

Section 400
Health and Safety

400. Introduction

While the primary goal of the Weatherization Assistance Program (WAP) is to improve the energy efficiency of dwellings owned or occupied by low-income persons, this must be accomplished in a way that is not detrimental to the Health and Safety (H&S) of occupants and weatherization workers.

Accordingly, Department of Energy (DOE) regulations allow for energy-related H&S expenditures.

(See DOE WPN 17-7, 17-7 Attachment A)

NOTE: CT WAP has implemented special Policy, Procedures and Protocols designed to address Job-Site health and safety during the **COVID-19** crisis. Please refer to updated Operations and Training Manual Sections 425, 425.1 and 425.2 as well as updated Sections 406, 406.3, 406.4, 406.5, 407, 417.7, 423.3 and 424.1 for additional information.

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However further qualifying factors of H&S activities include:

- Costs must be reasonable as determined by DOE in accordance with Connecticut’s approved State Plan; and
- **The actions must be taken to effectively perform a Site-Specific Energy and Health and Safety Assessments in accordance with Special Guidelines associated with the COVID-19 standards and approved weatherization work; and/or**
- The actions must be necessary as a result of weatherization work.

WAP cannot provide solutions for all H&S issues that a household may have. To qualify, the activity must be necessary to ensure weatherization activities do not cause or exacerbate H&S problems for workers and/or occupants. Only H&S activities related to a weatherization measure are eligible. This means H&S activities will generally be conducted in specific areas where energy efficiency measures are identified for installation.

Moreover, only those activities specifically defined in the approved Connecticut H&S Plan, which are also listed in this policy manual, will qualify as H&S activities. Many activities are limited in scope and there are budgetary restrictions on the H&S cost category.

A complete H&S evaluation by the Energy Auditor is required for each dwelling unit. The Energy Auditor’s H&S recommendations are to be made in conformance with the Connecticut H&S State Plan, utilizing the forms and protocols developed for that purpose. H&S issues must be addressed prior to the start of any weatherization work. The H&S inspection typically begins with a detailed visual inspection in several key areas of the unit, such as:

Outside	Attic	Wall	Unconditioned Space
<ul style="list-style-type: none"> • Ground Slopes Away from Foundation • Gutters Present and Functioning • Down-Spouts Discharge Away from Foundation • Foundation Cracks • Roof, windows, doors provide weather tight protection • Chimney in good shape 	<ul style="list-style-type: none"> • Recessed/Canned lighting • Chimney/Flue Shielding • Wiring Problems • Adequate Ventilation • Water Leaks • Moisture Problems • Other (Knob and Tube etc.) 	<ul style="list-style-type: none"> • Wiring • Water Leaks • Moisture Problems • Lead Paint • Knob and Tube • Asbestos Siding • Other 	<ul style="list-style-type: none"> • Vapor Barrier • Wiring/Electrical • Water Leaks • Plumbing Leaks • Moisture Problems • VOC Materials • Other

Discovery and mitigation of potential environmental hazards in the unit are insurance against danger to occupants and weatherization workers. The Energy Auditor and work crew should note unsafe and unsanitary conditions in or about the unit including, but not limited to: mold and mildew, drainage problems, plumbing leaks, lead-based paint, Asbestos like Material (ALM), structural damage and wood rot.

Where H&S issues cannot be addressed by the program the Subgrantee may have to defer weatherization work until the issue is remedied. In this instance, the Subgrantee should have alternative solutions available to the client and casework personnel to assist in locating other resources. See Section 204, *Unit Deferral* for additional information. H&S issues and solutions are discussed in detail in this section.

Note: No Health and Safety measures can be performed in any home unless Energy Conservation Measures are also included in the completed scope of work for that specific site.

All Work performed and reported as DOE completed CT WAP sites must be in compliance with the Building Performance Institute (BPI) 1100T-2014 Home Energy Auditing Standards, ANSI/BPI-1200-S-2015 Standards,, DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, Connecticut Weatherization Field Guide (2021) and the DOE approved current year State Plan/Master File.

401. Energy Efficiency vs. Health and Safety

H&S measures, in particular heating units and water heaters will frequently have the effect of improving energy efficiency *and* making the appliance safer. So, the Subgrantee usually has a decision to make as to where to categorize the measure and how to charge it to the unit costs.

The initial decision is made based on the potential energy efficiency of the measure being considered. Any measure that is recommended, from repair of the appliance to replacement, **must first be tested by the audit software as to its cost-effectiveness.** This uses the process of computing the Savings to Investment Ratio (SIR) rating of the measure. If the rating meets the minimum threshold of one (1.0 SIR), the decision is simple: It *must* be charged as an energy efficiency measure on the unit.

If the measure does not have the required SIR of 1.0 or more, the only way to install it is as an H&S measure. This can only be done *if* the measure qualifies in the H&S category *and* to the extent that funding is available.

Otherwise, the unit may need to be deferred until a way can be found to accomplish the measure outside of WAP funding. See Section 301.10 *Saving to Investment Ratio (SIR) and* Section 204, *Unit Deferral*.

402. Regulatory References

All Work performed and reported as DOE completed CT WAP sites must be in compliance with the Building Performance Institute (BPI) 1100T-2014 Home Energy Auditing Standard, ANSI/BPI-1200-S-2015 Standards, BPI Healthy Home Evaluator Certification, DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, Connecticut Operations and Training Manual, Connecticut Weatherization Field Guide, and the DOE approved current year State Plan/Master File.

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The primary reference for H&S policies is the current Connecticut Health & Safety Plan. Regulatory references underpinning the H&S plan are:

- Federal regulations at 10 CFR Part 440.16(h) DOE programmatic authority; 10CFR Part 440.18(d) (15) DOE expenditure authority; and 29 CFR Part 1900 and 1926 (OSHA)
- Weatherization Program Notices: WPN No. 17-7, 17-7 Appendix A, DOE Memorandums 060, 062, 067
- United States Environmental Protection Agency (EPA) Healthy Indoor Environment Protocols for Home Energy Upgrades.

(See Connecticut Weatherization Field Guide (2021) for additional technical clarification and guidance on H&S measures.)

403. Health and Safety Training

H&S measures must always be properly considered and addressed for each unit. Subgrantee staff and weatherization workers must be trained and knowledgeable about how their work can affect the H&S of the unit occupants.

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403.1 Training

The State has established H&S training requirements for key weatherization program workers, including; energy auditors, inspectors, weatherization installers, program management, and others. Training includes

identification of the range of H&S issues, and requirements for Subgrantee responses under the program guidelines and possible resources outside of the program boundaries.

NOTE: CT WAP has implemented special Policy, Procedures and Protocols designed to address Job-Site health and safety training during the **COVID-19** crisis. Please refer to updated Operations and Training Manual Sections 425, 425.1 and 425.2 as well as updated Sections 406, 406.3, 406.4, 406.5, 407, 417.7, 423.3 and 424.1 for additional information.

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Worker safety is an important training component. Training will include DOE & State of Connecticut regulations, along with **EPA** requirements for addressing environmental hazards and **OSHA** requirements in areas such as proper use of personal protective equipment (PPE).

The State will maintain continuous monitoring of all related programs, methodologies used in WAP delivery and provides Subgrantees with training resource references and opportunities including, but not limited to, WAP-funded providers.

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403.2 Certification

In some instances, Subgrantee weatherization staff, weatherization Contractor personnel and all weatherization workers must possess the proper H&S related certifications to perform weatherization work.

These certifications include but are not limited to: Lead Safe Weatherization related certifications, OSHA 10, BPI Healthy Home Evaluator Certification, proper state licensure for certain trades, EPA Certified Renovator. Proper certification is required prior to any crew or Contractor performing work in the Connecticut Weatherization Program.

NOTE: CT WAP has implemented special Policy, Procedures and Protocols designed to address Job-Site health and safety training certifications prior to service delivery during the **COVID-19** crisis. Please refer to updated Operations and Training Manual Sections 425, 425.1 and 425.2 as well as updated Sections 406, 406.3, 406.4, 406.5, 407, 417.7, 423.3 and 424.1 for additional information.

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Verification of credentials on at least an annual basis is a Subgrantee requirement.

403.3 Tracking

Subgrantees must track training for employees and Sub-Contractors. Mandatory training and certification for any weatherization position within the agency should be part of the agency's personnel policies and individual position requirements. Personnel records must be maintained for each weatherization position

detailing compliance to these requirements.

NOTE: CT WAP has implemented special Policy, Procedures and Protocols designed to address Job-Site health and safety training and tracking during the **COVID-19** crisis. Please refer to updated Operations and Training Manual Sections 425, 425.1 and 425.2 as well as updated Sections 406, 406.3, 406.4, 406.5, 407, 417.7, 423.3 and 424.1 for additional information.

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Likewise, the Subgrantee must contractually ensure that Sub-Contractors adhere to all mandatory training and certification requirements. The Subgrantee is required to monitor and track Sub-Contractor training, and maintain Sub-Contractor records readily available for State monitoring reviews.

The State holds trainings on H&S issues, including providing training courses relative to Lead Safe Work Practices, on an as-needed basis. It is an allowable expenditure of Training and Technical Assistance funds for Subgrantees and/or Contractors to attend additional training in the area of H&S measures.

(See *Section 500, TRAINING* for additional training information and requirements.)

404. Health and Safety Monitoring

During the Annual Administrative Review (AAR) State staff will review training and certification records as a part of its annual administrative review process. See Section 600, *MONITORING & QUALITY ASSURANCE*

In addition, the State will review weatherization client files to ensure files contain copies of all signed H&S disclaimers. Failure to meet H&S training and certification requirements, maintain complete H&S training records, and fully document client files will result in a compliance finding by the State at the time observed.

State staff will monitor the Subgrantee for compliance with training and certification requirements including Subgrantee records for training and certifications. Monitoring will include verifications that these requirements are followed.

The State also reserves the right to perform random assessments at work sites to determine if crews and Contractors are utilizing safe work practices. Should State monitors notice failure to comply with State policy, OSHA standards, or H&S requirements, it will be a finding against the Subgrantee.

The State will monitor the use of the H&S cost-category very closely. Failure to properly allocate funds to the appropriate cost category will result in disallowed costs. Subgrantees must be well informed of allowable H&S cost categories.

405. Health and Safety Funds

Weatherization program regulations allow for a separate cost category for H&S activities that meet defined criteria related to the weatherization work and are within the dollar limits defined in the State's approved H&S plan. Activities assigned to H&S costs are not subject to SIR analysis. H&S activities are not included as program operations costs and are not a part of the average cost per unit calculation.

405.1 Health and Safety Cost Category

The State has implemented a separate Subgrantee cost category for H&S. When determining what costs can be charged to H&S, the Subgrantee must be aware of the following restrictions:

- Only specific activities in the approved Connecticut WAP H&S Plan qualify as H&S activities;
- To qualify, activities must be necessary to ensure that weatherization activities do not cause or exacerbate H&S problems for the unit occupants; and/or, ensure that they do not present a H&S issue to weatherization workers;
- H&S costs are reasonable, as determined by DOE and are in accordance with the CT WAP current, approved Annual Plan; AND
- The actions must be taken to effectively perform weatherization work; OR
- The actions are necessary as a result of weatherization work.
- H&S activities will be needed in specific areas where related energy efficiency measures are identified for installation.

Note: No H&S measures can be performed in a home unless Energy Conservation Measures (ECM) are also part of the scope of work for the completed site.

If the proposed H&S measure qualifies as an energy efficiency measure (i.e., has the effect of energy conservation and meets a minimum SIR rating of one (1), the measure *must* be installed and charged under that energy efficiency measure. A primary example of this would be a heating system replacement that meets an SIR of one or more.

Finally, some activities that have an H&S effect may be specified in the state plan as Incidental Repairs (IR). In such instances, IR measures will always be charged to the energy efficiency measure provided that measure meets an SIR of one (1) or more. If not, then the IR may be charged to the overall package of measures of the unit if that overall package of measures meets an SIR of one or more.

See Section 311, *Incidental Repairs* for the further definition of that cost category and DOE Weatherization Program Note 12-09, *Frequently Asked Questions*.

405.2 Health and Safety Budget Caps

Connecticut budgets H&S as a separate program operations category and excludes these costs from the average cost-per-home. When addressing H&S issues, Subgrantees must take into consideration budget limitations including:

- Subgrantees must stay within the percentage allocated for H&S; and
- Subgrantees must maintain an average H&S cost per-unit based on a percentage established using Program Operations average cost per-unit.

The State will closely monitor use of H&S funds to ensure compliance with budget limits. Exceeding budget limits, including the H&S Average cost-per-home will result in disallowed costs. See Section 702.9, *H&S as a cost category*.

405.3 State Waiver Requirement

There are several situations referred to in this section in which H & S measures require prior State approval. These include but are not limited to; heating appliance repair and replacement, domestic water heater replacement, and related fuel and venting systems. See Section 301.12 for further instructions on submitting a waiver request.

406. Weatherization Work Safety

Weatherization work crews have a right to work in an environment that does not jeopardize their H&S. Occupants of the unit also expect that work be performed in a manner that will not endanger them and other household members.

The Subgrantee must have written policies and protocols in place which require all standard precautions to ensure a hazard-free workplace. These precautions apply to the Subgrantee’s crews and its Sub-Contractors. Such safety policies, as well as the agency’s subcontracts, must explicitly cite the requirement for compliance with federal regulations on worker H&S, including DOE and OSHA requirements, applicable state law, and local codes.

COVID-19 Pandemic – Special Considerations- Please refer to DOE WAP Memorandums 060, 062 and 067 regarding deferral policy and procedure as long as COVID-19 workplace Safety protocols are in place in CT.

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To maintain a safe work environment, the Subgrantee must enforce WAP deferral policies that require work postponement until H&S hazards are mitigated. Procedures must be in place to authorize program staff, energy auditors and weatherization workers to call for possible deferral whenever potential Hazards are identified. See *CT Program Operations and Training Manual*; Section 424 H&S Deferral.

The Subgrantee is responsible for weatherization workers' H&S throughout the implementation of weatherization services: office, warehouse, and job-site.

It is expected and required that crews, directly employed or subcontracted, are adequately trained and possess valid state licensure to perform all work associated with their contract. Other requirements include, but not limited to, proper protective gear, safe and well maintained machinery, tools and equipment, safety data sheets (SDS) for all hazardous items, worker safety training.

406.1 Regulations and Training

The Subgrantee must comply with all applicable H&S safe worksite regulations. Subgrantee employees, and subcontracted personnel, must be fully trained on H&S rules and regulations from applicable agencies

including but not limited to DOE, EPA, HUD and OSHA. Training is required prior to weatherization personnel working at the job site.

The following regulations/procedures are applicable:

- OSHA regulations re: labor (29 CFR 1926, 29 CFR 1926 AA *Safety and Health Regulations for Construction*).
- OSHA regulations relating to toxic substances (29 CFR 1910, *Occupation Safety and Health Standards*).
- OSHA 3990 PPE Standards, OSHA Guidance on Preparing Workplaces for COVID-19
- FEMA use of PPE by non-healthcare workers
- CDC protocols on how to clean and disinfect
- DOE Weatherization Program Notice 17-7, 17-7 Appendix A: *Health and Safety Guidance*.
- *CT Program Operations and Training Manual* Section 500, TRAINING
- *Connecticut Weatherization Auditor/Inspector and Installer Field Guide (2021)* for additional technical clarification on crew and Contractor safety in the workplace.

Training requirements include periodic refresher sessions on various safety topics for all employees. A Subgrantee training log must be maintained by the Subgrantee that includes individual names, dates and training topics for its own employees as well as Contractor personnel.

The State will monitor qualifications of crew and Contractor personnel. Subgrantee charges for work performed by unqualified personnel on a weatherization job will result in questioned or disallowed costs under State fiscal/program monitoring or a Subgrantee fiscal audit.

Through internal and contract technical/monitoring compliance staff, the State's evaluation of workforce training needs and development of comprehensive training strategies is ongoing.

406.2 Training Funds

The State will, through Training and Technical Assistance (T&TA) funding, provide ongoing training on various H&S related topics. Such training is made available for program staff and Contractors and their staff at no additional cost.

Furthermore, Subgrantees are allocated T&TA funds that allow for additional staff and Contractor training as needed. The cost of these H&S trainings will be paid with T&TA funding. Subgrantee-sponsored trainings require prior State approval.

Purchasing equipment necessary to comply with H&S requirements is allowable under the Program Operations cost category. See Section 117 for more information and requirements for procuring equipment.

For additional information on how to charge for time of Staff and Contractors to attend training, see Sections 501 *Training* and Section 703.3 *Training and Technical Assistance Cost Category*. Sub-Contractors are expected to provide *all* of the equipment and supplies required for the job, as they bid, at their own expense.

Note: Health and Safety requirements and costs that go above and beyond the parameters of the contracted procurement may be considered for review at the Subgrantee and contracted resource levels.

406.3 Occupant Safety

COVID-19 Pandemic – Special considerations – Please refer to DOE WAP Memorandums 060, 062 and 067 regarding deferral policy and procedure as long as COVID-19 workplace safety protocols are in place in CT.

The Subgrantee is responsible for ensuring that occupant H&S is considered and documented prior to and throughout installation of weatherization measures. This is especially important if one or more of the occupants has an identified sensitivity or medical condition.

If it is determined that any of the work activities would constitute an H&S hazard, the occupant at risk will be required to leave the home during these work activities. If that is not possible, the work must be deferred until an alternative solution can be determined.

To ensure household safety, the ideal worksite will be set up so that occupants are not in any danger of injury while work is underway. Children in particular should be shielded; either, by the family removing them from the area, or by an arrangement that keeps them away from work areas.

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Weatherization activities that can present an H&S issue for occupants include, but are not limited to:

- Blower Door and Duct and Combustion Appliance zone testing.
- Air sealing using foam spray
- Insulation blowing and installation
- Sanding, planning, or removing lead painted building components
- Working with solvents, paints, caulks and sealants containing VOCs
- Using EPA approved cleaning and disinfecting materials.
- Using power tools, staple guns, other tools

- Installing certain materials such as glass, fiberglass, plywood
- Operating the blower door under certain configurations
- Leaving unattended ladders
- Monitoring activities around combustion appliance(s) which may cause CO spillage
- Caution tape, cones and signage, such as where lead safety is required, should be used to demarcate areas where work is being performed.
- Workers must be cognizant of the presence of occupants and appropriately warn them of hazards.

The State reminds Subgrantees that careful review of Auditors' Data Collection Sheets, Field Notes and Proposed Measure installations must be conducted by trained Reviewers, prior to issuing all Work Orders.

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406.4 Worksite Guidelines

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On-the-job safety begins with a well-organized worksite where tools and materials are neatly and handily arranged. Refuse/debris should be packed up and discarded at regular intervals during the job. Workers should be responsible for safety in their work areas. Supervisory personnel should be aware of the overall operation, watching for potential hazards to workers and occupants. In areas where lead safety is applicable, the work must be isolated and conducted according to EPA lead-safe weatherization practices.

A supply of potable water must be kept in all work areas and job sites. Portable water containers must have taps and each worker must have his own drinking cup.

Tool Safety: The safe use of powered and manual tools is an important component of crew worker safety practices. Crews must be trained in the proper use of tools. Crews are required to don appropriate Personal Protective Equipment (PPE) when using tools or exposed to certain hazards where wearing appropriate PPE affords them personal protection. Power tools and equipment must be protected with GFCI circuit breakers. Damaged or worn electrical cords must be discarded. All workers must be trained on the safe use of ladders.

Note: Special guidelines for tool maintenance during the COVID-19 crisis.

Truck Safety: All weatherization vehicles must be properly maintained and inspected regularly to insure safe

operation. A maintenance log documenting all service and repairs must be kept for each vehicle. The truck used for weatherization and/or insulation equipment should be well-organized and clean, packed so that equipment and materials are secure and not likely to fall on the weatherization worker(s) or occupants. Trucks should have an ample supply of potable water, a first-aid kit, and a fire extinguisher.

Note: Special guideline for Truck maintenance during the COVID-19 crisis.

On-site Documentation: Subgrantee and Sub-Contractor crews must comply with OSHA HAZCOM training and requirements. Containers of hazardous materials must be labeled with appropriate warnings. SDS for all materials being used at the job site must be available at all job sites in case of an emergency.

It is the responsibility of all Subgrantees to ensure that worksite guidelines are enforced for all personnel and Sub-Contractors performing WAP service delivery and or Inspection Services.

Note: Special Guidelines for On-Site Documentation during the COVID-19 crisis

406.5 Personal Protective Equipment (PPE)

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Subgrantees shall ensure that all worksite personnel have available and use PPE appropriate to the task undertaken. All Subgrantee personnel policies and sub-contracts with weatherization auditors, installers and inspectors must explicitly require the use of PPE.

Specific PPE required at a typical jobsite includes, but is not limited to:

- Safety glasses or protective eyewear
- Noise reduction ear plugs
- Polyethylene- coated suit (Tyvek)
- Safety-toed footwear
- Work gloves
- Respirator, properly NIOSH rated for the job
- Hard hats as necessary

(See 29 CFR 1910.132 Occupational Safety and Health Standards Subpart I Personal Protective Equipment; ANSI Z-87.1-2003, and 29 CFR 1926.102.)

406.6 Spray Polyurethane Foam (SPF) (Two-Part)

In the past, Connecticut WAP held trainings on use of low pressure two-part polyurethane spray foam (in certain situations) for air sealing. Due to the properties of this material, the Subgrantee and Sub-Contractors MUST first receive certification training from the original product manufacturer and strictly comply with WAP protocols for its use and application. The Subgrantee must assure that crews and Contractors obtain this certification in the proper care and use of this product.

Also, EPA has issued guidelines which must be followed when working within the conditioned space. Care must also be taken when working outside the conditioned space, near windows, doors or other openings, to prevent fumes from entering the conditioned space.

Prior to the start of work, the client must be notified of plans to use two-part polyurethane spray foam and about necessary precautions. When this material is being applied, all occupants must leave and not return for at least one hour after all spray foam applications have been completed. Continuous fresh-air ventilation must be provided to the space(s) where spray foam is being applied and not allowed to mix with indoor conditioned air for the duration and the one hour after all spray foam activities have been completed. Subgrantee and Contractor crews that install two-part spray foam must wear appropriate PPEs during the application process.

The State reminds Subgrantees to always utilize appropriate client notification and document notice to vacate and re-entry. Sub-Contractors are reminded to comply with all applicable State and local code, in respect to ignition barrier installation in exposed areas.

Note: The State neither mandates nor restricts the use of Spray Polyurethane Foam for air sealing.

The use of two-part spray polyurethane foam is not currently procured for use in CT WAP and not an approved measure listed in the CT Weatherization Assistant Audit Tool. Any future consideration for use will be formally outlined in CT WAP Guidance for Certifications, procurement, and energy audit policy and procedures.

The State continuously monitors the USDOE and EPA guidelines in respect to the use of this material in residential applications and will provide guidance and develop ongoing training strategies.

(See Connecticut Weatherization Field Guide (2021) for further information on the use of this material in Weatherization applications)

406.7 Lead-Safe Weatherization

Subgrantee protocols must designate that any house built before 1978 that has not been cleared by an official lead inspection contains lead paint hazards. The personnel on-site and the work practices must reflect this designation.

(See *Connecticut Program Operations and Training Manual* Section 419, *LEAD-SAFE WEATHERIZATION*; Connecticut Weatherization Field Guide (2021))

407. Client Health and Safety Education

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The client must be advised at the time of completion of the Request for Weatherization document, that they will be contacted by the weatherization provider for additional information regarding the site and occupants. The client will be contacted telephonically and surveyed via a scripted "New Client, Job Information" intake form which requires the occupants to reveal any known or suspected health concerns. A secondary review of this information shall be performed by the local weatherization coordinator and additional screening is done at the time of site-specific audit.

Prior to the start of work, Subgrantees *must* provide clients with forms that identify all hazards potentially identified by the audit. There are several forms, hazard specific (Mold/Moisture and Carbon Monoxide, Radon and generic (H&S Disclaimer) for all other potential hazards, that must be completed prior to the start of work. In addition, clients will receive publications/documents, when applicable:

EPA Renovate Right (occupants of all pre-1978 buildings)

- EPA A Brief Guide to Mold, Moisture and your Home
- EPA Asbestos in the Home: A Homeowners Guide
- EPA Renovation, Demolition & Asbestos-NHDES 2007
- Provide a copy of the EPA pamphlet "A Citizen's Guide to Radon" and obtain a signed copy of the Client's informed consent to provide weatherization (Radon Disclaimer)
- Provide clients with all paperwork and manuals associated with any installed equipment.
- Explain in layman's terms the various weatherization services and how they will benefit the occupants of the home through improved comfort, safety, and cost savings.
- Discuss appropriate use and maintenance of all combustion appliances including indications of improper or unsafe operation.

- Discuss and provide information regarding proper procedures to address disposal of bulk fuel storage and resources available to address issues not addressed during weatherization activities.
- Deferral of Services Notice

These documents must be signed by the client and the Subgrantee representative (e.g., Energy Auditor) and kept in the client file.

Whenever H&S measures (e.g., carbon monoxide detectors, smoke detectors, thermostats, heating systems and/or water heaters) are installed in a home, the Energy Auditor, Inspector, as well as the installer must provide comprehensive instructions relative to the operation and maintenance of the device or appliance.

Deferral: If the client refuses to sign any required document, no work may be done to the home, and the unit must be deferred until such time as the client agrees to sign the appropriate paperwork. See Section 420, Deferral.

COVID-19 Pandemic – Special Considerations – Please refer to DOE WAP Memorandums 060, 062 and 067 regarding deferral policy and procedure as long as COVID-19 workplace safety protocols are in place in CT.

(See Connecticut Program Operations and Training Manual, Section 407 Client Education)

408. Combustion Appliances

Appliances that combust materials have the potential to cause H&S issues if not operating properly. It is important that the Subgrantee perform analysis of each appliance for operational efficiency and safety. It is vital that the weatherization work itself does not cause or worsen the possible dangers posed by malfunctioning combustion appliances.

Combustion appliances that require analysis include but are not limited to:

- Furnaces
- Boilers
- Water Heaters
- Vented Space Heaters
- Gas Ovens/Stovetops/Ranges
- Gas Dryers

Combustible materials used by these appliances include natural gas, propane, oil, kerosene, and wood. All of these materials, when burned, produce byproducts which are dangerous if not properly vented to the outside. The Subgrantee has the responsibility to ensure that combustion appliances are operating safely and are properly vented.

In instances where secondary heating sources such as unvented kerosene space heaters exist, the Energy Auditor must inform the occupants that they must be removed prior to weatherization.

408.1 Comprehensive Combustion Appliance Analysis

Combustion appliances must be individually assessed by the Energy Auditor to determine the condition, operability, and efficiency of each one. At the same time, the appliances must also go through comprehensive technical analysis to ensure that they all operate safely together, even under 'worst case' conditions.

Such conditions are established by establishing the maximum depressurization of the zone in which the combustion appliances operate (CAZ). Comprehensive technical analysis is conducted with all of the appliances in operation, along with any other devices, such as exhaust fans which may exert a negative pressure; and, the most negative pressure configuration of the unit.

In terms of H&S, the comprehensive combustion appliance analysis must include:

Combustion Appliance Zone Testing: to establish that an adequate supply of combustion air is available in the Combustion Appliance Zone (CAZ) for the safe operation of each appliance, performed under the 'worst case' conditions.

Worst Case Draft Testing: to ascertain that all appliances are properly venting combustion gasses under the 'worst case' conditions that includes analysis draft pressure in the appliance (over fire draft) and the smoke pipe connected to the chimney flue (draft)

Carbon Monoxide Levels: Measuring carbon monoxide emissions from the combustion appliances to ensure that they are within acceptable levels. Procedures are performed to measure CO at ambient, worst case and natural conditions.

Note: Gas Ovens/Stovetops/Ranges must be tested for CO levels as well as burner and oven operability and flame quality.

Additional safety analysis includes:

Fuel Leakage Test: Testing for gas (natural or LP) leaks in the pipes that deliver fuel to the appliances, or look for signs of fuel oil leaks in pipes that connect oil storage tank to the oil burner.

Fire Hazard Inspection: Inspecting for clutter, frayed wiring, and location of flammable materials and chemicals.

Test Emergency Shut-Off Switch(s) for combustion appliances:

Electrical Hazard Inspection: Including observation of grounding connector in face of power outlets, ground wire connected to grounding rod outside, correct polarity of power outlets, use of extension cords, overloading of power outlets, observe wiring junction boxes missing covers and observe connections inside (do not remove any junction box covers), fuse types and sizes, element amperage [electric furnace], disconnect requirements and conduit requirements.

408.1.1 Licensure Restrictions

Connecticut state law requires state licensing by the State Boards of Occupational Licensing in the several areas relevant to working on combustion appliances, including the following:

- Heating, piping and cooling
- Plumbing
- Electrical work
- Duct work (sheet metal)
- Combustion Appliance Repairs

Since some analysis of combustion appliances may be considered to involve “alteration,” the Energy Auditor may be restricted in the types of testing techniques that can be conducted on combustion appliances due to licensing requirements.

For example, proper draft analysis involves the drilling of a small hole in the smoke pipe to accommodate the draft probe.

In any case, it is the responsibility of the Subgrantee to ensure the proper analysis is conducted to ensure the H&S of the occupants with regard to the proper function of the combustion appliances.

Subgrantees are reminded that when situations require that a licensed Contractor be utilized to conduct efficiency testing, a standard CT Combustion Efficiency Report must be provided and filed with the Auditor's data collection calculations. See Connecticut State Statute: Regulations of Connecticut State Agencies, Title 20-332 (Professional Licenses Department of Consumer Protection (4) Occupational Licensing)

408.2 Combustion Appliance Issues

The danger with a combustion appliance may be attributed to numerous causes which justify H&S work under this category. Causes may include, but are not limited to:

- Non-existent, inoperable heating system or water heating appliance
- Fuel (gas, oil) leak in the delivery pipes leading to the appliance
- Gas Oven/Stovetop/Ranges producing excessive CO due to compromised operating conditions.

(See Action/Allowably below)

- Leaking oil tank
- Serious structural damage to the combustion appliance; cracked heat exchanger, missing appliance sections (e.g. plenum, flue)
- Poorly adjusted boiler/furnace parts that cause high levels of dangerous flue gasses

- Non-existent, deteriorated, disconnected, improperly installed flue gas exhaust vents; including chimney and chimney liners
- Masonry Chimneys- Masonry chimneys used by vented space heaters should be properly lined in compliance with the International Fuel Gas Code (IFGC) When WAP installs new equipment it must meet all local code requirements.
- Masonry Chimneys- that have been retired (not being used by existing equipment) should be assessed for energy savings opportunities such as air sealing and capping o reduce thermal bypass.
- Excessive flue gas spillage
- Inadequate combustion air as tested in the CAZ
- Inadequate drafting of flue gasses as tested under the worst-case scenario
- Unacceptable CAZ depressurization limits

If actionable CO levels are found, the client must be informed of the potential danger and asked to sign a CO Disclaimer Form, which the Energy Auditor must also sign and date. A copy is to be given to the client and the original placed in the job file. If high CO levels are found the Energy Auditor **MUST** take immediate action including evacuation of any people in the building and notifying an HVAC tech or the gas company of the situation needing immediate attention, as well as notifying the Subgrantee’s management.

The Subgrantee must not continue with weatherization work until all combustion appliances are functioning properly.

Action/Allowability: Standard maintenance on or repair of gas ovens/ stovetops/ranges is an allowable H&S cost. All proposed costs must be pre-approved by the grantee prior to service delivery.

Note: Replacement of gas ovens/stovetops/ranges is not an allowable weatherization cost.

Deferral: Repairs or replacement of H&S issues with combustion appliances may be beyond WAP's scope, because of budget limitations or the scope of work required. In such case, the WAP work must be deferred.

(See *Program Operations and Training Manual*, Section 414, H&S Deferral)

408.3 Ambient CO Danger – Immediate Response

Technical Reference- ANSI/BPI 1200 S 2015 Standard

Upon first arriving at the unit, the Energy Auditor must take initial readings for the ambient level of carbon monoxide in the unit. If the ambient air reading is nine parts per million (9 PPM) or more, the following procedures must be followed:

- 9PPM – 35 PPM: Contact the client's fuel vendor immediately to alert him to the problem. If the appliance uses oil or propane, and the client does not have a vendor or, if the vendor does not do service work, the Energy Auditor must immediately contact the Subgrantee program manager to apprise him of the situation. The Subgrantee program manager must contact a qualified vendor to

make repairs as soon as possible.

- 36 PPM – 69 PPM: This will be considered a serious situation. Energy Auditor will advise all occupants to vacate the building immediately. The steps above should be initiated.
- Above 70 PPM - This will be considered an emergency situation. Notify Fire Department immediately, then follow the steps. The State program monitor for that Subgrantee should also be notified of any such instances.

Procedure: THE CLIENT MUST BE NOTIFIED IMMEDIATELY BY THE ENERGY AUDITOR OF ANY POTENTIAL OR PRESENT DANGER. This notification must be acknowledged by having the client sign the *Carbon Monoxide Disclaimer* form. The Energy Auditor must also sign and date the form which is placed in the client file with a copy going to the client.

As testing of combustion appliances continue, additional ambient air testing should be conducted. If during the testing ambient CO air reading is nine parts per million (9PPM) or more, the above procedures must be followed.

As testing continues, the cause of the high CO levels will be discovered and should usually be alleviated as an H & S issue.

Note: Subgrantees are strongly encouraged to advise Field staff to document initial ambient CO readings and all subsequent readings in detail in Field Notes. Readings should be documented to include date, times, locations, devices used and calibration dates.

Additional restrictions may apply for secondary heat sources; however, Connecticut WAP does not allow for repairs or replacement of any secondary heat sources. If any secondary heat source is generating actionable CO levels, this condition must be addressed by the owner at his expense before weatherization work may begin. A deferral of up to 60 days must be issued; the energy audit may complete the energy audit, provided it does not endanger the H & S of the Energy Auditor or occupants of the unit.

408.4 Combustion Appliance Safety Action Limits

The Connecticut WAP requires that Subgrantees use Building Performance Institute (BPI) action limits to determine acceptable levels when testing of combustion appliances. Weatherization limits can be found in the BPI tables and in the Connecticut Weatherization Field Guide (2021) these limits include:

- Combustion passive analysis for CO action levels
- CAZ depressurization limits
- Acceptable appliance spillage limits
- Acceptable draft test ranges

If combustion appliances exceed the action limits repairs must be ordered to correct the hazards. Weatherization work must not commence until such repairs are made.

408.5 Daily Checkout – Testing Out

Because weatherization work can affect operation of combustion appliances, a worst-case draft test must be completed at the end of each day’s work: this is known as “testing out.” Any appliance that fails a worst-case test before or after all weatherization work is completed should be made non-operational until the hazardous condition is corrected.

The State recognizes that this requirement was not mandated under previous WAP protocols. In addition, the State recognizes that some Sub-Contractor Weatherization installers may not have the training and equipment necessary to conduct “worst case” CAZ testing in accordance with BPI standards.

The State reminds Subgrantees of the responsibility to assure that any required testing is conducted and documented in all cases with no exceptions. In cases where on-site installers do not have the capacity to conduct the required testing, the Subgrantee must be prepared to dispatch appropriate personnel to the site on demand.

(See Connecticut Weatherization Field Guide (2021) for additional information.)

409. Heating Degree Days

In accordance with WPN 11-06, climate justification for heating system repair or replacement is required for those costs to be allowable as H&S expenses. Heating degree days were calculated through BizEE Degree Days software tool www.degree-days.net for a period of 60 months from January 2016 to January 2020. Based on this information:

- The central part of the State (Hartford) averaged, 5454 heating degree days.
- The south-eastern part of the state (Bridgeport) averaged 4968 heating degree days.
- The north-east part of the State (Windham) averaged 5873 heating degree days.
- The north-west part of the state (Waterbury) averaged 5994 heating degree days.
- The south-central part of the state (New Haven) averaged 5124 heating degree days.

Connecticut’s heating degree days average (5483) justifies heating system repairs or replacement as an H&S measure.

Note: Subgrantees are required to use the Hartford, CT weather data (5454) in the Energy Index tab in the Weatherization Assistant Energy Audit for all CT WAP sites

410. Heating Systems and Cooling Systems

Connecticut’s climate (with over 5400 heating degree days) may contribute to dangerous situations for families when heating systems are non-existent or inoperable. Additionally, gas, propane, oil, kerosene, and solid fuel heating systems, if not working properly, can create dangerous air quality issues.

Therefore, Connecticut allows for the repair or replacement of primary heating appliances as an H&S

measure if it is unsafe, not functioning or inoperable. Repairs or replacement of secondary heating systems are not allowable weatherization measures.

Note: Per DOE guidance all CT WAP site specific home energy assessments conducted utilizing the Weatherization Assistant Energy Audit Tool all heating and cooling systems must be evaluated as potential Energy Conservation measures including secondary units.

While this directive is intended to assess Energy Conservation opportunities it does not, in itself justify or constitute the use of Health and Safety funding for the purpose of repair or replacement of cooling equipment in CT WAP. Cooling equipment repair and replacement with Health and Safety funds will be reviewed on a case-by-case basis.

410.1 Primary Heating Systems

The Connecticut WAP allows for replacement of heating systems used as primary heating sources as an H&S measure only if it is unsafe, not functioning, inoperable or where remediation is necessary to perform weatherization cannot be remedied by repair or tuning, unless these replacements produce an SIR of one (1) or more, in which case they can be replaced as an Energy Conservation Measure following the waiver process.

H&S funding may be used to repair, or replace the following primary heating systems following the waiver process for replacement:

- Natural Gas and Propane Heating Appliances
- Oil Fired Heating Appliances
- Solid Fuel Heating
- Primary Space Heaters, Vented Combustion
- Unvented Combustion Primary Space Heaters (Replacement Only)
- Electric Heating Systems

If during the Audit or the Clean, Tune, and Test (CTT) process the technician finds certain conditions that make the system unsafe or inoperable, such problems should be repaired if possible under the H&S cost category unless they can produce an acceptable SIR of one (1) or more.

- Heating appliances may be replaced as an H&S expense if:
- The primary heating system is non-existent.
- The primary heat source is an unvented combustion appliance; or
- The heating system is inoperable; and
- The repairs cannot be made to correct the H&S issue.

- The household has at least one (1) vulnerable person residing in it AND
- The replacement does not produce an SIR of one (1) or more.
- Care should be taken to ascertain whether a heating appliance can be repaired. State approval is required prior to replacing heating systems, including obtaining a **minimum of two (3) bids**.

Note: The waiver review process must include documentation used to support cost comparison between replacement and repair and be kept in the client file.

Note: The State has retained technical staff specific to Technical and Monitoring Compliance Support and can assist Subgrantees on a case-by-case basis in evaluating Heating System Repair and Replacement options. See also, Section 301.12.2, *Waiver for Heating Systems*

Deferral: Subgrantees must ensure that expected cost of repairing or replacing a heating system can be done within the H&S per unit average. If the cost of repairs or replacement affects the Subgrantee's ability to stay within available funding limits, the job may have to be deferred until those issues are resolved by the owner or other funding source. *See Section 424 H&S Deferral.*

(Refer to Section 408 in this manual and the Connecticut Weatherization Field Guide (2019) for additional details the technical analysis, repair or replacement of heating appliances)

410.2 Secondary Heating Systems

The Connecticut WAP does not allow for the repair or replacement of heating systems used as secondary heating source.

Note: Per DOE guidance all secondary heating and cooling equipment must be entered into the energy audit tool and all repairs and replacements must be evaluated as Energy Conservation opportunities.

While this directive is intended to assess Energy Conservation opportunities it does not, in itself justify or constitute the use of Health and Safety funding for the purpose of repair or replacement of secondary heating or cooling equipment in CT WAP. Equipment repair and replacement with Health and Safety funds will be reviewed on a case-by-case basis

411. Gas and Oil Fired Domestic Hot Water (DHW) Systems

The Energy Auditor or Licensed Plumbing and Heating Contractor must follow program protocols to determine that the unit's gas or oil-fired domestic water heater system is operating safely by performing technical analysis.

All gas and oil-fired water heaters must be monitored for draft and CO levels as well as checked for gas leaks or oil leaks. Requirements for evaluating gas and oil-fired water heaters can be found in the Connecticut Weatherization Field Guide (2021)

Gas and oil-fired water heaters must be repaired if not properly drafting, have high CO levels, gas leaks, non-functioning venting systems, or are rusted and leaking water. The Energy Auditor should first consider the possibility of repairing and replacing parts on a malfunctioning water heater before recommending replacement of the water heater.

Restrictions: Replacement of gas or oil-fired water heaters is an allowable H&S expense. Prior State approval is required. See Section 301.12 for the State approval procedure.

Deferral: Subgrantees must ensure that expected cost of repairing or replacing a water heater can be performed within available per unit H&S average cost. If the cost of repairs or replacement is “unreasonable” and will affect the ability of the Subgrantee to stay within available funding limits, then the job may be deferred until those issues are resolved by the owner or other funding source.

Note: The State recognizes that replacement costs associated with repair and replacement of DHW appliances is directly related to site conditions. Subgrantees are reminded to provide documentation of all contributing factors when requesting prior State approvals.

412. Gas Cook Range and Stove

Gas-fired cook ranges can be a CO source if not in proper working order. Interference from food dropping into burners, or from aluminum foil placed over air vents in the oven, can produce alleviated CO in gas cook ranges. Gas lines can become leaky over time, in particular for ranges that are moved periodically for cleaning. Additionally, gas cook ranges that have electric igniters may have frayed wiring or other electrical problems.

The Energy Auditor must check gas fired cook ranges for gas leaks, electrical issues and excessive carbon monoxide in the oven and top burners.

Technical Reference: Connecticut Weatherization Auditor/Inspector and Installer Field Guide (2021) recommended limits and action level “standards” currently used by the CT WAP, with the following CO limits for gas ovens:

- CO limits of 200ppm, (800 ppm air-free) or ambient- air readings above 35 ppm – Discontinue testing, install a carbon monoxide detector and written notification/recommendation for service must be made to the client. Standard maintenance and or repair maybe paid for as an H&S cost.
- Greater than 200ppm, (800 ppm air-free) or ambient-air readings above 35 ppm, the unit must be serviced prior to other weatherization work can continue.
- If greater than 200ppm after servicing, defer all Weatherization work until this condition has been addressed by the client permanently.

If gas leaks are found, the client must be informed of gas leaks, improper gas lines, and/or frayed wiring. Gas leaks must also be reported to the gas company by the client for follow-up.

Restrictions: It is not an allowable expense to replace non-functioning or malfunctioning cook stoves and/or ovens using DOE funding.

Deferral: Should a cook stove or oven require repair or replacement due to H&S concerns, weatherization work must be deferred until the issue is resolved. See Section 421 H&S Deferral.

413. Gas Clothes Dryer

If the dwelling has a gas dryer that is not vented to the outside, it is an allowable H&S measure to install proper venting.

413.1 Carbon Monoxide (CO) Generation

Ambient CO must be checked in the space or room occupied by the gas dryer while in operation. This may be done by the Energy Auditor using his/her personal CO monitoring device while in the area of the dryer during its operation. If actionable CO levels are detected, shut off the dryer and evacuate the area until CO falls below any actionable levels; notify the client in writing of the condition the gas dryer is generating CO, and alert the client to call for service on the gas dryer at the client's expense or other funding. The dryer must not be used until appropriate action has been taken to preclude this generation of CO by the gas dryer.

413.2 Gas Leaks

Check all gas piping for leaks connecting the gas meter to the dryer. If any leaks are found notify the client to call the gas utility for repair at the client's expense or other funding.

414. Carbon Monoxide (CO) Detectors

For dwellings with combustion appliances or attached garages, the assigned weatherization installer must ensure operable CO detectors are in the unit in the number and locations throughout the home as specified in the Connecticut Weatherization Field Guide (2021).

Note: Fireplaces- Fireplaces present special hazards that are affected by weatherization. If fireplace draft is poor or insufficient under certain conditions, downdraft may result in smoke or CO entering the living space.

CO and Smoke alarms must always be installed in the combustion zone and the clients must be educated as to the hazard, danger signs and what to do in case of an alarm.

Clients are to be educated as to the proper installation of batteries. Installation or replacement of inoperable CO detectors and/or batteries is an allowable H&S expense.

Restrictions: Replacing an existing operable alarm with a new alarm is not an acceptable H&S expense. If batteries are required for the alarm to function, replace the batteries.

Deferral: Carbon monoxide detectors are to be addressed immediately and are not a reason for unit deferral.

415. Smoke Alarms

The assigned weatherization installer must ensure the unit has operable smoke alarms in a number and in locations as specified in the Connecticut Weatherization Field Guide (022519). Clients are to be educated on proper installation of batteries. Replacement of inoperable smoke alarms and/or batteries is an acceptable H&S expense.

Note: See above Fireplace requirements

Restrictions: Replacing existing operable smoke alarms is not allowed. If batteries are required for the alarm to function, replace the batteries

Deferral: Smoke detector issues are to be addressed immediately and are not a reason for unit deferral

416. Water and Moisture

Water and excessive moisture in a unit can cause H&S issues ranging from structural deterioration to formation of dangerous mold and mildew. To the extent that water problems will interfere with effective weatherization, or will be worsened by a measure, the underlying problems must be addressed prior to any weatherization work. High levels of indoor relative humidity (over 60% for an extended period of time) encourage increased growth of molds and germs. The health effect of mold spores can be exacerbated by weatherization because of the reduction in air flow throughout the unit resulting from air sealing activities.

The sources of water and moisture problems vary greatly. They can be caused by excessive ground-water penetration, poor drainage, poorly graded grounds, roof leaks, deteriorated guttering, leaky plumbing, and inadequate ventilation.

Evidence of H&S issues resulting from these problems is determined by the Auditor conducting a moisture assessment on all units. This assessment will check for the following conditions:

- Water stains or mold in the attic, especially on the underside of roof sheathing
- Evidence of excessive condensation on windows
- Water stains or mold on exterior wall surfaces and roofs
- Standing water in basements, or stains indicating periodic flooding
- Damp basements or crawl spaces with dirt floors
- The use of sump pumps in basements or crawl spaces
- Inadequately vented clothes dryers
- Inoperable or inadequately vented bathroom fans
- Inoperable or inadequately vented kitchens exhaust fans

Note: Testing should not be limited to visual inspection of exterior and interior surfaces only. Use of diagnostic equipment such as moisture meters during pre-weatherization and during in-progress and final inspection activities.

Mold testing is not an allowable Weatherization cost.

Action: A copy of the EPA publication “A Brief Guide to Mold, Moisture and your Home” must always be given to the family by the Energy Auditor for the purposes of client education.

In less serious moisture-caused situations, the owner/client must be alerted to the situation. The areas of

concern must be documented. See Connecticut WAP form: *Mold Disclaimer Form*. The client, and the landlord if applicable, should sign the form before weatherization work can be started. This form will be kept in the job/client file.

In more extensive situations the Subgrantee should take action to alleviate the cause of water or moisture damages (Source Control). Such actions are to be taken only as they relate to the weatherization work and can be accomplished at a reasonable cost within the available H&S funding for the unit.

The following actions are allowable H&S measures related to water and moisture under Connecticut WAP, Including, but not limited to: Drainage, gutters, down spouts and extensions, flashing, sump pumps, dehumidifiers, landscape, leaking roofs, vapor retarders, moisture barriers, etc.

Limited Water Damage: work that can be addressed by weatherization workers is allowed when necessary in order to weatherize the home and ensure long-term stability and durability of the installed measures.

Source Control: correction of moisture and mold creating conditions when necessary in order to ensure the long-term stability and durability of the installed measures.

Surface Preparation: where weatherization measures are being installed, and must be charged as part of the installed ECM.

Note: Mold Cleanup is not an allowable H&S measure.

Drainage: Minor re-grading of the perimeter grounds to correct improper drainage and reduce the excessive accumulation of water.

The maximum allowable action is limited to work that can be addressed with hand tools and limited material costs, within a four hour labor cost limit.

Minor gutter system measures may be taken to correct water accumulation around the home perimeter. "Minor" is defined by the program as the repair or replacement of existing gutters and downspouts; or, the installation of non-existent gutters and downspouts.

The maximum allowable replacement under this policy is a length of twenty five feet of gutter and fifty feet of down spout.

Note: CT WAP will review special requests for gutter and downspout repairs on a case-by-case basis provided sufficient documentation of need is provided and costs are within program limits for "minor" repair or replacement.

Plumbing: Minor plumbing by a licensed Contractor to fix leaks that are causing to water problems.

All actions, including the installation of a sump pump, that are to alleviate moisture problems and plumbing issues require the Subgrantee to obtain prior approval from the State. Such approval will require a waiver request by the Subgrantee. The request includes a description of the work, a justification connecting the plumbing work to the weatherization and three quotes from licensed plumbers for the job. The request is submitted to the Subgrantee's Program Monitor with a copy to the Technical Project Manager. The Subgrantee must have written approval from the State before commencing plumbing work.

Clothes Dryer Ventilation: The correction or installation of proper clothes dryer ventilation may alleviate moisture issues in the unit. Venting for clothes dryers to the outside of the dwelling, or the correction of existing dryer vents, including ventilation flex ducts installed to the outside are required H&S activities.

Bathroom Ventilation: Excessive moisture may also be remedied by the correction of bathroom exhaust fans. Fans should always be checked for cleanliness and operability. Fans must be vented to the outside to avoid moisture build-up in the house or attic. Repair or replacement of bathroom vents, including ventilation flex ducts, are required as an H&S measure. Bathroom replacement fans must provide a minimum of 50 CFM spot ventilation at a noise level of one sone.

Note: All WAP completed site must be in full compliance with ASHRAE 62.2-2016 standards

Kitchen Exhaust Fans: To mitigate excessive moisture, kitchen exhaust fans must always be checked for cleanliness and operability. Fans must be vented to the outside to avoid moisture build-up in the house or attic. Repair or replacement of kitchen ventilation, including ventilation flex ducts to the outside, are required as an H&S measure. Kitchen replacement fans must provide a minimum of 100 CFM of spot ventilation at 2 sones.

Note: All WAP completed site must be in full compliance with ASHRAE 62.2-2016 standards

Vapor Retarders: Install a ground moisture barrier, which is a piece of heavy plastic sheeting (6 Mil) laid on the ground. Black heavy plastic film works well, but tough cross-linked polyethylene is even more durable. The edges should be sealed to the foundation walls with urethane adhesive and/or mechanical fasteners. The seams should be sealed as well.

Note: All Work performed and reported as DOE completed CT WAP sites must be in compliance with the Building Performance Institute (BPI) 1100T-2014 Home Energy Auditing Standard, ANSI/BPI-1200-S-2015 Standards, BPI Healthy Home Evaluator Certification, DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, Connecticut Weatherization Field Guide (2021) and the DOE approved current year State Plan/Master File.

Roof Repairs: Reasonable and LIMITED repairs of roof conditions that effectively control the source of water damage and moisture problems are allowable.

Actions to repair a roof for H&S reasons require the Subgrantee to obtain prior State approval. Such approval will require a waiver request by the Subgrantee. The request includes a description of the roof work, a justification connecting the roof work to weatherization, and three quotes from roofing Contractors for the job. The request is to be submitted to the State monitor with a copy to the Technical Program Manager. The Subgrantee must have written prior approval from State before commencing with any and all roofing work.

Note: All roof repair requests must provide photo documentation of the exterior drainage plane and related flashing, interior roof decking and flashing and any interior finished surfaces or insulation materials damaged as a result on existing roof leaks.

Roof repair may also be justified as an Incidental Repair needed to ensure the effectiveness of the measure being installed such as installation of insulation. Determining where to charge roof work depends on the reason for the repairs. If the leaking roof was causing moisture and mold, the work would most likely be considered an H&S activity. If the roof work was necessary to ensure the integrity of insulation work, the job would be better charged as an Incidental Repair. See Section 311, *Incidental Repairs*

Funding: H&S funds may be used to mitigate the cause of water or moisture conditions (Source Control) where weatherization will further impact H&S risk to occupants, or will threaten workers. To the extent that the specific moisture is related to the weatherization work, reasonable mitigation of the causes of the problem may be considered H&S work by the weatherization installer.

The Subgrantee must keep in mind that some of the work under this category can be difficult to estimate scope of work due to conditions which can only be identified during the course of the repair, resulting in costs that can become extremely expensive. That is why roof work and plumbing work, for example, require coordination with and approval by the State. In determining whether to approve such work, the State will consider factors such as the connection with weatherization work, as well as the Subgrantee’s current average cost of H&S in comparison with established limits.

In some cases, the moisture and water fixes may be necessary to ensure the long-term stability and durability of weatherization measures. In that case the activities could also be considered and charged as an Incidental Repair (e.g., replacement of a dry-rotted window sill, replacement of gutter or downspouts, roof repair).

Where additional funding is needed to alleviate the effects of moisture damage, the Subgrantee should inform clients of other community resources for the work. For example, mold remediation is NOT an allowable H&S cost. In instances where mold is significant in the living unit and abatement is critical, the client should be referred to other partners such as the local office of the CT Department of Public Health (DPH).

Restrictions: Areas of active mold, mildew or water damage should be addressed but, in most instances, cannot be paid for with WAP funds.

Deferral: Weatherization work will be deferred until evidence of serious water, drainage or moisture problems can be documented. Such evidence would include excessive mold, mildew, strong odors, standing water, or other unsanitary conditions present such as raw sewage. Weatherization services must be postponed until the problems are corrected. These problems will be documented on the “Notice of Postponement of Services Form” and a copy will be provided to the client. In the meantime, every effort will be made to refer clients to other programs that can assist in eliminating these problems.

Defer weatherization services if the repairs to mitigate hazards are beyond the scope of the Connecticut WAP either because the cost is too high or the correction is not allowed such as major drainage issues or mold abatement.

Note: All Work performed and reported as DOE completed CT WAP sites must be in compliance with the Building Performance Institute (BPI) 1100T-2014 Home Energy Auditing Standard, ANSI/BPI-1200-S-2015 Standards, BPI Healthy Home Evaluator Certification, DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, Connecticut Weatherization Field Guide (2021) and the DOE approved current year State Plan/Master File.

The State reminds all Subgrantees to document all equipment and methodology utilized to conduct analysis of water and moisture conditions including the evaluation of ventilation devices. Field notes should document all subject conditions photographically and indicate date, time and location of analyses.

417. Other Pollutants

The Energy Auditor must check for the presence of asbestos, vermiculite, radon, and volatile organic compounds (VOCs) which can be disturbed during the weatherization process and increase health hazards to the weatherization workers and the occupants. For instance, tightening a dwelling which has high levels of VOCs can exacerbate an already unhealthy condition. Disturbing friable asbestos when running the blower door may cause asbestos particles to become airborne causing potential health concerns for both the weatherization worker and the household.

417.1 Asbestos

Many homes contain asbestos, which was widely used into the late 1970's because of its fireproof quality and excellent insulation properties. In products such as pipe wrap, the material can become friable, meaning it destabilizes into microscopic particles when damaged which, when inhaled, can cause serious health problems such as pulmonary fibrosis and mesothelioma, a form of lung cancer that occurs in the chest and abdominal cavities.

Action: The Energy Auditor may come across asbestos in such components as asbestos siding, ceiling tiles and insulation wrap on pipes coming from a steam or water boiler, or as insulation on ductwork of a forced hot air furnace heating system. As with other potentially hazardous materials, if asbestos is in stable condition and will not be disturbed by the work, weatherization work can continue in areas away from the asbestos components. In some instances, certain weatherization measures may have to be bypassed or modified to accommodate the presence of the material. Any presence of asbestos in or about the home is to be noted in the energy audit.

Testing: In addition to visually inspecting the interior and exterior of the site, asbestos testing may be conducted in accordance with the Asbestos Hazard Emergency Response Act of 1986 (AHERA). All testing must have prior approval for the Grantee. Asbestos should not be disturbed during weatherization work *under any circumstance, except* asbestos shingles on exterior siding, which may be removed and/or replaced as necessary to properly install insulation. Asbestos siding should never be cut or drilled through.

In cases where conditions prohibit installing side-wall insulation without disturbing asbestos materials, it is recommended that consideration be given and costs proposals be prepared for insulation being installed through the interior of the home.

Note: Any and all costs related to exterior sidewall insulation procedures where asbestos siding is present must be charged as part of the Energy Conservation Measure (ECM)

Whenever asbestos siding is suspected, the Energy Auditor must inform the client and discuss all precautions that will be taken prior to the start of work.

Note: General abatement of Asbestos siding materials or related replacement materials is not an allowable H&S cost.

Note: The State has developed no specific guidance in respect to installing insulation via penetrations to interior finished surface areas. Subgrantees are advised to examine all potential limitations to interior installation options including, but not limited to, interior hazardous materials testing and excessive installation costs prior to considering this option.

If asbestos insulation covering pipes and boilers is in good condition (Not Friable), and in the Auditor’s opinion, the fibers will not become air-borne, it will be safe to work in the immediate area.

The State recognizes that the term “good condition” is subjective and requires Subgrantees to photo document all conditions found prior to conducting blower door testing in all cases and file accordingly.

When the heating piping distribution system or boiler/furnace wrapping or ductwork insulation is suspected as asbestos-containing materials, limited removal or limited encapsulation of the heating system by a licensed Asbestos professional is an allowable measure under H&S if the heating system is to be replaced. The Energy Auditor must educate the client about asbestos and the dangers of airborne asbestos fibers. In these instances, clients should be instructed not to disturb suspected asbestos- containing material.

State of Connecticut: For state regulations regarding the treatment of asbestos see the Department of Public Health website: www.ct.gov/dph

Funding: WAP funding, including H&S funds, may be used for limited removal or encapsulation of Asbestos on a case-by-case basis. H&S funds can be used for an appropriately-trained Asbestos Hazard Emergency Response Act (AHERA) asbestos control professional to perform limited encapsulation and/or limited removal only with prior State approval. Testing for asbestos by an AHERA Certified Tester is an allowable WAP expense.

Blower Door Testing Restrictions: If friable asbestos (i.e., material that appears to be asbestos, and crumbles or produces dust when touched) is identified in a home, and would be exposed to the direct flow of air and become disturbed during blower door testing, the blower door depressurization testing cannot be performed, unless that room or space where such materials are present can be isolated from the rest of the building, by closing a door, or other means, the blower door test can be performed but at a reduced pressure of CFM 25. In addition, if concerns still remain regarding performing the blower door test at reduced pressure, then, a blower door pressurization test must not be performed.

Deferral: In some cases, the presence of asbestos may mean the weatherization work is deferred. If the condition of the asbestos is such that it presents a potential health risk to the worker, or if the weatherization work will worsen the situation for the occupants, the work on the dwelling should be deferred.

The occupant and/or owner must be notified of the conditions that are the deferral reason. To properly identify where asbestos should be addressed, the homeowner should be urged to have an inspection performed, and to have the asbestos removed, by a licensed asbestos abatement Contractor. This determination should be left to the homeowner and not entered into by the Subgrantee or Contractors. However, if a heating system is to be replaced as a WAP Health and Safety measure, some limited removal of asbestos pipe insulation allowable, just enough to enable the disconnection of the old boiler from the heating pipe distribution system and to reconnect the new boiler. The air testing required after abatement and before re-entry can be made into the space where the abatement took place, cannot be paid for as a separate cost using DOE WAP funding and must only be included within the entire cost of the limited removal associated with the heating system cost as a Health and Safety measure. No WAP health and safety costs can be expended to verify safe re-entry post homeowner abatement efforts.

417.2 Vermiculite

Although not all vermiculite contains asbestos, some vermiculite products that contain asbestos were made

until the early 1990s. Vermiculite is a naturally occurring mineral composed of shiny flakes, resembling mica. When heated to a high temperature, flakes of vermiculite expand as much as 8-30 times their original size. The expanded vermiculite is a lightweight, fire-resistant, and odorless material and has been used in numerous products, including insulation for attics and walls. Sizes of vermiculite products range from very fine particles to large (coarse) pieces nearly an inch long.

Action: Weatherization workers are required to take the same precautionary measures as when other suspected materials may contain asbestos is present.

- Do not insulate directly over vermiculite.
- Do not perform blower door testing when vermiculite is present. Assume it contains asbestos unless testing determines otherwise.
- Clients must be instructed not to disturb suspected asbestos-containing material as part of the Energy Auditor’s client education module about asbestos safety.

Funding: WAP funding, including H&S funds may be used to address encapsulation of Vermiculite by appropriately trained Asbestos control professionals, provided testing performed by AHERA Certified sampling confirms the presence of Asbestos.

Note: Baseline environmental testing is an allowable cost, and must be conducted by an AHERA certified professional. Prior approval is required form the Grantee in all cases.

Note: CT WAP will review all encapsulation proposals on a case-by-case basis.

Restrictions: Removal of vermiculite is not allowed under the CT-WAP program

Deferral: When deferral becomes necessary due to asbestos, the occupant must provide documentation that a certified professional performed the remediation before work can continue.

417.3 Radon and Soil Gases

Radon and other dangerous soil gases generally enter homes by seeping up through the ground. Radon is an inert gas, which means that it does not react or combine with the elements in the ground. Because of this, radon gas can move up through the soil into the atmosphere, where it is easily diluted. However, when it enters a building constructed on top of this soil, it can build up and become a health concern. Studies have shown a link between breathing high concentrations of radon and incidence of lung cancer. Thus, radon is considered a significant contaminant that affects indoor air quality worldwide. According to the U.S. EPA, radon is the second most frequent cause of lung cancer, after cigarette smoking. For state regulations regarding radon treatment, see the Department of Public Health website www.ct.gov/dph

Action: When site conditions permit, a moisture/vapor barrier over **dirt** spaces aids in reducing radon infiltration into a home as well as in reducing moisture evaporation is required to be installed.

Note: Other precautions may include, but are not limited to sealing any observed penetrations, including open sump pump pits, isolating the basement from the conditioned space and ensuring crawl space ventilation where applicable. Clients should be provided with EPA Consumer’s Guide to Radon.

Funding: WAP funding including H&S funding cannot be used to mitigate radon. Auditors may identify the presence of radon via client inquiry or visual identification of abatement measures or mitigation equipment. Auditors must refer to WPN 17-7 and conduct blower door testing only after thorough evaluation of existing conditions and equipment operation has been completed. Subgrantees are advised to document all site conditions and file accordingly.

Restrictions: Radon testing is not an allowable activity under the Connecticut Weatherization Assistance Program. WPN 17-7 indicates that Radon testing may be considered in locations with high radon potential. Current EPA documentation provides a map of Radon Zones in CT in accordance with the Indoor Radon Abatement Act of 1988 (IRAA). The CT map displays 3 color-coded zones of radon potential.

Zone 1: (Red) is listed as the highest potential area to encounter residential radon exposure. (Fairfield, New Haven, Middlesex and New London Counties).

Zone 2: (Orange) is listed as moderate potential.

Zone 3: (Yellow) is listed as low potential.

Based on EPA reporting, Radon testing should be recommended in any home weatherized in CT Zones 1 and 2. Testing may be recommended in Zone 3 homes if the auditor determines that site conditions warrant further examination.

As always document all existing conditions and testing results and provide the client with appropriate education and reference materials.

Do not run a blower door test if radon is identified unless a radon mitigation system is already in place and verified to be fully to be operational. Radon gases are driven by air pressure differentials, so work should never be done that creates or increases negative pressures in basements and crawlspaces.

Deferral: None

417.4 Formaldehyde and Volatile Organic Compounds (VOC's)

Volatile organic compounds (VOCs) are emitted as gases from certain solids or liquids. VOCs include a variety of chemicals, some of which may have short and long-term adverse health effects. Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors. VOCs are emitted by a wide array of products. Examples include paints and lacquers, paint strippers, cleaning supplies, pesticides, building materials such as plywood, furnishings, new carpets, and craft materials including glues and adhesives.

Note: Common fuels used in residential heating (#2 Fuel Oil, Kerosene, and Liquid Propane (LPG)) and recreational fuels such as gasoline and Diesel Fuel, also contain VOCs and must be treated as such. Also see sections 314.2, 408.1 and 422 regarding Fuel Leak hazards.

The ability of organic chemicals to cause health effects varies. As with other pollutants, the extent and nature of the health effect will depend on many factors including level of exposure and length of time exposed. Eye and respiratory tract irritation, headaches, dizziness, visual disorders, and memory impairment are among the immediate symptoms that some people have experienced soon after exposure to some organics.

Action: The client must be informed and receive documentation on safety and proper disposal of household pollutants, including household chemicals, paints, and other suspected pollutants.

Testing: In the event that sensory testing indicates that a hazard exists, action to remove the hazard must include proposals to remove the hazard as well as any required testing to ensure that any latent or subsurface contamination has been quantified, addressed and cleared via required documentation as per agency having jurisdiction.

Funding: H&S funds can be used to remove pollutants if they pose a risk to workers and the cost is not prohibitive. Prior State approval is necessary before removal of VOCs may take place.

Restrictions: If there is evidence of excessive VOC fumes, no blower door testing can be conducted and no air sealing work is to be done.

Deferral: If the removal of such pollutants is cost prohibitive a 60-day deferral may be necessary in order for the owner to abate this condition.

417.5 Dust

Inhaling any kind of dust can be harmful. During weatherization work, especially when blowing insulation, precautions should be taken to minimize exposure to dust. Workers should wear NIOSH N100 rated respirators, and clients should be isolated from work areas. If this is not possible, or the client has a history of respiratory problems, they should be removed from the dwelling until work is complete.

417.6 Unsanitary Conditions

Unsanitary conditions may pose a risk to weatherization workers. Unsanitary conditions include but are not limited to odors, mustiness, raw sewage, and rotting wood.

Deferral: In these cases, work *must* be deferred until the client can address these hazards. If unsanitary conditions are present, clients should be informed and be provided with information about maintaining a sanitary home.

417.7 Biologicals, Odors, Bacteria, Viruses, Raw Sewage, Rotting Wood, etc.

It is not an allowable H&S expenditure to address harmful bacteria not normally present in a dwelling unit. In all circumstances where harmful bacteria are present, work must be deferred. If harmful bacteria are suspected to be present, clients should be informed and be provided with information about maintaining a sanitary home.

Funding: Remediation of conditions that may lead to or promote biological concerns is allowed and must be proposed and pre-approved on a case-by-case basis by the state

Testing: Limited to on-site sensory only.

NOTE: CT WAP has implemented special Policy, Procedures and Protocols designed to address Job-Site health and safety during the **COVID-19** crisis. Please refer to updated Operations and Training Manual

Sections 425, 425.1 and 425.2 as well as updated Sections 406, 406.3, 406.4, 406.5, 407, 417.7, 423.3 and 424.1 for additional information.

*Be advised that in the event of any new Federal, State or Local agency having jurisdiction regulatory restrictions and Guidance is adapted, CT WAP will continue to update program compliance requirements.

Note: Weatherization Assessments and Service delivery may be postponed due to indications that any virus or illness is suspected at the site.

417.8 Pests

Pests such as cockroaches, mice, rats, mites, and others can be detrimental to the health of the weatherization workers and the client.

Funding: Pest removal is allowed as an H&S cost only where infestation would pose a health hazard to the worker and prevent weatherization. Screening of windows and points of access, and incorporating pest exclusion into air sealing practices to prevent intrusion is an allowable H&S cost.

Prior State approval is necessary before funding may be expended to address pest removal.

Deferral: Infestation of pests may be cause for deferral where it cannot be reasonably removed or poses risk for weatherization workers. Clients should be informed in writing of observed condition and associated risks.

Note: refer to the National Center for Healthy Housing and BPI Healthy Homes Evaluator credentialing for testing and training protocols.

417.9 Refrigerant and Hazardous Materials Disposal

Hazardous materials such as Asbestos, Lead, Mercury, including CFL/Fluorescent lighting elements, generated in the course of weatherization work, shall be disposed of according to all local laws, regulations and/or Federal guidelines as applicable. Clients must be informed in writing of any and all hazards associated with waste materials being generated/handled on any weatherization site.

Refer to Lead and Asbestos sections for more information.

Refrigerant should be reclaimed per Clean Air Act of 1990, section 608. The EPA requires that removal of refrigerants be conducted by an appropriately licensed party. Subgrantees should remind clients not to disturb refrigerant if it is located in a dwelling unit. A deferral must be issued until the client has had the refrigerant issues addressed. CT WAP dollars cannot be used to address such issues.

Documentation of all disposal requirements must be articulated in all contract language with responsible parties.

418. Building Code Compliance Issues

All installed weatherization measures and weatherization -related work must comply with applicable State of Connecticut Building, Fire, and all other applicable Codes. Subgrantees are reminded that if a conflict arises between State and local codes, the local code will prevail.

Note: identification of some code compliance issues may exceed the limits of training provided within standard weatherization training curriculum. Auditors and Inspectors should refer to grantee level Training and Technical resources for further guidance and state and regional training resources.

Restrictions: Correction of preexisting code compliance issues is not an allowable cost unless it pertains directly to the weatherization measures to be installed. Prior State approval is required on a case-by-case basis to expend Health and Safety funds to address code compliance issues and all proposed measures must include reference to specific code and jurisdiction.

Testing: Limited to visual inspection during on-site audit. Specific measures related to occupant health and safety must immediately be referred to appropriate licensed contractor and or agency having jurisdiction.

Deferral: Condemned properties and properties where severe H&S conditions due to code non-compliance exist must be deferred for up to 60 days until repaired by the owner or another funding source. If issues are not addressed within the 60-day period, the client must be notified in writing that weatherization work will not be performed, the job will be a “walk away”, the client file will be closed, and the client may jeopardize any State assistance for up to two years.

419. Lead Safe Weatherization

Lead exposure can lead to poisoning, especially in young children and pregnant women. Household paints used before 1978 are presumed to contain lead. Paint chips or dust from lead-containing paints can be inhaled or ingested, which can lead to lead poisoning. Studies have found quantities of lead dust around windows and doors because of the friction created from constant opening and closing. Once this dust is airborne it can settle anywhere. Crews working within these areas of pre-1978 dwellings must assume that lead paint is present and take precautions to prevent contamination of themselves and clients.

The USDOE Minimum Standards: Must follow EPA Lead, Renovation, Repair and Painting Program (RRP) when working in pre-1978 dwellings, unless approved, certified testing confirms the work area to be Lead free.

Note: CT WAP recognizes that EPA RRP safety rules are triggered when there is more than six square feet of interior painted surface disturbed or more than twenty square feet of exterior paint disturbed in the course of installing weatherization measures. These square footage thresholds are based on single area surface disturbances or an aggregate number of disturbances such as in the case of sidewall insulation penetrations.

Per EPA RRP rule (40 CFR 745, Subpart E) all window replacements where lead paint exists require RRP practices regardless of the area disturbed.

Deferral: required when the extent of the condition of Lead-based paint in the house would potentially create further Health and Safety hazards.

Funding: Only costs directly related with the testing and lead safe practices for surfaces directly disturbed during weatherization activities are allowable Health and Safety costs. Testing methods must be certified, approved, and economically feasible and justified in all cases.

In some cases RRP costs may be included as incidental repair costs as is in the case of window and door installations when approved via CT WAP waiver procedures.

Note: The Grantee will verify that crews are using lead safe practices via on-site and file review monitoring activities.

Documentation in the client file must include Certified Renovator certifications, on-site training provided, descriptions of actions taken, testing and assessment documents and site photos including containments.

Best practices for on-site work may include:

- Residents, especially young children and pregnant women, are to be kept away from the work area.
- HEPA vacuum or wet-clean the immediate work area, before and after work, to remove potentially dangerous lead paint particles and prevent dust from becoming airborne.
- Household items within the immediate work area will be removed, if possible, or covered with plastic. The floor in this area will also be covered with plastic (6 mil minimum thickness) and secured with masking tape. Photo documentation of containment setup must be kept in file.
- When working on exterior surfaces, cover the ground and all landscaping underneath the vertical surface. The area to be covered should extend out to 5 feet for every 10 feet of wall height. Use 6 mil plastic and secure the plastic to the foundation with duct tape. Photo documentation of containment setup must be kept in file.
- All painted surfaces that are to be disturbed (sanding, drilling, cutting, etc.) must be thoroughly misted first.
- Workers must remove or clean footwear and remove gloves or clean hands before leaving the work area so as not to contaminate other areas. Disposable coveralls and footwear are recommended.
- At the end of each workday all plastic coverings must be rolled or folded inward to trap dust and debris; removed from the job site; and disposed of along with all other construction waste. All debris must be bagged and sealed before removal from the job site.

As a client education service, all weatherization clients living in pre-1978 housing that may contain lead paint will be alerted to the dangers of lead paint as part of the client education process during the energy audit. Prior to any weatherization work being done on pre-1978 housing, owners and occupants will be provided with the EPA Pamphlet “Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools.” An adult tenant or homeowner must sign an acknowledgement after receiving this pamphlet. This documentation must be kept in the client file.

All weatherization workers and Contractors who might come into contact with or disturb lead-painted surfaces must be EPA Certified. To comply with the rule, all WAP Subgrantees and Contractors must be certified firms as defined by EPA. Certified Renovators are required to be onboard with all Subgrantee crews, and shall supervise and inspect weatherization work to ensure that procedures pertaining to the weatherization of buildings built prior to 1978 are met. Firms are responsible for ensuring that a Certified Renovator is assigned to each job for the purpose of supervising and inspecting weatherization work. Firms are responsible for ensuring that a dust sampling is also performed on each unit to ensure the work area has been cleaned.

Note: Per WPN 17-7 Subgrantees are reminded that testing for lead-containing substances is an allowable

cost. All testing and post completion verification results must be documented and placed in the client file.

420. Structural Issues

The State does not allow for structural or roofing repairs that do not directly affect weatherization measures. In some instances, minor structural repairs may be made to accommodate weatherization measures. “Minor repairs” are funded under Incidental Repairs and included in the overall SIR of the package of measures.

Homes that require more than minor repairs must be deferred.

When deferral is necessary, provide detailed documentation of all conditions that must be met in order for weatherization to commence.

(See Mold and Moisture, Code Compliance and Pests section for more information)

420.1 Injury Prevention to Occupants and Weatherization Workers - Repairing Stairs, Replacing Handrails, etc.

When necessary to effectively weatherize the home, workers may make minor repairs and installations, as defined and approved by the grantee; otherwise measures are not allowed.

The visual inspection of a home must ensure that access to the portions of the site where weatherization activities will occur are safe for entry and performance of assessment, work and inspection.

Note: If such conditions are observed, the client should be informed of observed hazards and associated risks, and these potential hazards should be documented and placed in the client file.

420.2 Building Science

Building rehabilitation is beyond WAP’s scope. When homes in poor structural condition are encountered, weatherization services should be delayed until the dwelling can be made safe for crews and occupants. Clients should be referred to the State Department of Housing and Urban Development or other programs for assistance with rehabilitation services. Incidental repairs necessary for the effective performance or preservation of weatherization materials are allowed provided they yield an individual SIR of one (1) or more

(See Incidental Repairs, Section 311)

420.3 Window and Door Replacement and Window Guards

Window, DOOR, and Window Guard replacements are not an allowable Health and Safety cost. Provide written information on Lead risks whenever issues are identified.

Only those costs associated with Lead Safe practices can be considered. Subgrantees are required to provide photo documentation and written information on LEAD risks whenever issues are

identified and proposed as incidental repairs or Health and Safety costs.

421. Electrical Safety

Issue: A range of electrical issues may arise in the process of weatherizing a house when installing insulation in an attic or in sidewalls where outdated, overloaded or deteriorated electrical circuits may pose a hazard. Typical issues to look out for include:

- Uncapped junction boxes
- Frayed or exposed electrical wiring
- Live knob & tube style wiring
- Overloaded circuits
- Improper use of extension cords
- Recessed can light – always consider to be non-insulation contact canned lights
- Other exposed wiring at lighting fixtures, switches and outlets, fans
- Electrical problems with fans, blowers, thermostats on combustion appliances

The owner of the property must be notified immediately of any observed electrical issue that may pose a danger. A licensed electrician is required for any further electrical inspections or repairs.

Weatherization measures such as insulation must be undertaken in such a way as to avoid any contact with electrical systems.

When the Health and Safety of the occupant or worker(s) is at risk, minor repairs, as defined by and approved by the state, are allowable Health and Safety costs.

Evaluation and detailed work scope proposals necessary to provide over-current protection and damming (when required) prior to insulating building components containing knob and tube wiring as required by local agency having jurisdiction must be completed and provided to the state.

Note: Electrical testing and evaluation beyond the most basic visual inspections must in all cases, be conducted by a licensed contractor and documented.

A CT licensed electrician's report, where required, must document that all circuits have over-current protection, either by circuit breakers or type "S" fuses. A copy of the electrician's report must be kept in the job file. Electrical inspections and minor electrical repairs are allowable H&S measures. Allowable measures can include repairs to prevent circuit overloading, and replacement or elimination of live knob and tube wiring to allow for insulation. If knob & tube wiring is addressed, the client must be provided with information on over-current protection. Anytime electrical issues are addressed, the client should be provided with information (client education) on the dangers of overloading circuits and basic electrical safety.

Funding: H&S funding may be used for CT licensed electrical inspection and repair of electrical hazards if such hazards might be made worse with the installation of weatherization measures, would prevent the effectiveness of the work, or present a danger to weatherization crews. Such costs must be reasonable and are limited by the funds available for each unit and require prior state approval in all cases.

Restrictions: Only licensed electricians may conduct electrical inspections or make repairs or alterations to the electrical systems.

Deferral: Electrical hazards must be repaired such that weatherization activities can safely be undertaken. Otherwise the unit should be deferred until the issues have been resolved.

Note: Identification of some electrical hazards and electrical code compliance issues may exceed the limits of training provided within standard weatherization training curriculum. Auditors and Inspectors should refer to grantee level Training and Technical resources for further guidance and state and regional training resources.

Note: Subgrantees are advised to refer to WPN 17-7 for additional information.

422. Fire Hazards and Fuel Leaks

- Checking for fire hazards should be ongoing, when the audit is conducted and while weatherization work is underway.
- All combustion appliance areas must be checked for fuel/gas leaks. Testing of exposed gas lines should include leak testing from utility coupling into and throughout the home. Sensory inspection of bulk fuel storage and supply lines must be conducted as well.
- When a gas leak is found on the utility side of the service, the utility must be contacted before work can proceed.
- Fuel leaks that are the responsibility of the client (vs. the utility) must be repaired before weatherization can commence.
- Notify utilities and temporarily suspend all weatherization work when leaks are discovered that are the responsibility the utility to address.

Other Fire hazards that must be considered during the audit are as follows:

- Adequate clearance between combustion appliances, flue pipes and any combustible materials (See Code Compliance)
- Frayed electrical wiring (See Electrical Safety)
- Overloaded or misused electrical wiring (See Electrical Safety)

- Excess creosote and or soot built-up in flues and chimneys connected to primary heating appliances (See Heating Systems)

Action: Education is crucial. Clients must be informed in writing of any fuel leaks are detected.

Funding: Costs related to Fire hazard and detection are directly included in the initial energy audit fees.

422.1 Smoke and Carbon Monoxide Alarms, Fire Extinguishers

During the course of the initial audit, technicians are reminded to:

- Check existing alarm for operation.
- Verify operation of any installed devices installed during the audit.
- Provide the client with written and verbal instruction on the use of any installed devices.

Allowable Health and Safety Measures:

- Smoke Alarms may be installed when not present or inoperable.
- CO Alarms must be installed where alarms are not present or are inoperable.
- Where solid fuel burning equipment is present, fire extinguishers may be provided as needed and in accordance with manufacturer’s instructions.
- Fire extinguisher installation is not an allowable WAP expenditure in homes where solid fuel equipment is not present.

Note: CT will provide specific guidance in respect to Fire Extinguisher specifications in the course of prior approval of all fire extinguisher measures. See DOE WPN 17-7 for further clarification of equipment and allowable costs.

423. Indoor Air Quality (IAQ), Ventilation, and ASHRAE 62.2 2016

Because weatherization activities, particularly air sealing, affect ventilation rates through the unit, indoor air quality (IAQ) can be worsened by weatherization work. IAQ issues may range from noticeable sources such as discarded VOCs to less detectable dangers such as CO. The decision to adjust the unit’s ventilation systems cannot be based solely on visible and obvious issues: it must take into consideration all possible issues. Thus, a WAP ventilation standard has been established.

DOE has adopted for WAP ventilation standards set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) in its handbook section ANSI/ASHRAE Standard 62.2-2016, *Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings* (“ASHRAE 62.2”). ASHRAE62.2 applies to single family and multi-family up to three stories above grade, including manufactured or modular units.

(See Connecticut Weatherization Program Guidance No.18, *Air Sealing*; Connecticut Weatherization Field Guide (2021) and the DOE Weatherization Program Notice 17-7, DOE H&S Guidance.)

Note: All Work performed and reported as DOE completed CT WAP sites must be in compliance with the Building Performance Institute (BPI) 1100T-2014 Home Energy Auditing Standard, ANSI/BPI-1200-S-2015 Standards, BPI Healthy Home Evaluator Certification, DOE WPN 15-4 and the CT WAP Quality Work Plan requirements, Connecticut Weatherization Field Guide (2021) and the DOE approved current year State Plan/Master File.

423.1 Ventilation and Air Sealing

Major air sealing should be done and *then* ventilation installed to meet calculated ventilation requirement per the standard. CT WAP has adopted the ASHRAE normative Appendix A and when an existing fan is being replaced or upgraded to meet whole house ventilation requirements, actions must be taken to prevent zonal pressure differentials greater than 3 Pascal across a closed door, if one exists within the ventilated space.

*** CT WAP recognizes Addendum m to ASHRAE 62.2-2016 as approved on 1/24/2018.**

Revised definition of floor area as defined in ANSI Standard Z765 1 that includes below grade unfinished spaces in the calculation of floor area if they are within the pressure boundary of the home.

Post weatherization installation inspection, including scientific assessment of ventilation requirements must be conducted.

Also note that CT WAP Technical personnel will closely monitor and adapt to any changes to the standard and training requirements to remain in compliance with USDOE ventilation standards.

If needed the two system requirements of ASHRAE 62.2 2016 standards are:

- Whole-Building Ventilation – installation of a fan, or a combination of fans, which will provide the minimum ventilation needed for proper air flow as calculated by the standards.
- Local Ventilation Exhaust – installation of local, intermittent exhaust fans in each kitchen and bathroom, as specified by the standards, to reduce the possible levels of contaminants and moisture in each of unit.

Note: Subgrantees are advised as follows: On the initial site visit, Auditors must conduct indoor air quality analysis consistent with ASHRAE 62.2 2016 standards to develop projected Health and Safety cost estimates to determine feasibility to comply or defer the unit. Based on those findings, Weatherization may proceed.

(See Connecticut Weatherization Field Guide (2019) for more information.)

423.2 IAQ Funding

When installed to comply with ASHRAE 62.2 2016 standards, the materials, supplies and labor needed for systems including electrical circuits, devices and ducts to the outside - for whole house ventilation, kitchen exhaust and bathroom exhaust installations qualify as H&S measures.

423.3 Blower Door Restrictions

NOTE: CT WAP has implemented special Policy, Procedures and Protocols designed to address Job-Site health and safety during the **COVID-19** crisis. Please refer to updated Operations and Training Manual Sections 425, 425.1 and 425.2 as well as updated Sections 406, 406.3, 406.4, 406.5, 407, 417.7, 423.3 and 424.1 for additional information.

*Be advised that in the event of any new Federal, State or Local agency having jurisdiction regulatory restrictions and Guidance is adapted, CT WAP will continue to update program compliance requirements.

Some Blower Door safety concerns in this process are:

Do not conduct a depressurization test with a wood stove or fireplace burning. Close flue dampers and cover loose ash in the fireplace.

- Do not conduct a depressurization test when any other combustion appliance is operating. Shutoff power or gas before the test is conducted, and make sure appliances are turned back on when testing is completed.
- Do not conduct a blower door test if **friable** asbestos or suspected asbestos like material is present in the dwelling unit.
- **Do not conduct blower door testing when mold, moisture or other potential health risk conditions prohibit creating conditions that may disturb harmful substances that may impact occupant pre-existing or potential health conditions as a result of air movement within the home.**

Note: determination of risk levels and workers and occupant vulnerability is defined within the Special COVID-19 Guidelines.

424. Health and Safety Deferral

Note: CT WAP has implemented special Policy, Procedures and Protocols designed to address Job-Site health and safety during the **COVID-19** crisis. Please refer to updated Operations and Training Manual Sections 425, 425.1 and 425.2 as well as updated Sections 406, 406.3, 406.4, 406.5, 407, 417.7, 423.3 and 424.1 for additional information.

*Be advised that in the event of any new Federal, State or Local agency having jurisdiction regulatory restrictions and Guidance is adapted, CT WAP will continue to update program compliance requirements.

NOTE: USDOE WAP Memorandum 060,062 provide special Deferral instructions regarding client refusal of services due to COVID-19 and illness due to COVID-19. Tracking and proper prioritization of deferred sites is required in all cases.

424.1 Deferral Guidelines

Note: COVID-19 Pandemic – Special Considerations – Please refer to DOE WAP Memorandums 060, 062, and 067 regarding deferral policy and procedure as long as COVID-19 workplace safety protocols are in place in CT.

The goal of the weatherization assistance program is to weatherize homes and save energy. However, in

certain circumstances, Health and Safety Hazards, structural problems, or other environmental hazards must be addressed before the weatherization work can be completed. Some of these repairs may be beyond the scope of the program because they are too expensive, or not allowed under DOE WAP funding. In these cases, the Subgrantee should work with the client, and with other funding sources to coordinate the completion of the required repairs.

Ultimately, the decision to defer work is the responsibility of the Subgrantee that must insure the safety of the client, as well as the integrity of the weatherization work being done. In most cases, deferral of weatherization services means that work will be postponed until the problems can be resolved. Subgrantees are expected to assist clients when possible, helping to find alternative sources of funding. Good judgment must always be used in dealing with these difficult situations.

Subgrantees must document all serious H&S problems encountered that will either prevent or delay the delivery of weatherization services on the Notice of Postponement of Services along with possible solutions. The form must be signed and dated by the client and the Subgrantee's representative. If the client is a renter, a copy must also be sent to the landlord.

The Subgrantee must monitor timelines for client eligibility and completion of work.

- Work must be completed within 12 months of the original eligibility determination date of the client
- If all H&S concerns that triggered deferral are addressed within sixty (60) days of receipt, re-verification of eligibility is not required.
- Should remediation take longer than the sixty (60) day grace period, eligibility must be re-verified in accordance with state and federal policy. If the client is still eligible work can begin.
- If the client's circumstances have changed and they are no longer eligible, work cannot be done on the dwelling unit.
- All weatherization work MUST be completed within 12 months from the original eligibility date of the client

Where conditions cannot be corrected through H&S funds, deferral may include some of the following situations:

1. The client has known health conditions that would be impacted by the installation of insulation or other measures.
2. The building structure or its mechanical systems, including electrical and plumbing, are in such a state of disrepair that failure is imminent and the conditions cannot be resolved cost-effectively.
3. The building has sewage or other sanitary problems that would further endanger the client and weatherization installers if weatherization work were performed.
4. The building has been condemned or electrical, heating, plumbing or other equipment has been "red tagged" by local or state building officials or utilities.
5. Moisture and drainage problems are so severe they cannot be resolved under existing guidelines.

6. Dangerous conditions exist due to; high carbon monoxide levels in combustion appliances, high levels of Formaldehyde, other pollutants or VOCs, and these conditions cannot be resolved under existing guidelines.
7. The extent and condition of lead-based paint in the building would potentially create further H&S problems.
8. The client is uncooperative, abusive or threatening to the Energy Auditor, crew, Sub-Contractors or others who must work in or visit the dwelling.
9. In the judgment of the Energy Auditor, any condition exists which may endanger the health or safety of the work crew or Sub-Contractor (e.g. **Illness or identified potential exposure to infectious disease, or extremely unsanitary conditions**).
10. In the judgment of the Energy Auditor, illegal activities are taking place on the property.
11. Infestation of pests cannot be reasonably removed or creates an H&S concern for weatherization workers.
12. The client exhibits signs of hoarding behavior that prevent the installation of weatherization measures that are necessary to improve the efficiency of the home.
13. The client exhibits signs of hoarding behavior that prevent the installation of weatherization measures that are necessary to improve the efficiency of the home.

424.2 Deferral Forms

(See attached examples)

Connecticut Weatherization Assistance Program

Health and Safety Disclaimer

Revised 01/2006

This is to verify that I have been alerted to the presence of health & safety concerns, specifically:

Four horizontal lines for listing health and safety concerns.

In the following area(s) of my home or property:

Four horizontal lines for describing areas of home or property.

I understand that it was determined that work may still be performed in my home despite this potential hazard and that in large enough concentrations, these concerns can be a serious health hazard and that I have been provided with information concerning the dangers of above identified problems in my home or property. Furthermore, should _____ authorize any weatherization work or repairs to

(Subgrantee/Contractor Name)

my home or property, I understand that neither they nor their State and Federal funding sources shall be held responsible for any future liability related to the above-mentioned condition.

Signature of Client

Date

Signature of Landlord

Date

Signature of Subgrantee Representative

Date

Connecticut Weatherization Assistance Program

Mold Disclaimer

Revised 09/2017

This is to verify that I have been alerted to the presence of a moisture and/or mold problem in the following area/s of my home or property:

I understand that in large enough concentrations, mold can be a serious health hazard and that I have been provided with information concerning the dangers of these mold and moisture problems in my home or property. Furthermore, should _____ authorize any weatherization work or repairs to my home or property,

(Subgrantee/Contractor Name)

I understand that neither they nor their State and Federal funding sources shall be held responsible for any future liability related to the above-mentioned condition.

Signature of Client **Date**

Signature of Landlord **Date**

Signature of Subgrantee Representative **Date**

Connecticut Weatherization Assistance Program

Notice of Postponement of Services

Revised 09/2017

During an audit by a Connecticut Weatherization Provider _____,
(Service Provider Name)

The following Health and Safety problems were discovered:

Because these problem(s) will prevent us from starting our weatherization work, we have outlined the following required actions. Any help that we can provide will be clearly stated.

The problems listed above do not exclude you from receiving the benefits of the weatherization program. If the above problems can be rectified within sixty (60) days, you will still be eligible for services provided by the Weatherization Program. It will be your responsibility to notify the Provider within the timeframe mentioned above, in writing, that the problem(s) outlined have been eliminated unless the Provider has taken the responsibility for resolving them.

I clearly understand that the condition(s) and problem(s) outlined above prevent my home from being weatherized. I also clearly understand the responsibilities of all parties involved, including my responsibilities and required actions. By signing this document, I understand that I am not giving up my rights to benefits provided by the Weatherization Program, but it is in the best interest of all parties involved that weatherization work shall not take place until the problem(s) are resolved.

Signature of Client

Date

Provider's Name: _____

Representative: _____

Date: _____

Connecticut Weatherization Assistance Program

Carbon Monoxide Disclaimer

Revised 09/2017

This is to certify that I have been alerted to the presence of dangerous levels of Carbon Monoxide in my home. I understand that these odorless gases are coming from:

And that this appliance(s) should not be operated until it has been inspected and repaired by an authorized service technician. Furthermore, should _____ authorize

(Contractor/Subgrantee)

any repairs I understand that, neither they nor their State and Federal funding sources will be held responsible for any injuries that may occur before these repairs are completed.

I also understand that in some instances, State or Federal Program funds will not be available to pay for complete repairs or replacement; if recommended, I will be responsible for paying the remaining costs.

Signature of Client Date

Subgrantee Representative Date

cc:

Local Authority Having Jurisdiction (Housing Codes)

Local Authority Having Jurisdiction (Fire Codes)

Connecticut Weatherization Assistance Program

Revised 09/2017

Smoke Detector/Carbon Monoxide Detector Disclaimer

This is to certify that I: _____

(Client Name)

Have had _____ working smoke detector(s), and/or _____ working carbon monoxide detector(s)

(Quantity)

(Quantity)

Installed in my dwelling unit located at: _____

(Client Address)

By the: _____

(Local Subgrantee Name)

I have also been instructed in its/their use and maintenance. **The replacement of batteries and maintenance is my sole responsibility, and not the responsibility of the Subgrantee.** Neither the State nor the Subgrantee listed above, guarantees the performance of the smoke detector(s) and/or carbon monoxide detector. Life expectancies of those detectors vary depending on the manufactures' specifications. Generally, they are 5 years or less.

I understand that the life expectancy of this detector(s) is 5 years or less and that replacement, when necessary is my responsibility.

Signature of Client

Date

I certify that I have installed _____ working smoke detector(s) in the dwelling unit listed above in the following area(s):

I certify that I have installed _____ working carbon monoxide detector(s) in the dwelling unit listed above in the following area(s):

I have also instructed the client on it's the proper use/maintenance of the device(s)

Signature of Installer

Date

425. COVID-19

Note: COVID-19 Pandemic – Special Considerations – Please refer to DOE WAP Memorandums 0606, 062, and 607 regarding deferral policy and procedure as long as COVID-19 workplace safety protocols are in place in CT

CT WAP has implemented special Policy, Procedures and Protocols designed to address Job-Site health and safety during the **COVID-19** crisis. Please refer to updated Operations and Training Manual Sections 425, 425.1 and 425.2 as well as updated Sections 406, 406.3, 406.4, 406.5, 407, 417.7, 423.3 and 424.1 for additional information.

*Be advised that in the event of any new Federal, State or Local agency having jurisdiction regulatory restrictions and Guidance is adapted, CT WAP will continue to update program compliance requirements.

425.1 Service Delivery

CT WAP anticipates a range of potential costs associated with service delivery in the COVID-19 era workplace. As Federal and State policies are in the developed, CT WAP proposes to categorize and track any costs related to steps necessary to respond to this requirement in a separate Health and Safety category. These may include but are not limited to testing, tracking, site preparation, and specific PPE for all WAP personnel and clients, while conducting field services.

The 2021 Health and Safety budget has been prepared to include allowances for these costs.

The updated 2021 Health and Safety Plan also contains language to address these conditions.

425.2 Quality Assurance (QA) and Quality Control Inspections (QCI)

CT WAP recognizes that doing site-specific assessments, quality assurance and quality control services will present a range of hazards not previously encountered in the WAP. As Federal and State policy and procedures are implemented, CT WAP will continuously update the Health and Safety Plan, Operations Manual, Field Guide, and related Guidance and forms to address how these aspects are managed and tracked from client intake and prioritization of services through unit completion.

426. – 499. Health and Safety Reserved