained therein shall be construed against EE Vendor.

11.5 **Waiver**. No waiver by either Party hereto of any one or more defaults by the other Party in the performance of any provision of this Agreement shall operate or be construed as a waiver of any future default, whether of like or different character. No failure on the part of either Party hereto to complain of any action or non-action on the part of the other Party, no matter how long the same may continue, shall be deemed to be a waiver of any right hereunder by the Party so failing. A waiver of any of the provisions of this Agreement shall only be effective if made in writing and signed by the Party who is making such waiver.

11.6 **Records; Audit**. EE Vendor shall maintain books, records, and other compilations of data pertaining to the requirements of this Agreement to the extent and in such detail as shall properly substantiate claims for payment under this Agreement. EE Vendor agrees that the Compact may audit EE Vendor's books, records, and other compilations of data associated with the performance of this Agreement to ascertain that the payments requested by EE Vendor represent the value of the EE Vendor Services. All records shall be kept for a period of six (6) years commencing on the first day after final payment under this Agreement. 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.

11.7 **Solicitation**. EE Vendor shall not solicit work from a Customer for two (2) years following termination of this Agreement for any reason, unless EE Vendor can prove that it has a pre-existing relationship with such Customer. For purposes of this section, "pre-existing relationship" means a relationship pursuant to which EE 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 Eversource Energy, or any other utility. EE Vendor may directly perform services for a Customer if such Customer has solicited EE Vendor. EE Vendor shall not engage in targeted solicitations using Customer information obtained as a result of its performance of the EE Vendor Services or otherwise related to this Agreement. The prohibitions in this section shall not apply to general marketing campaigns of EE Vendor.

11.8 **Headings and Captions**. The headings and captions appearing in this Agreement are intended for reference only, and are not to be considered in construing this Agreement.

11.9 **Political Activity Prohibited**. None of the services to be provided by EE 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.

11.10 **Anti-Boycott Warranty**. EE Vendor hereby warrants that, during the term of this Agreement, neither it nor any "affiliate of the EE Vendor," 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 "affiliate of the EE Vendor" shall be any business entity of which at least 51% of the ownership interests are directly or indirectly owned by EE 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 EE Vendor.

11.11 **Non-Discrimination in Employment and Affirmative Action**. EE 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.

EE Vendor agrees to comply with all applicable federal, state, and local laws, rules, and regulations prohibiting discrimination in employment and in public accommodations.

11.12 **Procurement Process**. The Agreement is intended to be a contract for "energy" and/or "energy related services" within the meaning of G.L. c. 30B, §1(b)(33) and therefore this Agreement is exempt from the competitive procurement procedures set forth in G.L. c. 30B. It shall be the Compact's obligation to comply with submission and reporting requirements of G.L. c. 30B, §1(b)(33) and have executed this Agreement in accordance therewith. If this Agreement was procured under G.L. c. 30B, EE Vendor represents that it has executed all certifications required by such statute, or will provide them concurrently with execution of this Agreement, including the certificates set forth in Exhibits F and G attached hereto.

11.13 **Third-Party Beneficiaries**. Each Member is an intended third-party beneficiary of this Agreement, entitled to the full rights of this Agreement.

11.14 **Savings Clause**. If any section, sentence, clause, or other portion of this Agreement 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.

11.15 **Further Assurances**. From time to time and at any time at and after the execution of this Agreement, each Party shall execute, acknowledge and deliver such documents and assurances, reasonably requested by the other and shall take any other action consistent with the terms of this Agreement that may be reasonably requested by the other in order to effectuate the purposes and to carry out the terms of this Agreement.

11.16 **Survival of Obligations**. Termination of this Agreement for any reason shall not relieve either Party of any obligation accrued or accruing prior to such termination. In addition, the terms of Section 7 (Indemnification) and Section 8 (Dispute Resolution) and any other term that by its nature should survive, shall survive the expiration of termination of this Agreement.

11.17 **COVID Addendum**. If EE Vendor is performing work in the field, it will execute a COVID Addendum, the form of which is set forth in Exhibit H hereto.

11.18 **Diversity, Equity and Inclusion**. EE Vendor acknowledges that the Compact is strongly committed to ensuring that its Programs provide contracting/supplier opportunities for businesses and individuals who historically have been underrepresented in the energy efficiency contracting field. EE Vendor understands that the Compact is in the process of developing formal diversity, equity, and inclusion policies for its vendors and suppliers, and agrees to implement any such policies that are finalized by the Compact during the term of this Agreement.

11.19 **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 effective date first above written.

EE VENDOR	**CAPE LIGHT COMPACT JPE**
_____	_____
Signature	Signature
Print Name:_____	Margaret T. Downey
Title: _____	Cape Light Compact JPE Administrator & Chief Procurement Officer
_____	_____
Date	Date

LIST OF EXHIBITS

Exhibit A - EE Vendor Services
Exhibit B - Compensation
Exhibit C - Background Check Policy
Exhibit D - Pre-approved Subcontractors
Exhibit E - NDA Acknowledgment and NDA
Exhibit F - Tax Compliance Certification
Exhibit G - Certificate of Non-Collusion
Exhibit H - COVID Addendum

EXHIBIT A
EE VENDOR SERVICES

ATTACHMENT B

Form of Contract

EXHIBIT B
BACKGROUND CHECK POLICY

REQUIREMENTS FOR EE VENDOR EMPLOYEE
AND SUBCONTRACTOR BACKGROUND CHECKS

The requirements set forth below shall apply to any services to be performed by EE Vendor under the Agreement. The individuals who will perform the services under the Agreement, including employees, principals, and subcontractors are referred to herein as "EE Vendor Employees."

These requirements for background checks represent the minimum requirements for EE Vendor, to be undertaken at EE Vendor's expense. Additional requirements may be deemed appropriate by the Compact or EE Vendor, or may be required by law, regulation, or other bodies having jurisdiction over the services or EE Vendor. EE Vendor must comply with any such additional requirements as are known or should reasonably be known by it.

To the extent EE Vendor finds that any background check requirements are in conflict with State or Federal statutes, collective bargaining agreements, or other issues that would prohibit compliance, EE Vendor should notify the Compact so that EE Vendor and the Compact may discuss appropriate resolution of the issue.

EE Vendor must complete a background check before any EE Vendor Employee begins work under the Agreement, whether brought on at the outset of the Agreement or at any other point in the Agreement term. An EE Vendor Employee may only begin work under the Agreement in advance of the completion of background checks with the written approval of the Compact setting forth the number of calendar days for such allowance.

EE Vendor must be able to evidence that it has verified the identification of all EE Vendor Employees working for the Compact and that all such individuals are legally eligible to work in the country where the services are to be performed.

EE Vendor must ensure that all EE Vendor Employees working under the Agreement 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 EE Vendor has had a pre-employment criminal history check process in place and can provide documented evidence to the Compact that EE Vendor Employees working under the Agreement have been subjected to equivalent criminal history check, then additional checks are not necessary. If EE Vendor Employee has a felony or misdemeanor criminal record, the Compact reserves the right, in accordance with Section 2.4 (Staffing; Background Checks) of the Agreement, to require EE Vendor to remove such EE Vendor Employee from the work site. If at any time during the term of the Agreement, EE Vendor becomes aware of information concerning a criminal conviction of EE Vendor Employee that would fit the above criteria for

reporting to the Compact, EE Vendor shall forward this information to the Compact and the Compact shall determine whether to remove the EE Vendor Employee from the work site.

All EE Vendor Employees required to operate a motor vehicle in conjunction with services provided to the Compact must be legally licensed and hold a valid driver's license appropriate to the vehicle being driven. This requirement applies to both EE Vendor-owned or leased vehicles and the Compact's owned/leased vehicles. If applicable, a motor vehicle driving record check to include a commercial driver license search must be annually conducted by EE Vendor to validate this requirement.

EE Vendor must maintain a record of all background checks completed in accordance with these requirements and correspondence with the Compact regarding background checks performed during the term of the Agreement and shall make all such records available to the Compact upon reasonable notice.

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

In the event EE Vendor would like to utilize EE Vendor Employee to provide services under the Agreement despite adverse findings from any background check performed in accordance with these requirements, EE Vendor must submit a request in writing to the Compact, or its designee. The Compact shall evaluate all relevant background information and, in its sole discretion, shall make a determination whether the EE Vendor Employee should be allowed to perform services under the Agreement, and shall provide its determination in writing to EE Vendor.

The Compact reserves the right to perform, at its sole cost, audits of EE Vendor's background check program and records for any EE Vendor Employee performing services under the Agreement.

The Compact reserves the right to revise these requirements at any time during the term of the Agreement, which EE Vendor must comply with. Any revisions to these requirements will be provided in writing to EE Vendor.

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

EXHIBIT C
COMPENSATION

EXHIBIT D
PRE-APPROVED SUBCONTRACTORS

None

EXHIBIT E

NDA ACKNOWLEDGMENT AND NDA

I hereby certify my understanding that the Confidential Information, as that term is defined in the Non-Disclosure Agreement between Barnstable County, Massachusetts and the Cape Light Compact, on the one hand, and Commonwealth Electric Company d/b/a NSTAR Electric, on the other, dated May 10, 2001 (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, 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 consultant or contractor of the Cape Light Compact JPE 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:_____

EXHIBIT F

TAX COMPLIANCE CERTIFICATION

Pursuant to M.G.L. c. 62C, §49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

EE VENDOR

_____
Signature
Print Name:_____
Title: _____

_____
Date

EXHIBIT G

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that the bid or proposal it submitted in response to the RFP was made and submitted in good faith and without collusion or fraud with any person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club or other organization, entity or group of individuals.

_____

Signature of individual submitting bid or proposal

_____

EE Vendor Name

EXHIBIT H
COVID ADDENDUM

ADDENDUM #1 TO ENERGY EFFICIENCY FIELD SERVICES AGREEMENT

THIS ADDENDUM #1 ("Addendum") to the Energy Efficiency Field Services Agreement dated as of [insert] as such agreement may have been amended from time to time (collectively, the "Agreement") between the Cape Light Compact JPE, a joint powers entity organized pursuant to G.L. c. 40, §4A½ and the organizational successor to the Cape Light Compact (the "Compact"), and [insert] ("EE Vendor") is made effective as of [insert]. The Compact and EE Vendor may be referred to herein collectively as the "Parties" or either singularly as a "Party."

WHEREAS, under the Agreement, EE Vendor is providing services to the Compact in connection with the Compact's Energy Efficiency Plan which is periodically updated and approved by the Massachusetts Department of Public Utilities;

WHEREAS, some of the services provided by EE Vendor are rendered at customer's residences or businesses ("Customer Sites");

WHEREAS, due to conditions related to the pandemic of coronavirus disease 2019 ("COVID-19"), the Parties agree that additional precautions and measures are necessary in order to properly perform the Services under Agreement, and to mitigate the safety and health risks associated with the Services;

WHEREAS, EE Vendor agrees to comply with the additional requirements set forth in this Addendum as set forth below; and

WHEREAS, the Parties have agreed to amend certain provisions in the Agreement as specifically set forth below.

NOW THEREFORE, in accordance with Section 11.2 of the Agreement, the Compact and EE Vendor, intending to be legally bound hereby, agree as follows:

1. ***Definitions***. As used in this Addendum, the term "Program" means [insert]. Terms not specifically defined in this Addendum shall have the meanings assigned to them in the Agreement.

2. ***Acknowledgment of Risks and Liabilities***. EE Vendor acknowledges, understands and agrees that there are additional risks in providing EE Vendor Services to customers related to COVID-19 and EE Vendor assumes all associated risks, including, without limitation, the risks associated with COVID-19 in performing the EE Vendor Services. EE Vendor acknowledges that EE Vendor is voluntarily agreeing to provide EE Vendor Services to customers with knowledge of the danger and risks involved. EE Vendor understands and agrees that it is assuming all liabilities associated with performing EE Vendor Services during the pandemic,

including, but not limited to, worker exposure to COVID-19 from Customers, and potential claims from Customers relating to COVID-19 exposure.

3. ***Use of Disclaimers in Customer Communications***. In any material communications with Customers, EE Vendor shall include the following language: *The Compact has engaged [insert EE Vendor name] to perform work in connection with its program(s). Work performed by [insert EE Vendor name] is not guaranteed or subject to any representation or warranty, either expressed, implied or otherwise by the Compact. Any complaints, concerns or claims regarding the work are the sole responsibility of [insert EE Vendor name].*

4. ***Health and Safety Protocols.***

a. Policies and Procedures. For all EE Vendor Services to be performed at Customer Sites, EE Vendor shall comply and ensure that all of its employees and subcontractors performing EE Vendor Services shall comply with all requirements, procedures, guidelines and protocols provided by the Compact or its contractors to EE Vendor including, without limitation, those specifically relating to COVID-19 (e.g., minimum PPE and use, distancing from Customer, health and safety protocols for taking measurements and product installation, compliance monitoring). EE Vendor will ensure that all of its employees and subcontractors will comply with all of such requirements, as the same may be updated from time to time by the Compact and provided to EE Vendor.

EE Vendor must agree to adopt and follow any additional policies and procedures provided by the Compact to it at any time after execution of this Addendum. Notice of additional policies and procedure may be provided by email. If EE Vendor has developed and adopted its own safety protocols to minimize exposure and spread of the COVID-19, or develops such policies and procedures, copies should be sent to the Compact.

b. Training. EE Vendor shall ensure that all employees and subcontractors performing any EE Vendor Services at Customer Sites have taken and successfully completed training and certifications required by the Compact prior to EE Vendor assigning any such EE Vendor employees or subcontractors to perform any EE Vendor Services at any Customer Sites.

c. Personal Protective Equipment (PPE). EE Vendor shall ensure that EE Vendor employees and subcontractors follow safety rules and regulations applicable to the PPE use, and comply with all the Compact and EE Vendor policies and procedures. EE Vendor shall provide EE Vendor employees and subcontractors with appropriate PPE as required and EE Vendor shall have the sole responsibility to see that EE employees and subcontractors are (1) informed on and properly trained as to PPE use and (2) that safety practices and PPE use is correctly followed.

d. Compliance. EE Vendor shall ensure that EE Vendor employees and subcontractors strictly observe and fully comply with all applicable federal, state, and local laws, rules, regulations, executive orders and OSHA requirements applicable to the EE Vendor Services, and/or the Customer Sites, including, without limitation, any of the federal, state, and local laws, rules, regulations and executive orders specifically related to COVID-19, soliciting or communicating with Customers regarding EE Vendor Services and performing any EE Vendor Services at Customer Sites. In no event shall any EE Vendor Services be performed at any

Customer Site while there are any governmental or regulatory restrictions or prohibitions on performing any such EE Vendor Services at that Customer Site.

e. Tracking System. EE Vendor must develop and maintain a system to track the specific EE Vendor Services performed for each Customer and COVID-19 related issues.

f. Required Notifications. EE Vendor must notify the Compact if any of its employees or Compact Customers have been exposed to COVID-19, or it is aware of any parties asserting claims or issues related to exposure.

g. COVID-19 Points of Contact. For all COVID-19 related issues, the points of contact for each Party shall be:

Compact:

EE Vendor:

h. Subcontractors. If EE Vendor is serving as a lead vendor for the Program, EE Vendor agrees that it is responsible for implementation of the Program, and that this responsibility includes management, supervision of control of all independent contractors (including, but not limited to, home performance contractors and independent installation contractors) and subcontractors performing EE Vendor Services in connection with the Program.

5. ***Release and Assumption of Risk***. EE Vendor hereby releases all COVID-19 related claims (past, present and future) relating to the pandemic and COVID-19 exposures and disruptions (including, but not limited to, claims for contract damages or personal injury). EE Vendor hereby agrees to accept and assume any and all risks relating to COVID-19 claims or exposures, including, but not limited to, risks of illness, injury, death or property damage.

6. ***Indemnification***. EE Vendor ratifies and affirms that the indemnification and liability protections in the Agreement afforded to the Compact apply to any claims (including, but not limited to, Customer claims) related to COVID-19.

7. ***No Joint and Several Liability***. EE Vendor understands and agrees that the Compact assumes no liability or obligation with respect to the acts or omissions of any other statewide program administrator of the Program or related programs. EE Vendor understands and agrees that the Compact Members assume no liability whatsoever for any of the debts and liabilities of the Compact, including, but not limited to, any obligations under this Addendum and the Agreement.

8. ***Suspension or Termination***. EE Vendor acknowledges and agrees that the Compact's suspension and termination rights under the Agreement apply to any noncompliance by EE Vendor of its obligations under this Addendum, as determined by the Compact, in its sole discretion.

9. ***Representations and Warranties***. EE Vendor represents and warrants to Compact as follows: (i) this Addendum and the underlying Agreement constitute the legal, valid, and binding obligation of EE Vendor enforceable in accordance with its terms; (ii) the execution, delivery, and performance of this Addendum are within its powers, have been duly authorized by all necessary action, and do not violate any of the terms or conditions in its governing documents, any contract to which it is a party, or any applicable federal, state and local laws, regulations and executive orders applicable to it; and (iii) it has all authorizations from any governmental authority necessary for it to legally perform its obligations under this Addendum or will obtain such authorizations in a timely manner prior to when any performance by it requiring such authorization becomes due.

10. ***Insurance***. EE Vendor agrees that all of insurance obligations under the Agreement are hereby expanded to include insurance coverage for any third-party COVID-19 related claims arising from or related to the EE Vendor Services performed by EE Vendor.

11. ***Effect on Agreement***. All other provisions of the Agreement shall remain unchanged, binding, and effective.

12. ***Further Assurances***. From time to time and at any time at and after the execution of this Agreement, at the Compact's request, EE Vendor shall execute, acknowledge and deliver such documents and assurances, reasonably requested by the Compact and shall take any other action consistent with the terms of this Addendum or the Agreement for the purpose of effecting or confirming any of the transactions contemplated by this Addendum or the Agreement. EE Vendor further agrees to reasonably modify the scope of EE Vendor Services under the Agreement to take into account special issues and considerations raised by COVID-19.

13. ***Conflicts***. The Parties agree that the Agreement (including any amendments to it) and this Addendum are intended to be construed harmoniously to the greatest practicable extent. Notwithstanding anything to the contrary contained in this Addendum, in the event of conflict between the terms contained in this Addendum and the terms contained in the Agreement, the terms set forth in this Addendum shall control.

14. ***Counterparts; Scanned Copy***. This Amendment 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 Addendum 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 Addendum notwithstanding the failure or inability to produce or tender an original, executed counterpart of this Addendum and without the requirement that the unavailability of such original, executed counterpart of this Addendum first be proven.

IN WITNESS WHEREOF, the Parties have executed this Addendum between the Compact and EE Vendor effective as of the date set forth above.

EE VENDOR CAPE LIGHT COMPACT JPE

_____	_____
Signature	Signature
Print Name:_____	Margaret T. Downey
Title: _____	Cape Light Compact JPE Administrator & Chief Procurement Officer
_____	_____
Date	Date

ATTACHMENT C

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that the bid or proposal it submitted in response to the RFP was made and submitted in good faith and without collusion or fraud with any person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club or other organization, entity or group of individuals.

_____

Signature of individual submitting bid or proposal/Title:

_____

Proposer Name

ATTACHMENT D
Proposal Checklist

Proposer has submitted the following as part of its Proposal:

___ 1. Cover letter with signature. [Article VIA and K]

___ 2. Statement that the Proposal is submitted in accordance with this RFP, and that Proposer has read and understands all sections of the RFP. [Article VI A]

___ 3. General background information. [Article VI B]

___ 4. Company profile. [Article VI B]

___ 5. Four background statements. [Article VI B]

___ 6. Identification of Project staff and assigned roles. [Article VI C]

___ 7. Resumes for key staff. [Article VI C]

___ 8. Organizational capacity. [Article VI C]

___ 9. Resumes and qualifications of subcontractors or consultants. [Article VI C]

___ 10. Schematic diagram. [Article VI C]

___ 11. Other statements/descriptions regarding staffing and facilities [Article VI C]

___ 12. Proposed plan/approach. [Article VI D]

___ 13. Proposed edits to Scope of Work [Article VI D]

___ 14. Statements regarding related experience [Article VI D]

___ 15. Pricing (including rates for out of scope work). [Article VI E]

___ 16. References. [Article VI F]

___ 17. Redlined Contract or Contract acceptance letter. [Article VI G]

___ 18. Certificate of Non-collusion (Attachment C)

___ 19. Checklist (this document).

___ 19. Other from Specific Qualifications. [Article IV]. N/A

ATTACHMENT E

Data exchange invoice format sample

Specifications	Responses			Comments
FileName	CLC_{Source}_{ContentType}_Program_{CurrentDateTime}.{FileExtension}			CLC_VendorID_Enrollments_A2aLR_20190305102040.csv CLC_VendorID_EnrollmentMeasures_A2aLR_20190320124140.csv
File name unique(y/n)	Y			Will each file have a unique name?
File Format (Excel, text, etc)	CSV			If it is Excel, does it have multiple worksheets?
Is Delimited (y/n)	Y	Delimiter	,	
Is Fixed Length (Y/N)	N			
Is Encrypted (y/n)	N	Encryption Method		Note encryption methods and keys to decrypt.
Is Master or Differential	Customer and measure data to support invoicing			Is this a differential file from the last file or is it all inclusive of new data + old data?
Frequency of availability	As needed to support invoicing			How frequently would this file be sent, and at what times?
Transfer Mech (SFTP,Email, etc)	Direct upload into client system			Will this file be sent via SFTP/Email/FTP? If SFTP or FTP then what server would be the target?
Export to Location	n/a			Directory to export to.
SFTP Credential	n/a			Do not include in this file, but note that they will be sent by who/for who?
Confirm export (y/n)	Y	Method/Contacts	CLC application and email notification	Is there a confirmation that the data was posted?
Exception Report (y/n)	Y	Method/Contacts	Vendor resolves issues and uploads	If bad data is found in the file who gets it and what do we send?
Exception Handling	All good records are processed			If an error in the data is found do we reject the file in its entirety, process all good records, etc?
Contains Column Names (y/n)	Y			Does the file have column names?
Contains Aggregate Lines (y/n)	N			Is each line a detail line independent of other data in the file, or are some totals or counts based on detail in the same report?
Is File Zipped (y/n)	Y			
Are text qualifiers used? (y/n)	N	Qualifer		If text qualifiers are required, please note them.
Standard Date Format	mm/dd/yyyy			What is the date format required, if it is standard? If not, then note it on the description of the ExportSchema Tab.

Enrollment Upload Specification for Residential Coordinated Delivery - Attached Low Rise

Comma-delimited text file with headers. All column headers are needed. Column sequence order is not necessary, but column header must match the column contents.
For additional information and validation tables, reference the CLC Compressed Import Specification

Column Name	Required	Uniqu	Format	Length	Aggregated	Grouped	Text Qualified	Filter	Valid Data	Description
Outcome	**Y**		**Text**	25					**Work Complete**	
ReferenceNumber	**Y**	**Y**	**Text**	25						Vendor-defined unique Customer/Application ID which links to EnrollmentMeasures file. Can only be used once per data transfer. Subsequent transfers of new customer participation requires a new ReferenceNumber.
Action	**Y**		**Text**	1					**N**	Defines **New** enrollment
ProgramCode	**Y**		**Text**	5					**A2aLR**	Identifies CLC Program
ProgramYear	**Y**		**Text**	4					**2019**	Identifies CLC Program Year
EnrollmentDate	**Y**		**Date**	10					**mm/dd/yyyy**	Application date, must be within the Program Year
TotalProjectCost										
NumberOfParticipants										
ProjectDescription										
Comments	**Y**		**Text**	1024						Vendor Invoice Number
ServiceProvider										
ServiceAccountNumber	**Y**		**Numeric**	11					**Account Number**	Must be an active Eversource Customer Account Number
FirstName	Optional		Text	30						Not required, but useful to resolve upload errors
LastName	Optional		Text	30						Not required, but useful to resolve upload errors
EmailAddress	**If Available**		**Text**	100						Provide if available
PrimaryPhoneNumber										
AlternatePhoneNumber										
PrimaryLanguage										
AnnualHouseholdIncome										
FamilySize										
MeterNumber										
PremiseId										
LocationName	Optional		Text	50						Not required, but useful to resolve upload errors
LocationStreet	Optional		Text	50						Not required, but useful to resolve upload errors
LocationUnit	Optional		Text	10						
LocationCity	Optional		Text	30						Not required, but useful to resolve upload errors
LocationState	Optional		Text	2						Not required, but useful to resolve upload errors
LocationPostalCode	Optional		Text	10						Not required, but useful to resolve upload errors
MailingAttn										
MailingPOBox										
MailingStreet										
MailingUnit										
MailingCity										
MailingState										
MailingCountry										
MailingPostalCode										
BuildingType	**Y**		**Text**	10					**See comment**	Reference the Building Type Codes tab (may use **M2** as a default)
OccupancyStatus	**Y**		**Text**	1					**O, T**	Owner or Tenant
SelfInstalled										
ServiceVendorNumber	**Y**		**Numeric**	8					**99999**	Vendor ID, defined by CLC Financial System
ServiceEmployeeId										
ServiceVendor2Number										
ServiceVendor2EmployeeId										
ServiceVendor3Number										
ServiceVendor3EmployeeId										
ScheduledVisitDate										
ActualVisitDate										
TimeIn										
TimeOut										
PaymentTo	**Y**		**Text**	20					**Trade Ally**	Pay the vendor
PayeeName										
PayeeVendorNumber	**Y**		**Numeric**	8					**99999**	Vendor ID, defined by CLC Financial System
PayeePhone	**Y**		**Numeric**	10					**999-999-9999**	Vendor Telephone Number
PayeeStreet										
PayeeUnit										
PayeeCity										
PayeeState										
PayeePostalCode										
PayeeTaxStatus										
PayeeTaxIdType										
PayeeTaxIdSSN										
PaymentReleaseDate										
PayeeCheckApron										
Application - General Application Information - Milestone										
Application - General Application Information - Assigned Date										
Application - General Application Information - Request Received Date										
Application - General Application Information - Scheduled Date										
Application - General Application Information - Enrollment Completion Date	**Y**		**Date**	10					**mm/dd/yyyy**	Should be within a monthly invoice period
Application - Property Information - Marketing Source 2	**If available**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - Home Style	**If available**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - Size of Home 2	**If available**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - Age of Home	**If available**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - Number of Occupants	**If available**		**Numeric**	10						
Application - Property Information - Owner Name	**If available**		**Text**	50						Free-form owner name field
Application - Property Information - Primary Heating Fuel	**Y**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - Secondary Heating Fuel	**If available**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - Annual Heating Cost	**If available**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - Primary DHW Fuel	**Y**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - Secondary DHW Fuel	**If available**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - Central AC	**If available**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - Income Verification 2	**If available**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - Prior Audit 2	**If available**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - New Windows	**If available**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - New Heating System	**If available**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - New Insulation	**If available**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - Drafty or Cold	**If available**		**Text**	50						Reference the Property Information tab for valid entries
Application - Property Information - Notes	**If available**		**Text**	250						Free-form notes field
Application - Property Information - Participation Units	**Y**		**Numeric**	10						Default to 1
Application - Property Information - Units in Building	**Y**		**Numeric**	10						Default to 1

Enrollment Measures Upload Specification for Residential Coordinated Delivery - Attached Low Rise

Comma-delimited text file with headers. All column headers are needed. Column sequence is not necessary, but column header must match column contents.
For additional information and validation tables, reference the CLC Compressed Import Specification

Column Name	Required	Unique	Format	Length	Valid Data	Description
EnrollmentReferenceNumber	**Y**		**Text**	25		Vendor defined unique customer ID; links to Enrollments file
MeasureReferenceNumber	**Y**		**Numeric**	10		Sequential line number (1, 2, 3, etc.) for each enrollment measure
MeasureProperty-Description	**Y**		**Text**	80		
ActualQuantity	**Y**		**Numeric**	10		Quantity installed
ActualIncentiveAmount	**Y**		**Decimal**	15,2		Incentive amount
MeasureProperty-InstallationDate	**Y**		**Date**	10	**mm/dd/yyyy**	
MeasureProperty-ParticipantCost	**Y**		**Decimal**	15,2		Dollar amount that the customer contributed to the job, where the Total Measure Cost = Participant Cost + Incentive Amount Default to zero if not applicable
MeasureProperty-AHRIReferenceNumber	**Yes, for Heat Pump measures**		**Text**	80		
MeasureProperty-Manufacturer	**Yes, for Heat Pump measures**		**Text**	80		
MeasureProperty-OutdoorUnitModelNumber	**Yes, for Heat Pump measures**		**Text**	80		
MeasureProperty-IndoorUnitModelNumber	**Yes, for Heat Pump measures**		**Text**	80		
MeasureProperty-NumberofIndoorUnits	**Yes, for Heat Pump measures**		**Numeric**	2		
MeasureProperty-SEER	**Yes, for Heat Pump measures**		**Decimal**	15,1		
MeasureProperty-EER	**Yes, for Heat Pump measures**		**Decimal**	15,1		
MeasureProperty-HSPF	**Yes, for Heat Pump measures**		**Decimal**	15,1		
MeasureProperty-InstallationType	**Yes, for Heat Pump measures**		**Text**	80		
MeasureSubCode						
InventorySerialNumber						
MeterNumber						
ProposedQuantity						
ProposedMeasureCostAmount						
ActualMeasureCostAmount						
ProposedIncrementalMeasureCostAmount						
ActualIncrementalMeasureCostAmount						
ProposedIncentiveAmount						
Phase						
MeasurePayee						
InstallationVendorNumber						
InstallationVendorEmployeeId						
InstallationDate						
Proposed kWh						
Actual kWh						
Proposed kW						
Actual kW						
Proposed Winter kW						
Actual Winter kW						
Proposed Summer kW						
Actual Summer kW						
Proposed Water (Gallons)						
Actual Water (Gallons)						
Proposed Natural Gas (MMBtu)						
Actual Natural Gas (MMBtu)						
Proposed Oil (MMBtu)						
Actual Oil (MMBtu)						
Proposed Propane (MMBtu)						
Actual Propane (MMBtu)						
Proposed Kerosene (MMBtu)						
Actual Kerosene (MMBtu)						
Proposed Wood (MMBtu)						
Actual Wood (MMBtu)						

Building Type Code	Building Type Name
C29	Agriculture
C10	Assembly Hall
C9	Automotive
C11	B&B/Rooming House
C91	Big Box
C100	Charitiable/Non-Profit
C25	College/University
C2	Convenience/Liquor
C12	Function Hall
C94	Gallery/Museum
C13	Garage
G4	Government
C81	Greenhouse
C40	Hair Salon
C14	Health Club/Spa
C6	Healthcare - Clinic
C27	Hospital/Nursing Home
C15	Hotel/Motel
C95	Industrial - Heavy
C93	Industrial - Light
C16	Institutional
C101	Lab-Research
C17	Laundry/Dry Cleaning
C18	Library
C19	Manufacturing
C104	Mixed Use
C96	Multifamily Commercial
G3	Municipal, County
G1	Municipal, Federal
G2	Municipal, State
C20	Night Club
C21	Nursing Home
C71	Office - Large
C7	Office - Small
C8	Other
C97	Recreational - Ice Arena
C22	Recreational - Other
C23	Religious
R0	Res, General
L0	Res, LI General
L4	Res, LI MF Owner
L3	Res, LI MF Renter
L2	Res, LI SF Owner
L1	Res, LI SF Renter
R4	Res, MF Owner
R3	Res, MF Renter

R2	Res, SF Owner
R1	Res, SF Renter
C102	Residential Commercial
C1	Restaurant - Fast Food
C31	Restaurant - Full Service
C32	Retail - Large
C3	Retail - Small
C24	Rooming House
C5	School
C98	Schools K-12
C28	Supermarket
C30	Transportation
M2	Unknown
C103	Utility/Cable/Telephone
C26	Warehouse - Non-Refrig
C99	Warehouse - Refrigerated
C92	Water Treatment
C4	Wholesale

Property Information Field	Valid Entries
Application - General Application Information - Milestone	Assigned Request Received Scheduled Site Visit Complete Contract Presented Contract Signed Pending Start Date WIP
Property Information - Marketing Source 2	Blank Calls to Compact CSR Mail-in Application Web-based Application Vendor Marketing Enhanced Outreach Program Energy Fair CLC Presentation KeySpan Audit Green Community
Property Information - Home Style	Blank Ranch Colonial Cape High Rise Town House Tenement Mobile Home/Trailer Condominium Other
Property Information - Size of Home 2	Blank Less than 1000 sq ft 1000 to 2000 sq ft 2000 to 5000 sq ft 5000 to 8000 sq ft More than 8000 sq ft
Property Information - Age of Home	Blank 10 yrs or less 10 to 30 yrs More than 30 yrs
Property Information - Owner Name	Free-form field, may be blank
Property Information - Primary Heating Fuel	Blank Electric Gas Oil

	Propane
	Wood
	Coal
	Other
Property Information - Secondary Heating Fuel	Blank
	Electric
	Gas
	Oil
	Propane
	Wood
	Coal
	Other
Property Information - Annual Heating Cost	Blank
	Less than $500
	$500 to $1500
	More than $1500
Property Information - Primary DHW Fuel	Blank
	Electric
	Gas
	Oil
	Propane
	Wood
	Coal
	Solar
	Other
Property Information - Secondary DHW Fuel	Blank
	Electric
	Gas
	Oil
	Propane
	Wood
	Coal
	Solar
	Other
Property Information - Central AC	Blank
	Yes
	No
Property Information - Income Verification 2	Blank
	Res 61 to 80 Application Received
	Res 61 to 80 Application Returned (Missing Info)
	Res 61 to 80 OnHold for Callback
	Res 61 to 80 Approved at 100% Incentive
	Res 61 to 80 Not Approved (Standard Incentive)
	Res Tenant at 100% Incentive

	LI Approved (Fuel Assistance) LI Approved (Gas Discount Rate) LI Eligibility Pending LI Approved (Income Eligible) NP Low Income NP Cultural/Economic/Social
Property Information - Prior Audit 2	Blank Yes No
Property Information - New Windows	Blank Yes No
Property Information - New Heating System	Blank Yes No
Property Information - New Insulation	Blank Yes No
Property Information - Drafty or Cold	Blank Yes No

Proposed EECP Measure Definitions for Residential Coordinated Delivery - Attached Low Rise

Measure Name	Measure Code	Measure Property Description	Savings Type	Vendor Calculated Savings Unit	Comments
Air Sealing, Electric (Attached Low Rise)	E19A2a105	Attic - Hatch Seal & Insulate	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Air Sealing, Electric (Attached Low Rise)	E19A2a105	Bulkhead Door - Site-built	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Air Sealing, Electric (Attached Low Rise)	E19A2a105	FSK Paper	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Air Sealing, Electric (Attached Low Rise)	E19A2a105	Home Air Leakage Sealing	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Air Sealing, Electric (Attached Low Rise)	E19A2a105	Insulate Basement Door	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Air Sealing, Electric (Attached Low Rise)	E19A2a105	Weatherstrip Door	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Air Sealing, Electric (Attached Low Rise)	E19A2a105	Weatherstrip Door with Sweep	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Air Sealing, Oil (Attached Low Rise)	E19A2a106	Attic - Hatch Seal & Insulate	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)	
Air Sealing, Oil (Attached Low Rise)	E19A2a106	Bulkhead Door - Site-built	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)	
Air Sealing, Oil (Attached Low Rise)	E19A2a106	FSK Paper	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)	
Air Sealing, Oil (Attached Low Rise)	E19A2a106	Home Air Leakage Sealing	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)	
Air Sealing, Oil (Attached Low Rise)	E19A2a106	Insulate Basement Door	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)	
Air Sealing, Oil (Attached Low Rise)	E19A2a106	Weatherstrip Door	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)	
Air Sealing, Oil (Attached Low Rise)	E19A2a106	Weatherstrip Door with Sweep	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)	
Air Sealing, Other (Attached Low Rise)	E19A2a107	Attic - Hatch Seal & Insulate	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)	
Air Sealing, Other (Attached Low Rise)	E19A2a107	Bulkhead Door - Site-built	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)	
Air Sealing, Other (Attached Low Rise)	E19A2a107	FSK Paper	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)	
Air Sealing, Other (Attached Low Rise)	E19A2a107	Home Air Leakage Sealing	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)	
Air Sealing, Other (Attached Low Rise)	E19A2a107	Insulate Basement Door	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)	
Air Sealing, Other (Attached Low Rise)	E19A2a107	Weatherstrip Door	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)	
Air Sealing, Other (Attached Low Rise)	E19A2a107	Weatherstrip Door with Sweep	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)	
Boiler Reset Control, Oil	E19A2a014	Boiler Reset Controls	Deemed Savings		
Boiler Reset Control, Other	E19A2a015	Boiler Reset Controls	Deemed Savings		
Central Air	E19A2a088	Central Air	Deemed Savings		
Central Ducted Heat Pump Fully Displacing Existing Furnace, Oil	E19A2a264	Central Ducted Heat Pump Fully Displacing Existing Furnace Oil	Deemed Savings		
Central Ducted Heat Pump Fully Displacing Existing Furnace, Propane	E19A2a263	Central Ducted Heat Pump Fully Displacing Existing Furnace Propane	Deemed Savings		
Central Ducted Heat Pump Partially Displacing Existing Furnace, Oil	E19A2a258	Central Ducted Heat Pump Partially Displacing Existing Furnace Oil	Deemed Savings		
Central Ducted Heat Pump Partially Displacing Existing Furnace, Propane	E19A2a256	Central Ducted Heat Pump Partially Displacing Existing Furnace Propa	Deemed Savings		
Combo Condensing Boiler/Water Heater 95%, Other (Attached Low Rise)	E19A2a173	Combo Condensing Boiler/Water Heater 95% - Other	Deemed Savings		
Combo Condensing Boiler/Water Heater 95%, Other (Attached Low Rise)	E19A2a173	Condensing Boiler with On-Demand	Deemed Savings		
Combo Condensing Furnace/Water Heater 97%, Other (Attached Low Rise)	E19A2a292	Combo Condensing Furnace/Water Heater 97%	Deemed Savings		
DMSHP Integrated Controls Retrofit Oil	E19A2a262	DMSHP Integrated Controls Retrofit Oil	Deemed Savings		
DMSHP Integrated Controls Retrofit, Propane	E19A2a261	DMSHP Integrated Controls Retrofit Propane	Deemed Savings		
DMSHP with Integrated Controls Fully Displacing Existing Boiler, Oil	E19A2a286	DMSHP with Integrated Controls Fully Displacing Existing Boiler Oil	Deemed Savings		
DMSHP with Integrated Controls Fully Displacing Existing Boiler, Propane	E19A2a287	DMSHP with Integrated Controls Fully Displacing Existing Boiler Propa	Deemed Savings		
DMSHP with Integrated Controls Partially Displacing Existing Boiler, Oil	E19A2a260	DMSHP with Integrated Controls Partially Displacing Existing Boiler Oi	Deemed Savings		
DMSHP with Integrated Controls Partially Displacing Existing Boiler, Propane	E19A2a259	DMSHP with Integrated Controls Partially Displacing Existing Boiler Pr	Deemed Savings		
DMSHP, SEER 18.0 HSPF 10, Displacing Electric Heat	E19A2a278	DMSHP - SEER 18.0 HSPF 10 - Displacing Electric Heat	Deemed Savings		
DMSHP, SEER 18.0 HSPF 10, No Integrated Controls	E19A2a280	DMSHP - SEER 18.0 HSPF 10 - No Integrated Controls	Deemed Savings		
Duct Insulation, Elec (Attached Low Rise)	E19A2a117	Duct Insulation - Electric	Deemed Savings		Use a quantity of "1" with Pipe, Duct and Custom measures
Duct Insulation, Oil (Attached Low Rise)	E19A2a119	Duct Insulation - Oil	Deemed Savings		Use a quantity of "1" with Pipe, Duct and Custom measures
Duct Insulation, Other (Attached Low Rise)	E19A2a120	Duct Insulation - Other	Deemed Savings		Use a quantity of "1" with Pipe, Duct and Custom measures
Duct Sealing, Elec (Attached Low Rise)	E19A2a113	Duct Seal - Electric	Deemed Savings		Use a quantity of "1" with Pipe, Duct and Custom measures
Duct Sealing, Oil (Attached Low Rise)	E19A2a115	Duct Seal - Oil	Deemed Savings		Use a quantity of "1" with Pipe, Duct and Custom measures
Duct Sealing, Other (Attached Low Rise)	E19A2a116	Duct Seal - Other	Deemed Savings		Use a quantity of "1" with Pipe, Duct and Custom measures
Faucet Aerator, Electric (Attached Low Rise)	E19A2a128	Low Flow Faucet Aerator - elec	Deemed Savings		
Faucet Aerator, Oil (Attached Low Rise)	E19A2a130	Low Flow Faucet Aerator - oil	Deemed Savings		
Faucet Aerator, Other (Attached Low Rise)	E19A2a131	Low Flow Faucet Aerator - propane	Deemed Savings		
Fee_Incentive	Fee_Incentive	Adder for fixtures at over 15 feet in height			
Fee_Incentive	Fee_Incentive	Backplate			
Fee_Incentive	Fee_Incentive	Building Permit			
Fee_Incentive	Fee_Incentive	Common Area - Lift/Staging			
Fee_Incentive	Fee_Incentive	Common Area Wiring			
Fee_Incentive	Fee_Incentive	Drain Pan Sensor Removal			
Fee_Incentive	Fee_Incentive	RECYCLE HID LAMP			
Fee_Incentive	Fee_Incentive	RECYCLE LINEAR LAMP			
Fee_Incentive	Fee_Incentive	RECYCLE MISC. PACKAGING			
Fee_Incentive	Fee_Incentive	RECYCLE NON-PCB BALLASTS			
Fee_Incentive	Fee_Incentive	RECYCLE PCB BALLASTS			
Fee_Incentive	Fee_Incentive	RECYCLE U-LAMPS			
Fee_Incentive	Fee_Incentive	RECYCLING MINIMUM CHARGE			
Fee_Incentive	Fee_Incentive	RECYCLING TRANSPORTATION			
Fee_Incentive	Fee_Incentive	Remove Existing Insulation			
Fee_Incentive	Fee_Incentive	Transportation			
Fee_Incentive	Fee_Incentive	Weatherization PPE			
Fee_STAT	Fee_STAT	Base Home Energy Assessment			
Fee_STAT	Fee_STAT	Blower Door & CAZ Testing			
Fee_STAT	Fee_STAT	Blower Door Test			
Fee_STAT	Fee_STAT	Blower Door Test - Contractor			
Fee_STAT	Fee_STAT	Blower Door Test During Heating			
Fee_STAT	Fee_STAT	CAZ Testing			
Fee_STAT	Fee_STAT	Combustion / Health Safety Test Visit			
Fee_STAT	Fee_STAT	Combustion Safety Test Visit			
Fee_STAT	Fee_STAT	Comprehensive Site Visit			
Fee_STAT	Fee_STAT	Comprehensive Site Visit - additional			
Fee_STAT	Fee_STAT	Contractor Management Fee			
Fee_STAT	Fee_STAT	Elec Bill Disaggregation			
Fee_STAT	Fee_STAT	HEA In-Person PPE			
Fee_STAT	Fee_STAT	Health & Safety Test			
Fee_STAT	Fee_STAT	Heat Loan Authorization			
Fee_STAT	Fee_STAT	Heating Rebate Application			
Fee_STAT	Fee_STAT	Marthas Vineyard Stipend			
Fee_STAT	Fee_STAT	Multi-Family Site Per Unit Fee			
Fee_STAT	Fee_STAT	Non-Heat Assessment			
Fee_STAT	Fee_STAT	Non-Heat Assessment - additional			
Fee_STAT	Fee_STAT	QA Site Visit PPE			
Fee_STAT	Fee_STAT	Quality Assurance Inspection - HEAT Loan			
Fee_STAT	Fee_STAT	Refrigerator Rebate Application			
Fee_STAT	Fee_STAT	RMF Admin Fee			
Fee_STAT	Fee_STAT	RMF Res Multi-Family Market Integrator Svcs			
Fee_STAT	Fee_STAT	Special Home Visit			
Heat Pump, SEER 18, Replacing Existing EUL Heat Pump	E19A2a092	Heat Pump - SEER 18 - Replacing Existing EUL Heat Pump	Deemed Savings		
Heating System, Boiler, Oil (Attached Low Rise)	E19A2a165	High Eff Forced Hot Water Boiler - Oil	Deemed Savings		
Heating System, Boiler, Propane 90% (Attached Low Rise)	E19A2a271	High Eff Forced Hot Water Boiler - LP	Deemed Savings		
Heating System, Boiler, Propane 95% (Attached Low Rise)	E19A2a166	High Eff Forced Hot Water Boiler 95% - LP	Deemed Savings		
Heating System, Furnace, Oil (Attached Low Rise)	E19A2a167	High Efficiency Furnace ECM - Oil	Deemed Savings		
Heating System, Furnace, Other (Attached Low Rise)	E19A2a168	High Efficiency Furnace ECM - LP	Deemed Savings		
HVAC - Custom	E19A2a272	A/C Replacement	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	Air Sealing	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	Air Side Economizer Contrl	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	Chiller Controls	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	Custom A/C	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	Custom Air Sealing & Insulation	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	Custom Building Envelope	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	Custom Heat Pump - Displacing Electric Heat	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	Custom HVAC	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	High Efficiency AC Condenser	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	High Efficiency Boiler	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	Horizontal Air Flow Fan	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	Insulation and Air Sealing	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	IR Heater	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	Setback Thermostats	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	Step Down Transformers	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
HVAC - Custom	E19A2a272	Thermostat	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Add 8" Roof Vent	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Add 18/24 Gable Vent	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Add Perforated Soffit	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Add Soffit Vents 4" x 16"	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Add Ventilation Chutes	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic - Door Insulation	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic - Insulating Stair Cover	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Door Insulation	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Fan Cover	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Flat - 10" Open R-49 Cellulose	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Flat - 12" Open R-42 Cellulose	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Flat - 6" Open R-22 Cellulose	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Flat - 8" Floored R-25 Dense Cellulose	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Flat 14" Open R-49 Cellulose	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Flat R-38 Faced Fiberglass	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 10" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 10" Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 10" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 11" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 12" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 12" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 13" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 14" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 14" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 15" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 15" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 4" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 4" Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 4" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 5" Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 5" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 6" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 6" Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW	

Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 6" Kneewall Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 6" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 7" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 7" Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 7" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 8" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 8" Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 8" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation 9" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation Floored Kneewall 10"	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation Kneewall Hatch	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation Kneewall Rigid	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation open Kneewall 7"	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation R13 Kneewall	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation R19 Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation R19 Kneewall	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation R-30 Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation R-38	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation R-38 Damming	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation R-38 Unfaced	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation Rigid	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Insulation Rigid F/G Kneewall	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Slope Dense Pack 6"	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Slope Drill int 10"	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Slope R-13	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Slope R-19	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Slope R-30	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Temp Access	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Attic Tent	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Basement Ceiling R19 Fiberglass Batt	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Basement Ceiling R30 Fiberglass Batt	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Bath Fan Exhaust Vent w/Hose	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Bath Fan Soffit Vent w/Hose	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Bath Gable Vent	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Bath Vent through Roof	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Ceiling Access to Attic	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Common Wall - R13 FG plus 2" Rigid Board	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Crawlspace 10MIL Ground Cover	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Crawlspace Access Door	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Crawlspace Ceiling Rigid Board	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Crawlspace Wall R-10	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Crawlspace Wall R20 Sprayfoam	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Drywall	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Flip/Slash Existing	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Floor Over Crawlspace Insulation R-19	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Kneewall Access to Attic Space	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Kneewall Floor - 10" Dense R-32 Cellulose	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Kneewall Floor - 9" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Kneewall Floor R-19 Fiberglass	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Kneewall Insulation - 8" Open R-30 Cellulose	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Kneewall Insulation 10" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Kneewall Insulation 12" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Kneewall Insulation 4" Dense Pack Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Kneewall Insulation 6" Dense Pack Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Kneewall Slope	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Kneewall Slope 2" Rigid Board	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Kneewall Slope R-19 Fiberglass	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Kneewall Slope R-30 Fiberglass	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Mechanical Ventilation System	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Overhang 10" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Overhang 12" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Overhang 4" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Overhang 5" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Overhang 6" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Overhang 7" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Overhang 8" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Overhang R-19 Fiberglass	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Overhang R-30 Fiberglass	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Plastered Stairwell	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Plastic Ground Cover	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Pull-Down Stair: Thermadome	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Roof Strip Up To 5 Feet	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Sheathing Access to Attic	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Wall Insulation 2" Common Rigid	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Wall Insulation 4" Interior	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Wall Insulation Batt 13 Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Central AC in Electrically-Heated Unit (Attached Low Rise)	E19A2a109	Wall Insulation Ext Finish Siding	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Add 8" Roof Vent	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Add 18/24 Gable Vent	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Add Perforated Soffit	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Add Soffit Vents 4" x 16"	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Add Ventilation Chutes	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic - Door Insulation	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic - Insulating Stair Cover	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Door Insulation	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Fan Cover	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Flat - 10" Open R-49 Cellulose	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Flat - 11" Open R-40 Cellulose	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Flat - 12" Open R-42 Cellulose	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Flat - 6" Open R-22 Cellulose	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Flat - 8" Floored R-25 Dense Cellulose	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Flat 14" Open R-49 Cellulose	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Flat R-38 Faced Fiberglass	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 10" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 10" Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 10" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 11" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 12" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 12" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 13" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 14" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 14" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 15" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 15" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 4" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 4" Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 4" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 5" Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 5" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 6" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 6" Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 6" Kneewall Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 6" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 7" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 7" Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 7" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 8" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 8" Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 8" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation 9" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation Floored Kneewall 10"	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation Kneewall Hatch	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation Kneewall Rigid	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation open Kneewall 7"	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation R13 Kneewall	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation R19 Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation R19 Kneewall	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation R-30 Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation R-38	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation R-38 Damming	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation R-38 Unfaced	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation Rigid	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Insulation Rigid F/G Kneewall	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Slope Dense Pack 6"	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Slope Drill int 10"	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Slope R-13	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Slope R-19	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Slope R-30	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Temp Access	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Attic Tent	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Basement Ceiling R19 Fiberglass Batt	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Basement Ceiling R30 Fiberglass Batt	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Bath Fan Exhaust Vent w/Hose	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Bath Fan Soffit Vent w/Hose	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Bath Gable Vent	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Bath Vent through Roof	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Ceiling Access to Attic	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Common Wall - R13 FG plus 2" Rigid Board	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a10B	Crawlspace 10MIL Ground Cover	Vendor Calculated	kWh, kW, Winter kW and Summer kW

Insulation, Electric (Attached Low Rise)	E19A2a108	Crawlspace Access Door	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Crawlspace Ceiling Rigid Board	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Crawlspace Wall R-10	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Crawlspace Wall R20 Sprayfoam	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Drywall	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Flip/Slash Existing	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Floor Over Crawlspace Insulation R-19	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Kneewall Access to Attic Space	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Kneewall Floor - 10" Dense R-32 Cellulose	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Kneewall Floor - 9" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Kneewall Floor R-19 Fiberglass	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Kneewall Insulation - 8" Open R-30 Cellulose	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Kneewall Insulation 10" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Kneewall Insulation 12" Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Kneewall Insulation 4" Dense Pack Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Kneewall Insulation 6" Dense Pack Floored	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Kneewall Slope	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Kneewall Slope 2" Rigid Board	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Kneewall Slope R-19 Fiberglass	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Kneewall Slope R-30 Fiberglass	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Mechanical Ventilation System	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Overhang 10" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Overhang 12" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Overhang 4" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Overhang 5" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Overhang 6" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Overhang 7" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Overhang 8" Dense Pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Overhang R-19 Fiberglass	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Overhang R-30 Fiberglass	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Plastered Stairwell	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Plastic Ground Cover	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Pull-Down Stair: Thermadome	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Roof Strip Up To 5 Feet	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Sheathing Access to Attic	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Wall Insulation 2" Common Rigid	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Wall Insulation 4" Interior	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Wall Insulation Batt 13 Open	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Electric (Attached Low Rise)	E19A2a108	Wall Insulation Ext Finish Siding	Vendor Calculated	kWh, kW, Winter kW and Summer kW
Insulation, Oil (Attached Low Rise)	E19A2a110	Add 8" Roof Vent	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Add 18/24 Gable Vent	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Add Perforated Soffit	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Add Soffit Vents 4" x 16"	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Add Ventilation Chutes	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic - Door Insulation	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic - Insulating Stair Cover	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Door Insulation	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Fan Cover	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Flat - 10" Open R-49 Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Flat - 11" Open R-40 Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Flat - 12" Open R-42 Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Flat - 6" Open R-22 Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Flat - 8" Floored R-25 Dense Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Flat 14" Open R-49 Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Flat R-38 Faced Fiberglass	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 10" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 10" Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 10" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 11" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 12" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 12" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 13" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 14" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 14" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 15" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 15" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 4" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 4" Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 4" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 5" Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 5" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 6" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 6" Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 6" Kneewall Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 6" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 7" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 7" Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 7" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 8" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 8" Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 8" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation 9" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation Floored Kneewall 10"	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation Kneewall Hatch	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation Kneewall Rigid	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation open Kneewall 7"	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation R13 Kneewall	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation R19 Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation R19 Kneewall	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation R-30 Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation R-38	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation R-38 Damming	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation R-38 Unfaced	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation Rigid	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Insulation Rigid F/G Kneewall	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Slope Dense Pack 6"	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Slope Drill int 10"	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Slope R-13	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Slope R-19	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Slope R-30	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Temp Access	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Attic Tent	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Basement Ceiling R19 Fiberglass Batt	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Basement Ceiling R30 Fiberglass Batt	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Bath Fan Exhaust Vent w/Hose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Bath Fan Soffit Vent w/Hose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Bath Gable Vent	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Bath Vent through Roof	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Ceiling Access to Attic	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Common Wall - R13 FG plus 2" Rigid Board	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Crawlspace 10MIL Ground Cover	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Crawlspace Access Door	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Crawlspace Ceiling Rigid Board	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Crawlspace Wall R-10	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Crawlspace Wall R20 Sprayfoam	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Drywall	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Flip/Slash Existing	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Floor Over Crawlspace Insulation R-19	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Kneewall Access to Attic Space	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Kneewall Floor - 10" Dense R-32 Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Kneewall Floor - 9" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Kneewall Floor R-19 Fiberglass	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Kneewall Insulation - 8" Open R-30 Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Kneewall Insulation 10" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Kneewall Insulation 12" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Kneewall Insulation 4" Dense Pack Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Kneewall Insulation 6" Dense Pack Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Kneewall Slope	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Kneewall Slope 2" Rigid Board	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Kneewall Slope R-19 Fiberglass	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Kneewall Slope R-30 Fiberglass	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Mechanical Ventilation System	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Overhang 10" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Overhang 12" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Overhang 4" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Overhang 5" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Overhang 6" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Overhang 7" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Overhang 8" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Overhang R-19 Fiberglass	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Overhang R-30 Fiberglass	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Plastered Stairwell	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Plastic Ground Cover	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Pull-Down Stair: Thermadome	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Roof Strip Up To 5 Feet	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Sheathing Access to Attic	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Wall Insulation 2" Common Rigid	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Wall Insulation 4" Interior	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Oil (Attached Low Rise)	E19A2a110	Wall Insulation Batt 13 Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)

Insulation, Oil (Attached Low Rise)	E19A2a110	Wall Insulation Ext Finish Siding	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Oil (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Add 8" Roof Vent	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Add 18/24 Gable Vent	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Add Perforated Soffit	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Add Soffit Vents 4" x 16"	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Add Ventilation Chutes	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic - Door Insulation	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic - Insulating Stair Cover	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Door Insulation	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Fan Cover	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Flat - 10" Open R-49 Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Flat - 11" Open R-40 Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Flat - 12" Open R-42 Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Flat - 6" Open R-22 Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Flat - 8" Floored R-25 Dense Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Flat 14" Open R-49 Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Flat R-38 Faced Fiberglass	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 10" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 10" Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 10" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 11" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 12" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 12" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 13" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 14" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 14" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 15" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 15" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 4" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 4" Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 4" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 5" Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 5" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 6" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 6" Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 6" Kneewall Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 6" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 7" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 7" Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 7" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 8" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 8" Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 8" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation 9" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation Floored Kneewall 10"	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation Kneewall Hatch	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation Kneewall Rigid	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation open Kneewall 7"	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation R13 Kneewall	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation R19 Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation R19 Kneewall	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation R-30 Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation R-38	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation R-38 Damming	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation R-38 Unfaced	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation Rigid	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Insulation Rigid F/G Kneewall	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Slope Dense Pack 6"	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Slope Drill int 10"	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Slope R-13	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Slope R-19	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Slope R-30	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Temp Access	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Attic Tent	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Basement Ceiling R19 Fiberglass Batt	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Basement Ceiling R30 Fiberglass Batt	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Bath Fan Exhaust Vent w/Hose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Bath Fan Soffit Vent w/Hose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Bath Gable Vent	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Bath Vent through Roof	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Ceiling Access to Attic	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Common Wall - R13 FG plus 2" Rigid Board	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Crawlspace 10MIL Ground Cover	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Crawlspace Access Door	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Crawlspace Ceiling Rigid Board	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Crawlspace Wall R-10	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Crawlspace Wall R20 Sprayfoam	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Drywall	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Flip/Slash Existing	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Floor Over Crawlspace Insulation R-19	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Kneewall Access to Attic Space	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Kneewall Floor - 10" Dense R-32 Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Kneewall Floor - 9" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Kneewall Floor R-19 Fiberglass	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Kneewall Insulation - 8" Open R-30 Cellulose	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Kneewall Insulation 10" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Kneewall Insulation 12" Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Kneewall Insulation 4" Dense Pack Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Kneewall Insulation 6" Dense Pack Floored	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Kneewall Slope	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Kneewall Slope 2" Rigid Board	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Kneewall Slope R-19 Fiberglass	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Kneewall Slope R-30 Fiberglass	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Mechanical Ventilation System	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Overhang 10" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Overhang 12" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Overhang 4" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Overhang 5" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Overhang 6" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Overhang 7" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Overhang 8" Dense Pack	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Overhang R-19 Fiberglass	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Overhang R-30 Fiberglass	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Plastered Stairwell	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Plastic Ground Cover	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Pull-Down Stair: Thermadome	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Roof Strip Up To 5 Feet	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Sheathing Access to Attic	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Wall Insulation 2" Common Rigid	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Wall Insulation 4" Interior	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Wall Insulation Batt 13 Open	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
Insulation, Other (Attached Low Rise)	E19A2a111	Wall Insulation Ext Finish Siding	Vendor Calculated	kWh, kW, Winter kW, Summer kW and Propane (MMBTU)
LED Bulb (Attached Low Rise)	E19A2a150	5W LED Maxlite G16.5 E-12 Globe 1100.5393	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	8W LED BR30 2040.303	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 10.5w Slim	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 108w flood Sbox	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 10W Omni A	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 10W R20	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 12W BR40 Int DIM Flood 2040.103	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 12w Int Dimmable	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 13W 2.0 A Lamp 2010.102	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 13w Ext Dimmable	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 14W A21	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 15W A Lamp	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 15W PAR38 Maxlite 2040.301	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 17W PAR38 Maxlite 2040.301	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 2.5w Candle	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 22w Flood	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 3 Way	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 3.5 Candle	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 3.5w Candle	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 3-Way 2010.201	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 4.5 Flame	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 4.5W Candle 2030.201	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 4.5W G25 2020.101	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 4.5W Med Candle 2030.202	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 45w Flood	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 4W FILAMENT E12 2060.701	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 56w flood Sbox	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 5W CANDLE	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 5W G25 Globe 2020.101	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 5w Globe	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 5W Med Candle 2030.102	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 71w flood Sbox	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 7W BR30 2040.3021	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 7W G25 Maxlite 2020.158	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 7W Globe 2020.201	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 7W MAXLITE A19 FILAMENT 2060.304	Deemed Savings	
LED Bulb (Attached Low Rise)	E19A2a150	LED 7W MR-16 LED 1100.0192	Deemed Savings	

LED Bulb (Attached Low Rise)	E19A2a150	LED 7W TCP BR20 2040.1021	Deemed Savings		
LED Bulb (Attached Low Rise)	E19A2a150	LED 8W BR20 2040.102	Deemed Savings		
LED Bulb (Attached Low Rise)	E19A2a150	LED 8w Globe	Deemed Savings		
LED Bulb (Attached Low Rise)	E19A2a150	LED 8w R20	Deemed Savings		
LED Bulb (Attached Low Rise)	E19A2a150	LED 9.5w Flood	Deemed Savings		
LED Bulb (Attached Low Rise)	E19A2a150	LED 9W A Lamp 2010.101	Deemed Savings		
LED Bulb (Attached Low Rise)	E19A2a150	LED 9W BR30 2040.101	Deemed Savings		
LED Bulb (Attached Low Rise)	E19A2a150	LED 9W BR30 FLD 1660.9824	Deemed Savings		
LED Bulb (Reflectors) (Attached Low Rise)	E19A2a152	LED 12W BR40 Int DIM Flood 2040.103	Deemed Savings		
LED Bulb (Reflectors) (Attached Low Rise)	E19A2a152	LED 17W PAR38 Maxlite 2040.301	Deemed Savings		
LED Bulb (Reflectors) (Attached Low Rise)	E19A2a152	LED 8W BR20 2040.102	Deemed Savings		
LED Bulb (Reflectors) (Attached Low Rise)	E19A2a152	LED 9W BR30 2040.101	Deemed Savings		
LED Bulb (Specialty) (Attached Low Rise)	E19A2a151	LED 5W G25 Globe 2020.101	Deemed Savings		
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 10.5w Slim	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 108w flood Sbox	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 10W Omni A	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 10W R20	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 12W BR40 Int DIM Flood 2040.103	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 12w Int Dimmable	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 13W 2.0 A Lamp 2010.102	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 13w Ext Dimmable	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 14W A21	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 15W A Lamp	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 17W PAR38 Maxlite 2040.301	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 2.5w Candle	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 22w Flood	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 3 Way	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 3.5 Candle	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 3.5w Candle	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 3-Way 2010.201	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 4.5 Flame	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 4.5W Candle 2030.201	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 4.5W Med Candle 2030.202	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 45w Flood	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 4W FILAMENT E12 2060.701	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 56w flood Sbox	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 5W CANDLE	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 5W G25 Globe 2020.101	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 5w Globe	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 5W Med Candle 2030.102	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 71w flood Sbox	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 7W BR30 2040.3021	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 7W Globe 2020.201	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 7W MR-16 LED 1100.0192	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 8W BR20 2040.102	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 8w Globe	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 8w R20	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 9.5w Flood	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 9W A Lamp 2010.101	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Bulb, Common Area, Other (Attached Low Rise)	E19A2a159	LED 9W BR30 2040.101	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area (Attached Low Rise)	E19A2a160	LED 12 Watt dome drum	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area (Attached Low Rise)	E19A2a160	LED 12 Watt dome w/ occ. drum	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area (Attached Low Rise)	E19A2a160	LED 12 Watt Drum Kit	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area (Attached Low Rise)	E19A2a160	LED 150 W High Bay	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area (Attached Low Rise)	E19A2a160	LED 1-lamp dome GU24 brushed nickel	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area (Attached Low Rise)	E19A2a160	LED 20 Watt canopy	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area (Attached Low Rise)	E19A2a160	LED 2-lamp dome GU24 brushed nickel	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area (Attached Low Rise)	E19A2a160	LED 30 Watt garage canopy	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area (Attached Low Rise)	E19A2a160	LED 3-lamp bath bar GU24 brushed nickel	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area (Attached Low Rise)	E19A2a160	LED 3-lamp dome GU24 brushed nickel	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area (Attached Low Rise)	E19A2a160	LED 40 Watt garage canopy	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area (Attached Low Rise)	E19A2a160	LED 7 Watt Drum Kit	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area (Attached Low Rise)	E19A2a160	LED 7 Watt Sconce Kit	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area (Attached Low Rise)	E19A2a160	LED Exit Sign double faced w/ battery backup	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area (Attached Low Rise)	E19A2a160	LED Fixture - Indoor Common Area	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	30 Watt post-top mogul based retrofit	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 10 Watt mini wall pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 108w flood Sbox	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 12 watt Outdoor Drum	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 13w wall pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 16 Watt post-top retrofit	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 20 Watt canopy ext	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 223 Watt flood Sbox	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 22w Flood	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 24 Watt wall pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 30w wall pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 40 Watt post-top retrofit	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 40w wall pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 45 Watt post-top retrofit	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 45w Flood	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 47 Watt post-top Spider Mount	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 50 Watt post-top retrofit	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 56w flood Sbox	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 60w wall pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 71w flood Sbox	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED 90w wall pack	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Exterior (Attached Low Rise)	E19A2a162	LED Fixture - Outdoor Common Area	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 22 Watt 2x2 recessed	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 24 Watt 4' bilevel	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 2ft 1-lamp/ballast	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 2ft 2-lamp/ballast	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 2ft 3-lamp/ballast	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 2ft 4-lamp/ballast	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 30 Watt 2x2 recessed CREE	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 30 Watt 2x2 recessed RAFFINO	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 30 Watt 2x4 recessed RAFFINO	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 31 Watt 2x2 Recessed Kit	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 34 Watt 2x4 recessed	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 36 Watt Retrofit for 2x2	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 38 Watt 2x4 Recessed Kit	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 44 Watt 2x4 recessed	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 4ft 1-LP lamp/ballast	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 4ft 2-LP lamp/ballast	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 4ft 3-LP lamp/ballast	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED 4ft 4-LP lamp/ballast	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Common Area, Linear (Attached Low Rise)	E19A2a161	LED Fixture - Linear Indoor Common Area	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
LED Fixture, Indoor In Unit (Attached Low Rise)	E19A2a156	LED 13w wall pack	Deemed Savings		
LED Fixture, Indoor In Unit (Attached Low Rise)	E19A2a156	LED 1-lamp dome GU24 brushed nickel	Deemed Savings		
LED Fixture, Indoor In Unit (Attached Low Rise)	E19A2a156	LED 24 Watt wall pack	Deemed Savings		
LED Fixture, Indoor In Unit (Attached Low Rise)	E19A2a156	LED 30w wall pack	Deemed Savings		
LED Fixture, Indoor In Unit (Attached Low Rise)	E19A2a156	LED 40w wall pack	Deemed Savings		
LED Fixture, Indoor In Unit (Attached Low Rise)	E19A2a156	LED 4ft 2-LP lamp/ballast	Deemed Savings		
LED Fixture, Indoor In Unit (Attached Low Rise)	E19A2a156	LED 7 Watt Drum Kit	Deemed Savings		
LED Fixture, Indoor In Unit (Attached Low Rise)	E19A2a156	LED 7 Watt Sconce Kit	Deemed Savings		
LED Fixture, Indoor In Unit (Attached Low Rise)	E19A2a156	LED 90w wall pack	Deemed Savings		
LED Fixture, Outdoor In Unit (Attached Low Rise)	E19A2a156	LED 13w wall pack	Deemed Savings		
LED Fixture, Outdoor In Unit (Attached Low Rise)	E19A2a157	LED 1-lamp dome GU24 brushed nickel	Deemed Savings		
LED Fixture, Outdoor In Unit (Attached Low Rise)	E19A2a157	LED 24 Watt wall pack	Deemed Savings		
LED Fixture, Outdoor In Unit (Attached Low Rise)	E19A2a157	LED 30w wall pack	Deemed Savings		
LED Fixture, Outdoor In Unit (Attached Low Rise)	E19A2a157	LED 40w wall pack	Deemed Savings		
LED Fixture, Outdoor In Unit (Attached Low Rise)	E19A2a157	LED 4ft 2-LP lamp/ballast	Deemed Savings		
LED Fixture, Outdoor In Unit (Attached Low Rise)	E19A2a157	LED 7 Watt Drum Kit	Deemed Savings		
LED Fixture, Outdoor In Unit (Attached Low Rise)	E19A2a157	LED 7 Watt Sconce Kit	Deemed Savings		
LED Fixture, Outdoor In Unit (Attached Low Rise)	E19A2a157	LED 90w wall pack	Deemed Savings		
LED Fixture, Outdoor In Unit (Attached Low Rise)	E19A2a157	LED 9W BR30 FLD	Deemed Savings		
LED Recessed Trim Kits, Electric (Attached Low Rise)	E19A2a153	LED 4" Trim Kit - Electric	Deemed Savings		
LED Recessed Trim Kits, Electric (Attached Low Rise)	E19A2a153	LED 4" Trim Kit (in Thermal Boundary) - Electric	Deemed Savings		
LED Recessed Trim Kits, Electric (Attached Low Rise)	E19A2a153	LED 6" Trim Kit - Electric	Deemed Savings		
LED Recessed Trim Kits, Electric (Attached Low Rise)	E19A2a153	LED 6" Trim Kit (in Thermal Boundary) - Electric	Deemed Savings		
LED Recessed Trim Kits, Oil (Attached Low Rise)	E19A2a154	LED 4" Trim Kit - Oil	Deemed Savings		
LED Recessed Trim Kits, Oil (Attached Low Rise)	E19A2a154	LED 4" Trim Kit (in Thermal Boundary) - Oil	Deemed Savings		
LED Recessed Trim Kits, Oil (Attached Low Rise)	E19A2a154	LED 6" Trim Kit - Oil	Deemed Savings		
LED Recessed Trim Kits, Oil (Attached Low Rise)	E19A2a154	LED 6" Trim Kit (in Thermal Boundary) - Oil	Deemed Savings		
LED Recessed Trim Kits, Propane (Attached Low Rise)	E19A2a155	LED 4" Trim Kit - Propane	Deemed Savings		
LED Recessed Trim Kits, Propane (Attached Low Rise)	E19A2a155	LED 4" Trim Kit (in Thermal Boundary) - Propane	Deemed Savings		
LED Recessed Trim Kits, Propane (Attached Low Rise)	E19A2a155	LED 6" Trim Kit - Propane	Deemed Savings		
LED Recessed Trim Kits, Propane (Attached Low Rise)	E19A2a155	LED 6" Trim Kit (in Thermal Boundary) - Propane	Deemed Savings		
Low-Flow Showerhead, Electric (Attached Low Rise)	E19A2a132	Low Flow Showerhead - elec	Deemed Savings		
Low-Flow Showerhead, Oil (Attached Low Rise)	E19A2a134	Low Flow Showerhead - oil	Deemed Savings		
Low-Flow Showerhead, Other (Attached Low Rise)	E19A2a135	Low Flow Showerhead - propane	Deemed Savings		
Motors & VFD - Custom	E19A2a250	Custom - Motors-CLC	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
Motors & VFD - Custom	E19A2a250	Unit Vent Motors	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
Occupancy Sensor, Common Area (Attached Low Rise)	E19A2a163	Ceiling Mounted Occupancy Sensor	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Occupancy Sensor, Common Area (Attached Low Rise)	E19A2a163	Fixture Mounted Occupancy Sensor	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Occupancy Sensor, Common Area (Attached Low Rise)	E19A2a163	Switch Mounted Dual Technology Occupancy Sensor	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Occupancy Sensor, Common Area (Attached Low Rise)	E19A2a163	Switch Mounted Occupancy Sensor	Vendor Calculated	kWh, kW, Winter kW and Summer kW	
Other - Custom	E19A2a253	Other - Custom	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
Pipe Wrap (Heating), Oil (Attached Low Rise)	E19A2a126	Heat Pipe Insulation - Oil	Deemed Savings		Use a quantity of "1" with Pipe, Duct and Custom measures
Pipe Wrap (Heating), Other (Attached Low Rise)	E19A2a127	Heat Pipe Insulation - Other	Deemed Savings		Use a quantity of "1" with Pipe, Duct and Custom measures

Pipe Wrap (Water Heating), Electric (Attached Low Rise)	E19A2a121	Hot Water Pipe Insulation - Electric	Deemed Savings		Use a quantity of "1" with Pipe, Duct and Custom measures
Pipe Wrap (Water Heating), Oil (Attached Low Rise)	E19A2a123	Hot Water Pipe Insulation - Oil	Deemed Savings		Use a quantity of "1" with Pipe, Duct and Custom measures
Pipe Wrap (Water Heating), Other (Attached Low Rise)	E19A2a124	Hot Water Pipe Insulation - Other	Deemed Savings		Use a quantity of "1" with Pipe, Duct and Custom measures
Process - Custom	E19A2a251	Process - Custom	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
Programmable Thermostat, Electric (Attached Low Rise)	E19A2a142	Elec Heat Prog T-stat	Deemed Savings		
Programmable Thermostat, Electric (Attached Low Rise)	E19A2a142	Low Voltage Thermostat	Deemed Savings		
Programmable Thermostat, Oil (Attached Low Rise)	E19A2a145	Energy Star Thermostat - oil	Deemed Savings		
Programmable Thermostat, Oil (Attached Low Rise)	E19A2a145	Low Voltage Thermostat - oil	Deemed Savings		
Programmable Thermostat, Other (Attached Low Rise)	E19A2a146	Energy Star Thermostat - LP	Deemed Savings		
Refrigerator Recycling (HES Carryover)	E19A2a288	Refrigerator Recycle	Deemed		
Smart Strip	E19A2a008	Advanced 6-outlet Smart Power	Deemed Savings		
Smart Strip	E19A2a008	Smart Strip	Deemed Savings		
Smart Strip (Tier 2)	E19A2a009	Smart Strip (Tier 2)	Deemed Savings		
Vending Misers	E19A2a249	Snack Miser	Deemed Savings		
Vending Misers	E19A2a249	Vending Miser	Deemed Savings		
Water Heater, Heat Pump, <55 gallon, Energy Star (Attached Low Rise)	E19A2a284	Heat Pump DHW 50	Deemed Savings		
Water Heater, Heat Pump, >55 gallon, UEF 2.70 (Attached Low Rise)	E19A2a285	Heat Pump Water Heater >55 Gallon Electric	Deemed Savings		
Water Heater, Indirect, Oil (Attached Low Rise)	E19A2a169	Indirect Water Heater - Oil	Deemed Savings		
Water Heater, Indirect, Other (Attached Low Rise)	E19A2a170	Indirect Water Heater - Other	Deemed Savings		
Water Heater, On-Demand, Other (Attached Low Rise)	E19A2a171	On Demand Water Heater - LP	Deemed Savings		
Water Heating - Custom	E19A2a273	Water Heating - Custom	Vendor Calculated	kWh, kW, Winter kW, Summer kW and/or Oil, Propane, Kerosene or Wood (MMBTU) as needed	Use a quantity of "1" with Pipe, Duct and Custom measures
Wi-Fi Thermostat, AC Only (Attached Low Rise)	E19A2a268	Nest Learning + Google Home - Electric (AC Only)	Deemed Savings		
Wi-Fi Thermostat, AC Only (Attached Low Rise)	E19A2a268	Wi-Fi Thermostat - Electric (AC Only)	Deemed Savings		
Wi-Fi Thermostat, AC Only (Attached Low Rise)	E19A2a268	WiFI T-STAT NEST-E AC ONLY	Deemed Savings		
Wi-Fi Thermostat, Electric Baseboard (Attached Low Rise)	E19A2a289	Wi-Fi Thermostat - Electric Baseboard	Deemed		
Wi-Fi Thermostat, Oil (Attached Low Rise)	E19A2a269	Wi-Fi Thermostat - Oil	Deemed Savings		
Wi-Fi Thermostat, Oil (Attached Low Rise)	E19A2a269	Wi-Fi TSTAT BLDG 36 - Oil	Deemed Savings		
Wi-Fi Thermostat, Oil (Attached Low Rise)	E19A2a269	WiFI T-STAT NEST-3G HEAT ONLY - Oil	Deemed Savings		
Wi-Fi Thermostat, Oil (Attached Low Rise)	E19A2a269	WiFI T-STAT NEST-E HEAT ONLY - Oil	Deemed Savings		
Wi-Fi Thermostat, Other (Attached Low Rise)	E19A2a149	Nest Learning + Google Home - Propane	Deemed Savings		
Wi-Fi Thermostat, Other (Attached Low Rise)	E19A2a149	Wi-Fi Thermostat - Propane	Deemed Savings		
Wi-Fi Thermostat, Other (Attached Low Rise)	E19A2a149	Wi-Fi TSTAT BLDG 36 - Other	Deemed Savings		
Wi-Fi Thermostat, Other (Attached Low Rise)	E19A2a149	Wi-Fi TSTAT HONEYWELL LYRIC - HEAT - Other	Deemed Savings		
Wi-Fi Thermostat, Other (Attached Low Rise)	E19A2a149	WiFI T-STAT NEST-3G HEAT ONLY - Other	Deemed Savings		
Wi-Fi Thermostat, Other (Attached Low Rise)	E19A2a149	WiFI T-STAT NEST-E HEAT ONLY - Other	Deemed Savings		

Are there any Business Rules associated with the export that we must adhere to:

1. The data set consists of two files: Enrollments (Customer information) and EnrollmentMeasures (installed measures).
2. A recommended file naming convention is provided, however alternate conventions may be used as long as the words "_Enrollments_" and "_EnrollmentMeasures_" are contained in the file names.
3. All customer Enrollments must have an active Eversource account number. An updated customer master file will be made available to the vendor each month.
4. The Enrollments file is linked to the EnrollmentMeasures file using the ReferenceNumber field.
5. ReferenceNumber is a vendor-defined unique Customer/Application ID.
6. ReferenceNumber can only be used once per data transfer.
7. Subsequent transfers of new customer participation require a new ReferenceNumber.
8. Required data values, such as Program Code and Vendor ID, are provided as applicable.
9. EnrollmentMeasures require both a **MeasureCode** and a **MeasureProperty-Description.**
10. Valid MeasureCode and associated MeasureProperty-Description are listed in the Program Measures tab. No other values are accepted.
11. If a new value is needed, please contact your CLC Program Manager.
12. The sum of the EnrollmentMeasures.ActualIncentiveAmount column must equal the invoice incentive amount.
13. Program-wide costs (i.e., not customer-specific) are not included in this data set and are entered on the Invoice Draft screen prior to invoice generation.
14. The Enrollments and EnrollmentMeasures files are "Sent" to a Compressed (zipped) folder using Windows File Explorer
15. The Compressed folder is uploaded to the Compact's information system for processing

Mass Save Home Energy Services

Energy Assessment Standards

Version 3.0

July 2017

By Program Administrators:

TABLE OF CONTENTS

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 report and/or agreement (if applicable) for work that describes the efficiency of the building which lists measures. 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 and maintain appropriate 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 energy efficiency bulbs and other qualified Instant 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 weatherization opportunities 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 Instant 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, heating system upgrades, etc. All program-eligible improvements 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 & Condo Associations

The Mass Save HES program only serves 1-4 unit residences that are not part of a larger site where an association exists (such as a condo or property owner's association with multiple 4-unit buildings). The Energy Specialist should immediately call the supervisor 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 no-cost 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 or energy efficiency service provider. 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.

If the customer is being served by a non-participating Program Administrator the Energy Specialist should direct the customer to check with thier local municipality for energy efficiency program offers they may be eligible for.

2.1 Home Energy Assessment Visit Specifics

2.2 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.

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 applicable 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 reach out to your lead vendor.

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
- Collect available age, make, model and serial numbers

Central Cooling Systems

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

- Cooling system is estimated to be at least 12 years old
- Cooling system is determined to be below SEER 10
- Collect available age, make, model and serial numbers

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
- Water heating is provided by an atmospherically vented water heater
- If water heating is provided by an electric resistance water heater, recommend a heat pump water heater when applicable

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 Energy specialist must always 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 eligible weatherization recommendations 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):

<u>Heating System Distribution Improvements:</u>

- 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.

<u>Basement / Crawlspace Ceiling Insulation:</u>

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 thermal barrier 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 thermal barrier 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 thermal barrier 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.

For basements located inside the thermal envelope, rim joist insulation can be used to complete the thermal envelope.

Basement Rim Joist Insulation: (materials may vary by program administrator)

- **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.
- **Spray Foam Insulation** – Check with your PA for materials used.
- **Thermal Barrier Board** – Can be recommended in special circumstances. Check with your PA for appropriate situations.
- **Insulate Basement Exterior Door** – Recommend that rigid board insulation be applied to the back of uninsulated exterior basement doors, in good condition, present along the thermal boundary.

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.

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. 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 hallway garage wall, 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 enclosed 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 air leakage 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.

- 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. If rigid board insulation is not installed a FSK ignition barrier must be.
- 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. If rigid board insulation is not installed a FSK ignition barrier must be.

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.

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 staircover 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.

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^2 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

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. Per manufacturer specifications, a minimum 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. Thermostats existing in bathrooms should not be replaced due to possible moisture issues.

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)
- 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 licensed electrician certify that the wiring has been deactivated or removed before proceeding with any work that may contact the wiring.

2.10.3 Asbestos Like Material

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.

Blower door testing should not be completed in any home where asbestos like material is identified or suspected.

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, Energy Specialists must not dig through vermiculite insulation in the attic.

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.

2.10.4 Combustion Safety

Follow all applicable 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. Filters that recirculate dryer exhaust into the home are not considered to be vented to the outside.

- 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 with excessive storage prevent work in that area until the items are moved and access 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 approved energy efficient light bulbs are a very cost effective way to reduce electricity usage. There is no limit to the number of energy efficient light bulbs that can be installed in a home but they should only be installed in fixtures that are used existing incandescent. Please note that light bulbs are not to be left at the home uninstalled – **all approved energy efficient light bulbs 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.

If Home Performance Contractor (HPC) or Lead Vendor (LV) audit staff is found leaving instant savings measures behind with customers that should have been installed, the HPC or LV is issued a warning, the job is considered a failed inspection, and the company will not be paid for the uninstalled instant savings measures or installation fee. The individual energy specialist who left the instant savings measures behind will be suspended from all program work (for all program administrators statewide) for 2 weeks for first offense and 6 months for second offense.

Other installations that save electricity or heating and domestic hot water fuel are also to be installed. This includes programmable or wireless enabled thermostats, showerheads, and faucet aerators, advanced power strips. 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.

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

Initial Publication Date: May 13, 2010

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Updated: October 31, 2018

Version 2.1

This Standard applies to all work performed under the Mass Save Home Energy Services Program for customer contracts entered into **beginning October 1, 2016**. 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:

TABLE OF CONTENTS

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 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. Licenses include (but are not limited to): MA Home Improvement Contractor's License, MA Construction Supervisor License, and MA Lead Safe Certificate
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 SDS 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 and initial or sign-off of completion certificate by the homeowner are required before any modifications to the original Work Order are made.
h. CONTRACTORS *should attempt* to make acceptable repairs for all accidental damages made to a customer's property at the contractor's expense within 10 business days. 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.
c. CONTRACTORS are strongly urged to use drop cloths for an additional measure to protect homeowners property/belongings

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. If tests are not able to be performed (e.g., electric heat, asbestos,

etc.) it must be noted in the paperwork.

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:
   - An itemized confirmation that the Program Audit recommendations were addressed.
   - An itemized list of each measure, area, R-value, etc., installed.
   - Upon project completion, document that post-blower door testing and post-combustion safety testing has been performed. Must be done on the day of completion.
   - Proof of approved Change Orders by CUSTOMER and PA Vendor.

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. *Program Specifications & Customer Guidance* form must be signed by the customer.
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.
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.

2.10 BACKGROUND CHECKS

CONTRACTORS must comply with all background check policies required by the individual PA for which the CONTRACTOR is approved to do work. Contractors must check with each LV on specific requirements

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.

https://www.osha.gov/pls/oshaweb/owastand.display_standard_group?p_toc_level=1&p_part_number=1926

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. 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 shall perform combustion safety tests in accordance with the BPI Technical Standards for the Building Analyst Professional and provide appropriate 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.

4.1 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 (sign-off by a licensed electrician will be needed to proceed to ensure knob-and-tube wiring is not active)
- Existing conditions of specific building components
- Combustion safety issues
- Asbestos
- Inaccessibility
- Infestation
- Recessed lights verified by licensed electrician

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_{75} 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

- Door, interior: Schlegel "Q-lon" strips, or equivalent other product approved by PA vendor.)
- Doors, exterior: Schlegel "Q-lon with carrier" or equivalent other product approved by PA vendor.
- Door sweeps will be aluminum & vinyl
- 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.l50 mm) polyethylene sheet (used for ground cover or winter-warm side application only)
- Moisture permeable air impermeable wrap material, flame spread 25 (cold side cover),
- Foil/scrim/kraft facing ignition barrier per IRC 2009 R316.5.3
- 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 for 16 or 24 inch rafter spacing ventilation air chutes must extend over existing insulation,
- Insulated flex duct 4 and 6 inch diameter for exhaust fans (no tape, use 4 zip ties)

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,

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. Rock wool may NOT be used.
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 contractor provides the PA vendor signed documentation by a licensed electrician, 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 fire rated caulking.
    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 ½".
    iii. Foam shall not be used to span gaps or openings more than 1 ½" 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. Air sealing between the basement and the living space is not warranted in the scope of work when basement has been determined to be outside the conditioned space.

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
- 2nd 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 when there is a 18° inside to outside temperature difference 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 program. **See Appendix 16.5 for airflow testing guidelines**.

6.2.1 General

Duct sealing has many benefits including the potential to improved comfort, indoor air quality and better humidity control. Unlike a house or building, there is no lower boundary of air tightness for a duct system. When sealing ducts, it makes the most sense to seal leaks close to the air handler where the pressure is greatest first and then work to the extremities of the system. Any un-insulated section of the duct system located in unconditioned space should be insulated to current code requirements. Ducts should be sealed before being insulated. Existing duct insulation may be carefully pulled back using the procedure described in section 6.2.6 #6 to expose connections and joints that may then be sealed with duct mastic.

6.2.2 Locations and Use

For energy savings, only duct systems 30% or more in unconditioned space (measured by linear feet of ducts) should be evaluated for duct sealing and insulation. When assessing existing duct systems, ducts located in semi conditioned spaces like basements have proven to have marginal payback. Therefore it makes the most sense to seal ducts that are located in ventilated spaces such as attics and open crawl spaces, once the decision is made to seal a duct segment, all the openings in the duct system should be sealed using program approved materials.

6.2.3 Duct Sealing Materials Requirements

The following materials are approved for duct sealing:

1. Water based (latex) mastic conforming to UL-181A-M
2. Tapes listed and labeled in accordance with UL-181A-P for pressure sensitive or UL-181A-H for heat sensitive tape UL-181B-M.(Example: BUTYL mastic tape)
3. Aluminum Foil Tape (for use with metal duct work to plenum connections).
4. 2" roll mesh tape.(For openings in the duct system greater than ¼")

6.2.4 Duct Sealing Installation Requirements

1. All joints, **seams** and connections should be sealed with duct mastic or approved duct sealing tape when no duct Insulation is present or will be removed and replaced as part of the work scope.
2. All connection points and joints should be sealed when insulation is present. **Seams located along the edges of the duct work will not be required to be**

sealed due to existing insulation barrier.

3. Any seam or hole in the duct system greater than ¼" will be backed with mesh tape and sealed with duct mastic.
4. Flex duct connections should be made with hard duct connectors, held in place with a vinyl tension strap. The connection between the inner liner and the hard duct it is connected too should be sealed with duct mastic.
5. Filter Slot door, should have an operable door that closes securely and is reasonably tight. If present filter slot does not have a door or one that will close properly than Aluminum tape should be used as a temporary blocker and the customer should be notified to install a more permanent solution.
6. Boot to floor, wall or ceiling connections for supplies and returns should be treated as part of air sealing work scope.

6.2.5 Duct Insulation Materials Requirements

1. Duct wrap with an R-value of 8 will be used to insulate ducts located in unconditioned spaces.
2. Tape made specifically for use on duct insulation (e.g. FSK Facing Tape, Aluminum Foil/Fiberglass Scrim on Polyethylene Coated Kraft Paper).
4. Plier stapler and staples
5. 10-14" cable (zip) ties

6.2.6 Duct Insulation Installation Requirements

1. Duct insulation will be installed by wrapping insulation around ductwork and attaching neatly using a plier stapler. Two inches should be added to the width of the duct wrap to provide the excess wrap needed to create a neat tight seam that can be stapled without compressing the insulation. Do not pull the insulation too tight as this will compress it and decrease its R-value. Seams should be stapled every two inches at most
2. No fiberglass will be left exposed. All seams and tears in the vinyl vapor retarder will be sealed using program approved tape (FSK Facing Tape, Material Aluminum Foil/Fiberglass Scrim on Polyethylene Coated Kraft Paper).
3. Flex duct insulation connections should be made with hard duct connectors, held in place with a vinyl tension strap.
4. No part of the duct system will be left un-insulated, including supply and return boots.
5. Floor joist bays used as return ducts will have duct insulation wrapped around 3 sides and secured near the top of each joist or to the subfloor on each side. Duct insulation must be in substantial contact with all sides of duct area.
6. **Systems with existing insulation** should have the insulation peeled back to expose connections and joints only. Joints and or connections occur wherever two pieces of duct were connected by installers. Joints and or connections in straight duct can be located by compressing the duct insulation until joints are felt. Once they are located the insulation should be cut neatly and peeled back far enough to expose the joint for mastic application. Once the ducts have been sealed, the duct insulation should be replaced back in its original location with no voids in insulation coverage. All insulation that was cut should be put back in place using approved tape to seal area that was opened to expose the connections or joints. If insulation was removed completely to better access joints and connections then additional materials such as cable (zip) ties or staples should be used to additionally support insulation to prevent insulation from becoming disengaged from ducts.

6.3 ATTIC INSULATION

Installation must meet or exceed the Massachusetts State and Local Building Codes.

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.
f. 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., insulated attic stair cover) 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.

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.

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
- 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. 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 contact the customer 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. **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.

   Spray Foam Insulation – Check with your PA for materials used.

   Thermal Barrier Board – Can be recommended in special circumstances. Check with your PA for appropriate situations.

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

Berkshire Gas
Cape Light Compact
Columbia Gas of Massachusetts
Eversource
Liberty Utilities
National Grid
Unitil

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
CAN/CGSB 51.71-2005 Depressurization Test

Documents Published by the National Fire Protection Association
(NFPA) 1 Batterymarch Park
Quincy, MA 30169-7471
Telephone: (617) 770-3000; Fax: (617) 770-0700; www.nfpa.org
NFPA 54-2006, ANSI Z223.1-2006 National Fuel Gas Code

Documents Published by the International Code
Council 500 New Jersey Avenue, NW, 6th Floor
Washington, DC 20001
Telephone (888) 422-7233; Fax: (202) 783-2348; www.iccsafe.org
International Residential Code - 2006

16.0 INFORMATIVE APPENDICES

16.1 Health and Safety Guidance
16.2 Contractor Performance Standard
16.3 K &T Form 2008
16.4 Application Details
16.5 Duct Sealing and Duct Insulation Guidance

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
- Steam boiler insulation
- Pipe insulation
- Duct insulation
- Asbestos cement sidewall shingles
- Vermiculite insulation
- Floor tiles (9x9)
- Acoustical

materials To

minimize exposure:

- Learn to recognize suspected asbestos containing materials. (Joints look like a plaster cast.)
- 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. In the case of Steam boilers with radiators, asbestos may still be in wall cavities.
- 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 planning 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 INDIVUALS 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 TECHNCIAL 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 cannot 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
CONTRACTOR PERFORMANCE STANDARD

The Performance Standards Subcommittee has developed a list of prerequisites that the group is proposing as a set of requirements for all Home Energy Services Program representatives to follow.

- Before Arriving On Site
    - Vehicle Identification Requirement - The company name should be included on all company vehicles.
    - Provide a confirmation to all customers before arriving on site. This could be an email, letter or phone call confirming the appointment.
- Crew Chief Requirements - Crew Chief should be the first and last interactions with the customer
    - Crew Chief should introduce himself/herself to the customer showing some form of identification: business card, ID badge or other identification that associates the Crew Chief as the Mass Save Participating Contractor. The Crew Chief should also be providing an overview of the work that is going to be performed and where they will be doing work.
    - At the end of each day, the Crew Chief should conduct a walk-through of the home making sure the customer is satisfied with the cleanliness of the home and to review the work completed. The Crew Chief should also provide a contact number for additional questions.
    - Crew Chiefs should inform the customer that they may request an Inspection of the work and may be contacted to participate in surveys or inspections following the completion of the work.
- General Contractor Crew Requirements
    - Smoking - Contractor should be out of direct sight of the customers. This could include smoking in the company vehicle, personal vehicle or across the street.
        - All cigarette waste should be properly disposed of and removed from the property each day.
    - Crew Clothing - Shirt and pants are required to be worn at all times while on site.
        - Shirt will not contain vulgar or offensive language/pictures.

- All clothing and general appearance should be representative of the high standards of the Mass Save Home Energy Services Program.

- Shoes
  - Always comply with OSHA requirements for footwear.
  - Follow customer's expectations for wearing footwear in the home, including:
    - Wearing booties to eliminate tracking dirt into house when necessary.
    - Properly protect travel areas from foot traffic.

- Ask homeowner for permission before using the restroom facilities.
- The crew should not eat food in the customer's home. The crew may eat in the driveway/truck and should clean up after themselves.
- Phone usage inside the home should be limited to work related calls only. Each company is responsible for maintaining their own employee requirements regarding phone use, but should not interfere with their work or customer service.
- Each member of the crew is expected to refrain from any language or actions that could be construed as offensive, harassing, intimidating, and/or demeaning while at a customers' property.

- Customer/Condition of House
  - No trash will be left on property (neither inside nor outside home)
  - Leave customer's property in the same condition as when the work started.
  - No graffiti will be permitted on the customer's property at any time.
  - Working Hours - Unless authorized by the customer, crews will work during normal business hours and all crews must follow all local ordinances
  - Customers should not be in the general area when work is being completed.

APPENDIX 16.3
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 16.4

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 ft2 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
7.

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.

APPENDIX 16.5

DUCT SEALING AND DUCT INSULATION GUIDANCE

16.5.1 DUCTED AIR DISTRIBUTION

The forced-air system consists of an air handler (furnace, heat pump, air conditioner) with its heat exchanger along with attached ducts. The annual system efficiency of forced-air heating and air-conditioning systems depends on the following issues.

- Duct leakage
- System airflow
- Blower operation
- Balance between supply and return air
- Duct insulation levels
- System location

16.5.2 Duct Sealing Eligibility Sequence of Operations

The evaluation and improvement of ducts has a logical sequence of steps.

- **Determine whether more than 30% of the ducts are located outside of the conditioned space**
    - Only duct systems located more than 30% outside of conditioned space are eligible for duct sealing
    - To determine if a duct system is more than 30% outside of the conditioned space, the total length of the duct system and the length of the system in conditioned space should be measured with a tape. If the length of duct in conditioned space is less than half of the total length, the duct system is eligible for duct sealing

- **Evaluate the ducts visually for air leakage/condition and decide whether duct-sealing is needed.**
    - Only duct systems with an evaluated leakage category of “some observable leaks” or “significant leaks” are eligible for duct sealing. These terms are defined in Section 16.5.3.
    - Only duct work that has properly attached connections and whose air flow has not been compromised due to crushed ducts.

NOTE: If the duct system has ducts that are crushed or improperly attached/disconnected to the point that the Energy Specialist believes that the system cannot be adequately sealed without first fixing ductwork, then refer the

customer to a program approved list of HVAC contractors to evaluate the duct systems condition.

- **Determine if the system airflow meets program requirements for proper flow.**
    - *Only* systems with airflow CFM falling within program recommended airflow rates are eligible for duct sealing.
    - *Only* Duct systems with accessible filter slots or single return grilles will have its' airflow measured using the True Flow Plates
    - Duct airflow can be assessed using the **Temperature Rise** method provided that the system is **HEATING ONLY**. All systems with **COOLING** must have a TRUE-FLOW test in order to qualify to be duct sealed.
    - See section 16.5.4 for details on performing airflow measurements with True Flow Plates or the temperature rise method.

Additional duct systems that should not be evaluated for duct sealing opportunities are as follows:

- Duct board systems are not eligible for duct sealing under this program
- High velocity systems are not eligible for duct sealing under this program
- Systems insulated with radiant bubble wrap are not eligible for duct sealing under this program, unless the bubble wrap is deemed by the energy specialist to have an effective R-value of under R-3. In which case, the bubble wrap would be removed and the ducts would be insulated to R-8.
- Any repair work requiring the use of HVAC industry tools and materials other than a cable tie (Zip Tie) tensioner will be referred to program approved list of HVAC contractors

16.5.2.1 Determine the Distribution System Efficiency (DSE) by visually evaluating the three duct characteristics below. Use the Building Performance Institute's 'Distribution Efficiency Look-Up Table' and the results of the duct system evaluation below to lookup the DSE. Alternately, enter inputs required by the program-approved energy modeling software, then the software will evaluate the system's distribution system efficiency and energy savings from any duct weatherization.

1. Percentage of duct work located outside of the conditioned space
2. Duct leakage evaluation
3. Duct insulation evaluation

The DSE should be determined before duct sealing and insulation, and after duct sealing and insulation. The increase in DSE due to duct weatherization will be used to calculate the energy savings as outlined in the ENERGY SAVING CALCULATIONS section 16.5.5 below.

16.5.3 Evaluating Duct Air Leakage

Duct leakage is a major energy-waster in homes where the ducts are located outside the home's thermal boundary in a crawl space, attic, attached garage. When these intermediate zones remain outside the thermal boundary, duct sealing is usually cost-effective.

Ducts in unconditioned space with ***some observable leakage*** will be eligible for duct sealing.

- ***Some observable leakage****:* Joints are not sealed with an approved sealant and there are gaps at most of the seams. Duct insulation shows discoloration at most field joints.

NOTE: Duct leakage within the thermal boundary or in Semi Conditioned Spaces like basements will not qualify to be duct sealed.

16.5.4 Specifying Duct Sealing Hours.

Duct sealing man hours will be determined based on liner footage of existing ridged duct work and existing duct insulation.

- 4 Man Hrs. (un-insulated rigid ducts less than 200 liner feet.)
- 6 Man Hrs. (un-insulated rigid ducts greater than 200 liner feet.)
- 8 Man Hrs. (insulated rigid ducts less than 200 liner feet.)
- 12 Man Hrs. (insulated rigid ducts greater than 200 liner feet.)

16.5.5 Airflow Measurement Tests

In order to be eligible for duct sealing in the program, duct systems must meet the following airflow rates for the equipment they serve.

- For systems with cooling, **CFM per ton** must be at or **above 300**.
  NOTE: If initial airflow test results are within 10% of the program 300 cfm per ton requirement, they will be considered to have met the program guidelines.

- For fossil fuel/Electric Furnace only heating systems, the measured Heat Rise must be within manufacturer's recommended range. Program default maximum temperature rise 80 deg F. will be used when manufacture data is not available.

Duct System air handlers must meet program airflow requirement to be eligible for sealing. The two airflow tests described below are the only tests approved in the program at this time. Any new testing methods must meet program approval. Remember when properly testing system airflow that all zone, register and balancing dampers must be in their fully open position. All duct systems that have cooling will require a True flow test. If one cannot be done than duct sealing cannot take place.

NOTE: When completing Flow test on cooling equipment the thermostat should be set on

cooling mode for the most accurate air flow results. When outside temperatures are below 60 deg. F. cooling equipment should not be turned on, use fan only mode.

1. Duct systems with accessible filter slot at the air handler or accessible single return filter grille will use True Flow Plates to measure system airflow. Instructions for installing the True Flow Plates and correctly measuring system airflow can be found here: http://dev.energyconservatory.com/wp-content/uploads/2014/07/TrueFlow-Manual-DG700.pdf

   NOTE: When the model number for the cooling equipment cannot be obtained to determine the required system airflow eligibility, the following can be used as a default:

   - 400 cfm per 500 sq.ft. of conditioned cooling space

2. **Heating only systems** will use the Temperature Rise method to assess system airflow. This method is described here:

a. Drill a ¼ inch hole in a straight section of the **supply plenum** or trunk. Be sure the hole is around at least one duct bend. The temperature probe should not have direct "line of sight" with the heat exchanger.

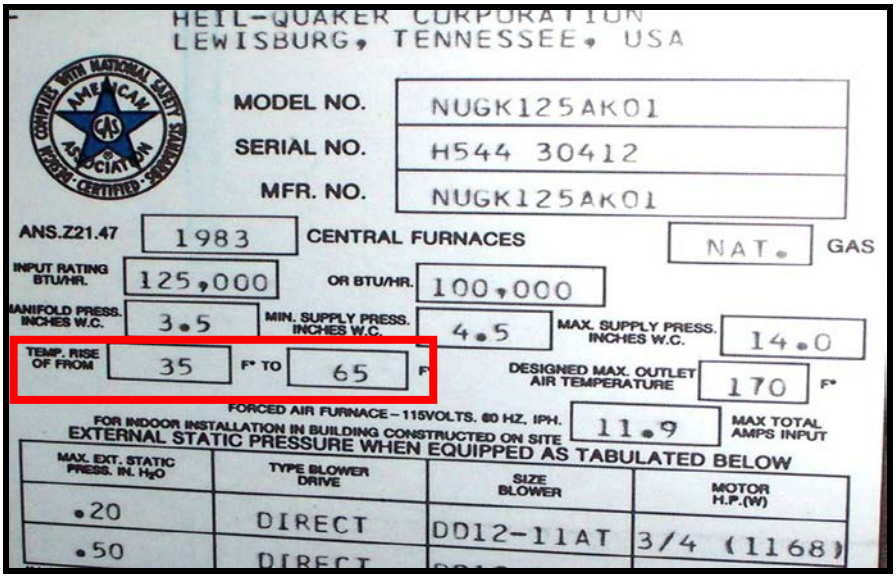
b. Drill a ¼ inch hole in a straight section of **return plenum** or trunk.

c. Insert a temperature probe into each drill hole in the Return and Supply. Be sure the probe extends into the middle of the duct and not along the sides.

d. Turn the system on and allow it to run for 10 minutes or until the supply and return side temperatures stabilize.

e. Read and record the supply and return side temperatures. Subtract the return side temperature from the supply side temperature. This is the systems' temperature heat rise.

f. Compare the measured heat rise from steps a-e to the manufacturer's acceptable heat rise range for the system data plate (red box).



g. If the measured heat rise falls within the manufacturer's projected range the airflow is acceptable and the system can be sealed.

Example: A 60, 000 btu/HR. output furnace has a supply side temperature of 120 degrees and the return side of 70 degrees. The difference between the two measurements is 50 degrees. The acceptable temperature rise as read from the data plate is 35-65 degrees. 50 degrees falls between 30-60 degrees and passes the heat rise test and so the system can be sealed. Systems that fail the test with a heat rise higher than manufacturer's projections have low air flow and should not be sealed.

16.5.6 Evaluating Existing Duct Insulation

Duct systems with an **effective** R-value of 3 or greater are not eligible to be insulated. When determining the effective R-value of existing duct insulation to be upgraded to R-8 take the following into consideration.

- Effective R-value of 2 or less regardless of install quality is eligible.
- Duct insulation with compression of insulation to less than 1 inch is eligible
- Ducts that have poorly installed insulation that is falling off or not properly fastened with multiple exposed ducts.
- Existing Duct insulation that will be compromised during duct sealing to the point that it will not be able to be re-installed due to its poor deteriorated condition.

NOTE: Duct insulation can only be recommended when Duct Sealing will be part of the work scope.

16.5.7 ENERGY SAVING CALCULATIONS

16.5.7.1 Evaluation of Distribution Efficiency – this methodology requires the evaluation of three duct characteristics below:

1. Percentage of duct work found within the conditioned space
2. Duct leakage evaluation
3. Duct insulation evaluation

These three characteristics which should have been determined using the guidance from Section 16.5.1-16.5.4 will be used to determine the distribution efficiency by using the Building Performance Institutes 'Distribution Efficiency Look-Up Table' located below Section 16.5.5.2, or calculated using program approved energy modeling software. Distribution system efficiency will be evaluated in the following two conditions:

Definition of Baseline Condition
The existing baseline condition is leaky duct work within the unconditioned space in the home.

Definition of Efficient Condition
The efficient condition is sealed duct work throughout the unconditioned space in the home.

16.5.7.2 Evaluation of Appliance Efficiency: Determining appliance efficiency for use in the Energy Savings Calculations will be accomplished using the following methods:

1. Fossil Fuel Appliances:
If the yellow Energy Guide efficiency sticker is still attached, use that value.
If the yellow Energy Guide sticker is no longer attached to the appliance, use program default.

Efficiency Ratings

Default Oil Furnace Efficiencies	AFUE
Condensing unit Direct Vent	0.90
Induce Draft	0.80
Natural Draft	0.72

Default Gas/ Propane furnace Efficiencies	AFUE
Condensing unit Direct Vent	0.90
Induce Draft	0.82
Natural Draft	0.78

2. Air Source Heat Pump
If the yellow Energy Guide efficiency sticker is still attached, use that value.
If the yellow Energy Guide sticker is not available use the following tables to estimate appliance efficiency.

Heat Pump (Air Source-heating) Efficiencies	HSPF
Energy Star Sept 2015 to present	8.5
Energy Star Sept 2006 - Aug 2015	8.2
2015 or newer	8
2006 to 2014	7.7
1992 to 2005	7.1
Before 1992	6.6

3. Cooling Appliances:

If the yellow Energy Guide efficiency sticker is still attached, use that value. If the yellow Energy Guide sticker is not available use the following tables to estimate appliance efficiency.

Default Air Conditioning/Heat Pump Efficiencies	**SEER**
2015 and newer Energy Star	15
2006 - 2014 Energy Star	14.5
2015 and newer **NOT** Energy Star	14
2006 - 2014 **NOT** Energy Star	13
1992 - 2005	10
Before 1992	9

This table is also located at: http://www.bpi.org/files/pdf/DistributionEfficiencyTable-BlueSheet.pdf

DISTRIBUTION EFFICIENCY LOOK-UP TABLE

Distribution Efficiency Table

System Charateristics (there are 3 questions you need to answer about the distribution system)

1 What percentage of the ducts are located within the conditioned space
2 How well are the connections on the duct system sealed
3 What is the insulation value on the ducts for the portion outside the conditioned space

	1. % within conditioned space			2. Duct leakage Charateristics					3. Duct insulation value		
Distribution Efficiency	90% or more inside envelope	50% or more inside envelope	less than 50% inside envelope	Connections sealed w/mastic	No observable leaks	Some observable leaks	Significant leaks	Catastrophic leaks	Ducts outside envelope R-8 or greater	Ducts outside envelope R-4 - R-7	Ducts outside envelope < R-4
95%	XXX			XXX					XXX		
94%	XXX			XXX						XXX	
93%	XXX			XXX							XXX
94%	XXX				XXX				XXX		
93%	XXX				XXX					XXX	
92%	XXX				XXX						XXX
90%	XXX					XXX			XXX		
89%	XXX					XXX				XXX	
88%	XXX					XXX					XXX
85%	XXX						XXX		XXX		
84%	XXX						XXX			XXX	
83%	XXX						XXX				XXX
80%	XXX							XXX	XXX		
79%	XXX							XXX		XXX	
78%	XXX							XXX			XXX
90%		XXX		XXX					XXX		
89%		XXX		XXX						XXX	
88%		XXX		XXX							XXX
84%		XXX			XXX				XXX		
83%		XXX			XXX					XXX	
82%		XXX			XXX						XXX
80%		XXX				XXX			XXX		
79%		XXX				XXX				XXX	
78%		XXX				XXX					XXX
75%		XXX					XXX		XXX		
74%		XXX					XXX			XXX	
73%		XXX					XXX				XXX
70%		XXX						XXX	XXX		
69%		XXX						XXX		XXX	
68%		XXX						XXX			XXX
80%			XXX	XXX					XXX		
79%			XXX	XXX						XXX	
78%			XXX	XXX							XXX
74%			XXX		XXX				XXX		
73%			XXX		XXX					XXX	
72%			XXX		XXX						XXX
70%			XXX			XXX			XXX		
69%			XXX			XXX				XXX	
68%			XXX			XXX					XXX
65%			XXX				XXX		XXX		
64%			XXX				XXX			XXX	
63%			XXX				XXX				XXX
60%			XXX					XXX	XXX		
59%			XXX					XXX		XXX	
58%			XXX					XXX			XXX

Example: If you have a system with more than 90% inside the conditioned space (i.e. in a heated basement) and the system is sealed with mastic and the portion of the duct system that is not in the heated space has an R-value of R-4, the distribution efficiency of the system is 94%.

The annual energy savings from duct weatherization will be determined using one of the following methods:

1. Using approved energy modeling software to determine modeled energy savings. This method will use complex algorithms to consider how duct weatherization will interact with other energy efficiency measures installed in the home, and how that will affect energy savings.
2. Use the formulas below to calculate energy savings from duct weatherization.

ANNUAL ENERGY SAVING ALGORITHMS:
Determine Distribution Efficiency by evaluating duct system before and after duct sealing using Building Performance Institute "Distribution Efficiency Look-Up Table"

Cooling savings from reduction in Air Conditioning Load:
ΔkWh cooling = ((((DEafter – DEbefore)/ DEafter)) * FLHcool * BtuH) / 1,000 / ηCool

Where:
DEafter = Distribution Efficiency after duct sealing
DEbefore = Distribution Efficiency before duct sealing
*FLHcool = Full Load Cooling Hours**
BtuH = Size of equipment in Btuh (note 1 ton = 12,000Btuh)
ηCool = Efficiency in SEER of Air Conditioning equipment= actual. If not available use:

Heating savings for homes with electric heat (Heat Pump of resistance):
kWh = (((((DEafter – DEbefore)/ DEafter)) * FLHheat * BtuH) / 1,000,000 / ηHeat) * 293.1

Where:
*FLHheat = Full Load Heating Hours***
BtuH = *Size of equipment in Btuh (note 1 ton = 12,000Btuh)*
ηHeat = Efficiency in COP of Heating equipment (HSPF)

For homes with Fossil Fuel Heating:
ΔMMBTUfossil fuel = ((((DEafter – DEbefore)/ DEafter)) * FLHheat * BtuH) / 1,000,000 / ηHeat

Where:
DEafter = Distribution Efficiency after duct sealing
DEbefore = Distribution Efficiency before duct sealing
*FLHheat = Full Load Heating Hours***
BtuH = Capacity of Heating System
ηHeat = Efficiency of Heating equipment

The MA TRM sets 360 hours as the full load cooling hours for MA and 1200 heating hours as the full load heating hours for MA.

ATTACHMENT H
MA DOER Reporting Requirements

MA Department of Energy Resources Reporting (DOER)

On a quarterly basis the DOER requires in depth reporting. The accuracy of this reporting is of paramount importance. The details in the report are expected to be at the customer and measure level. The sample reports provided below reflect historical Program Vendors.

Inquiry

In the DOER Record of Customer Inquiries of Tier One Service, LVs must report the call source, inquiry type and action taken at the customer level.

RECORD OF TIER ONE SERVICE						
Inquiries						
			DOER will map vendor values to the values listed in these fields. The field, **Inquiry Type**, has several values that would logically result in **Action Taken**, Referral Tier 2.			Integer
Date	**Administrator**	**Call Center**	**Call Source**	**Inquiry Type**	**Action Taken**	**Aggregate**
January 31, 2010	A MECO	BSG	Statewide-800	General	Phone Resolution	
February 28, 2010	B NSTAR Electric	AES	Outreach	Bill	Material Sent	
March 31, 2010	C WMECO	CET	Telemarketing	Comfort	Referral Tier 2	
April 30, 2010	D FG&E Electric	CSG	LDC Referral	Durability	Referral Low-Income	
May 31, 2010	E CLC	ENE	Word-of-Mouth	Health	Referral local distribution company	
June 30, 2010	F Keyspan	HDMC	Misdirected	Not Applicable	None	
July 31, 2010	G Bay State	RISE				
August 31, 2010	H NSTAR Gas					
September 30, 2010	I Berkshire					
October 31, 2010	J New England Gas					
November 30, 2010	K FG&E Gas					
December 31, 2010	L Blackstone					
	M Municipal					

Expenditures

In the DOER Record of Expenditures of Tier Two Service, LVs must report the in-home services provided and the cost.

RECORD OF TIER TWO SERVICE Expenditures				
Date	**Administrator**	**Vendor**	**In-home Service**	**Cost - Dollars**
January 31, 2001	BGC	CET	Monthly Contractual Expenses (MCE)	Program administrator payment to customer or vendor. Customer's payment to vendor for Direct Retail Sale.
February 28, 2001	BSG	CSG	Immediate Savings Piggyback (ISM-PB)	
March 31, 2001	CLC	HDMC	Direct Retail Sale (DRS)	
April 30, 2001	FGE-Ele	muni-lights	Energy Efficiency Incentive (EEI)	
May 31, 2001	FGE-Gas		Energy Efficiency Incentive Special (EEI Special)	
June 30, 2001	FRG		Demand Side Management (DSM)	
July 31, 2001	Keyspan		Renewable Energy Incentive (REI)	
August 31, 2001	MECo			
September 30, 2001	muni-lights			
October 31, 2001	NAG			
November 30, 2001	NSTAR-Electric			
December 31, 2001	NSTAR-Gas			
	TBGC			
	WMECo			

Services

In the DOER Record of Customer Services of Tier Two Service, LVs must report the in-home services provided along with aggregate incentives included in the services provided.

RECORD OF TIER TWO SERVICE Services				
Date	**Administrator**	**Vendor**	**In-home Service**	**Aggregate - Integer**
January 31, 2010	A MECO	AES	Home Energy Assessment (HEA)	When reporting incentive types, a customer can only receive a single incentive type from a particular Program Administrator. That is a customer can not get 2 EEI incentives from the same PA. However, customer could receive a gas DSM incentive and an electric incentive.
February 28, 2010	B NSTAR Electric	CET	Special Home Visit (SHV)	
March 31, 2010	C WMECO	CSG	Immediate Savings Measures (ISM)	
April 30, 2010	D FG&E Electric	ENE	Immediate Savings Measures Piggyback (ISM-PB)	
May 31, 2010	E CLC	HDMC	Direct Retail Sale (DRS)	
June 30, 2010	F Keyspan	RISE	Energy Efficiency Incentive (EEI)	
July 31, 2010	G Bay State		Energy Efficiency Incentive Special (EEI Special)	
August 31, 2010	H NSTAR Gas		Demand Side Management (DSM)	
September 30, 2010	I Berkshire		Renewable Energy Incentive (REI)	
October 31, 2010	J New England Gas		Inspections	
November 30, 2010	K FG&E Gas			
December 31, 2010	L Blackstone			
	M Municipal			

Measures

In the DOER Record of Measures of Tier Two Service, LVs must report the status of the job, measure and amount in units provided, number of households served, fuel type, and estimated annual savings.

RECORD OF TIER TWO SERVICE								
Measures								
Date	**Administrator**	**Vendor**	**Stage**	**Measure**	**Units**	**Households**	**Fuel Type**	**Estimated Annual Savings - Equivalent BTUs**
January 31, 2010 February 28, 2010 March 31, 2010 April 30, 2010 May 31, 2010 June 30, 2010 July 31, 2010 August 31, 2010 September 30, 2010 October 31, 2010 November 30, 2010 December 31, 2010	A MECO B NSTAR Electric C WMECO D FG&E Electric E CLC F Keyspan G Bay State H NSTAR Gas I Berkshire J New England Gas K FG&E Gas L Blackstone M Municipal	AES CET CSG ENE HDMC RISE	Recommendation Proposal / Work Order Installation	Air Sealing Duct Sealing Duct Insulation Attic Insulation Basement Insulation Rim Joist Insulation Wall Insulation Heating Pipe Insulation Refrigerator Thermostat Heating System Solar Domestic Hot Water Lighting Products DHW Products Weatherization Products	job job job sq-ft sq-ft sq-ft sq-ft linear ft number number number number Only one from each category per house. However, a house may have one of each.	Number of households served that BTU's are attributed	Electric Gas Oil Other 50% + of space conditioning	Only report measures with attributable savings.

ATTACHMNET I

Single Family Pricing

Pricing Request			
Service	Unit	Price	Additional Details
Call Center Services (scheduling included)	Monthly		Fixed monthly cost
Contractor Management Fee	Monthly		Bidder may wish to provide a cost range dependent on number of participating contractors managed
Heat Loan Administration	Monthly		Bidder may wish to provide a cost range dependent on number of HEAT Loans processed
Comprehensive Assessment	Per Assessment		Fixed Assessment Cost
Special Home Visit	Per Visit		Fixed Visit Cost
Rebate Processing Fee	Per Rebate		Bidder may wish to provide cost based on rebate type (may be limited in scope with transition to a statewide vendor)
Quality Assurance/Quality Control Visit	Per Visit		Fixed Visit Cost
Combustion Safety Test Visit	Per Visit		Fixed Visit Cost
Efficient Lighting Install Fee	Per Bulb		Fixed Cost for Installation
User Fees for Vendor Software	Per License/User		Fixed cost for license and training
Marketing Support	Per Hour		Bidder may wish to provide hourly cost for multiple designated resources
Product*	Unit	Price	Install Fee
7 Day Programmable Thermostat	Per Thermostat		
Wi-Fi Thermostat	Per Thermostat		
Flip Aerator (2.2 gpm)	Per Aerator		
Standard Aerator (1.5 gpm)	Per Aerator		
Low Flow Showerhead (1.7 gpm)	Per Showerhead		

* The bulbs are currently procured through the PAs vendor for bulk procurement. It is expected that the LV and the statewide vendor at statewide pricing.

ATTACHMENT J
ALR / AHR Pricing

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
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
Marketing Support	Per Hour		Bidder may wish to provide hourly cost for multiple designated resources

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
Lighting					
CFL and LED Bulbs	Per Bulb	----------	**Statewide bulb procurement to be used**	----------	----------
Exterior Fixtures					
Thermostat					
7 Day Programmable (Elec., oil, propane)	Per Thermostat				
Wi-Fi Enabled (Elec, Oil, Propane)	Per Thermostat				
Domestic Hot Water ISM					
Flip Aerator (2.2 gpm)	Per Aerator				
Standard Aerator (1.7 gpm)	Per Aerator				
Low Flow Showerhead (WaterSense Labelled)	Per Showerhead				
Pipe Wrap- ½", ¾"	Per 3' section				
Thermostatic Shut-Off Valve	Per valve				
Appliances					
Smart Power Strips	Per appliance				