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Air-Conditioning and Heating Systems/Units

(Space Heaters, including Solid Fuel Heating, are now covered in full in Attachment A to this guidance.)

Action/Allowability

When a space conditioning system does not qualify as an ECM, the following conditions must be met before the unit can be replaced or repaired with Health and Safety funds:

- “Red tagged,” inoperable, or nonexistent primary heating system may be replaced, repaired, or installed where climate conditions warrant, consistent with this guidance.
- Primary air conditioning system replacement, repair, or installation is allowed only in homes where current occupants meet Grantee’s definition of “at-risk” AND climate conditions warrant. “System” can mean a central unit or several individually operating units; however, when a central unit is in place, it shall be considered the primary unit, and all other units are to be considered secondary.
- Use proper sizing protocols (Manual J, State Approved sizing protocols, NEAT/MHEA outputs, etc.) based on post-weatherization housing characteristics, including installed mechanical ventilation, when installing or replacing a heating or cooling appliance.
- Unsafe primary units must be repaired, replaced and removed, or rendered inoperable, or deferral is required.
- Replacement or installation of secondary units is not allowed.
- Unsafe secondary units, including space heaters, must be repaired, removed or rendered inoperable, or deferral is required.
- See Hazardous Materials Disposal section for more information.

Testing

- Make sure primary systems are present, operable, and performing correctly.
- Check DOE-approved audit to determine if the system can be installed as an energy conservation measure (ECM) prior to replacement as an H&S measure.
- Determine and document presence of “at-risk” current occupants when installing air-conditioning as a Health and Safety (H&S) measure.
- On combustion equipment, inspect chimney and flue and test for Combustion Appliance Zone (CAZ) depressurization.
- For solid fuel appliances look for visual evidence of soot on the walls, mantel or ceiling or creosote staining near the flue pipe.

Client Education

- When deferral is necessary, provide information to the client, in writing, describing conditions that must be met in order for weatherization to commence. A copy of this notification must also be placed in the client file.
- Discuss appropriate use and maintenance of units.
- Provide all paperwork and manuals for any installed equipment.
- Discuss and provide information on proper disposal of bulk fuel tanks when not removed as part of the weatherization work.
- Where combustion equipment is present, provide safety information including how to recognize depressurization.

Training

- WAP H&S policy training on allowable activities.
- Licensing and/or certification for HVAC installers as required by authority having jurisdiction (AHJ).
- CAZ depressurization test and inspection training.

Asbestos - in Siding, Walls, Ceilings, etc.

Action/Allowability

Take all reasonable and necessary precautions to prevent asbestos contamination in the home.

Grantees must have a policy for identifying and managing suspected asbestos containing materials (ACM).

- Grantees must state in the H&S Plan the policy on blower door testing where friable suspected ACM is present. “Friable” means the material can be crumbled, pulverized, or reduced to powder by the pressure of an ordinary human hand. Grantees seeking guidance on safe policies and procedures should contact training providers or a local asbestos action office for technical support.
- The existence of asbestos siding that is in good condition does not prevent installing dense-pack insulation from the exterior.
- Siding may be removed and reinstalled in order to perform the ECM, and the associated costs may be charged as part of the ECM.
- General abatement of asbestos siding or replacement with new siding is not an allowable H&S cost.

Testing

- Visually inspect exterior wall surface and subsurface, floors, walls, and ceilings for suspected ACM prior to drilling or cutting.
- Asbestos Hazard Emergency Response Act of 1986 (AHERA) sample collection and testing must be conducted by a certified tester.

Client Education

- Inform the client in writing that suspected ACMs are present and what precautions will be taken to ensure the occupants’ and workers’ safety during weatherization.
- Formally notify client in writing of results if testing was performed.

Training

- Safe practices for siding removal and replacement.
- How to identify suspected ACM.
- Licensing/certification for removal and reinstallation of asbestos siding if required by AHJ.

Asbestos - in Vermiculite

Action/Allowability

- When vermiculite is present, assume it contains asbestos unless testing determines otherwise.
- Do not perform a blower door test if it will disturb the vermiculite.
- Use proper respiratory protection while in areas containing vermiculite.
- The H&S Plan must include the Grantee’s policy on blower door testing where suspected friable ACM is present. “Friable” means the material can be crumbled, pulverized, or reduced to powder by the pressure of an ordinary human hand.
- Encapsulation by an appropriately trained asbestos control professional is allowed.

- Removal is not allowed.
- When deferral is necessary due to asbestos, occupant must provide documentation that a certified professional performed the remediation before work continues.

Testing

- AHERA sample collection and testing must be conducted by a certified tester.
- Baseline environmental asbestos sampling is an allowable cost if authorized in the H&S Plan. .

Client Education

- Instruct clients in writing not to disturb suspected ACM.
- Provide asbestos safety information to the client.
- Formally notify client in writing of results if testing was performed.
- When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.

Training

- Training on how to recognize vermiculite.
- AHERA or state certification to conduct testing.
- AHERA or other appropriate asbestos control professional certification/training for encapsulation.

Asbestos - on Pipes, Furnaces, other Small Covered Surfaces

Action/Allowability

- Assume asbestos is present in suspect covering materials.
- When suspected friable ACM is present, take precautionary measures as if it is asbestos unless testing determines otherwise.
- Grantees must state in the H&S Plan the policy on blower door testing when friable suspected ACM is present. “Friable” means the material can be crumbled, pulverized, or reduced to powder by the pressure of an ordinary human hand.
- Encapsulation by an appropriately trained asbestos control professional is allowed and should be conducted prior to blower door testing if the materials are friable.
- Grantee may allow removal by an appropriately trained professional on a case-by-case basis. Grantees must state in the H&S Plan what criteria the Grantee uses when reviewing requests.
- Charge only those costs directly associated with the testing, encapsulation, or removal to the H&S budget category.
- When deferral is necessary due to asbestos, occupant must provide documentation that a certified professional performed the remediation before work continues.

Testing

- Assess whether suspected ACMs are present.
- AHERA sample collection and testing is allowed and must be conducted by a certified tester.

Client Education

- Instruct clients in writing not to disturb suspected ACM.
- Provide asbestos safety information to the client.
- Formally notify client in writing of results if testing was performed.
- When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.

Training

- How to recognize suspected ACM.
- AHERA or other appropriate asbestos control professional certification/training is required to abate the ACM.

Biologicals and Unsanitary Conditions - Odors, Bacteria, Viruses, Raw Sewage, Rotting Wood, etc.

Action/Allowability

- Remediation of conditions that may lead to or promote biological concerns and unsanitary conditions is allowed.
- Addressing bacteria and viruses is not an allowable cost.
- Deferral may be necessary in cases where conditions in the home pose a health risk to occupants and/or weatherization workers.
- See Mold and Moisture section for more information.

Testing

- Sensory inspection.

Client Education

- Inform client in writing of observed conditions.
- Provide information on how to maintain a sanitary home.
- When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.

Training

- How to recognize unsafe conditions and when to defer.
- Safe work practices when encountering such conditions.

Building Structure and Roofing

Action/Allowability

- Building rehabilitation is beyond the scope of the Weatherization Assistance Program.
- Homes that require more than minor repairs must be deferred.
- See Mold and Moisture, Code Compliance, and Pests sections for more information.

Testing

- Visual inspection.
- Ensure that access to the portions of the home where weatherization will occur are safe for entry and performance of assessments, work, and inspections.

Client Education

- Notify client in writing of structurally compromised areas.
- When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.

Training

- How to identify structural and roofing issues.

Code Compliance

Action/Allowability

- Correction of preexisting code compliance issues is not an allowable cost unless triggered by weatherization measures being installed in a specific room or area of the home.
- When correction of preexisting code compliance issues is triggered and paid for with WAP funds, cite specific code requirements with reference to the weatherization measure(s) that triggered the code compliance issue in the client file.
- Follow State and local or AHJ codes while installing weatherization measures, including H&S measures.
- Condemned properties and properties where “red tagged” H&S conditions exist that cannot be corrected under this guidance must be deferred.

Testing

- Visual inspection.

Client Education

- Inform client in writing of observed code compliance issues when it results in a deferral.
- When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.

Training

- How to determine what code compliance may be required.

Combustion Gases

Action/Allowability

- Proper venting to the outside for combustion appliances, including gas dryers and refrigerators, furnaces, vented space heaters and water heaters is required.
- Correct venting when testing indicates a problem.
- If unsafe conditions whose remediation is necessary to perform weatherization cannot be remedied by repair or tuning, replacement is an allowable H&S measure unless prevented by other guidance herein.
- Maintain documentation justifying the replacement with a cost comparison between replacement and repair in the client file.
- Replacement units must meet safety guidelines as determined in the Grantee Plan or technical Field Guide.
- See Air-Conditioning and Heating Systems section and Attachment A for more information.

Testing

- Combustion safety testing is required when combustion appliances are present.
- Test naturally drafting appliances for spillage and CO during CAZ depressurization testing pre- and post-weatherization and before leaving the home on any day when work has been done that could affect draft (e.g., tightening the home, adding exhaust).
- Inspect venting of combustion appliances and confirm adequate clearances.
- Check DOE-approved audit to determine if the appliance can be justified as an ECM prior to replacement as an H&S measure.

Client Education

- Provide client with combustion safety and hazards information.

Training

- How to perform appropriate testing, determine when a building is excessively depressurized, and the difference between air free and as-measured CO.
- CO action levels.

Electrical

Action/Allowability

- When the H&S of the occupant/worker(s) is at risk, minor repairs, as defined by the Grantee, are allowed when necessary for weatherization measures.
- Evaluate and if necessary provide sufficient over-current protection and damming (if required) prior to insulating building components containing knob and tube wiring, as required by the AHJ.

Testing

- Visual inspection for presence and condition of knob-and-tube wiring.
- Check for alterations that may create an electrical hazard.
- Voltage drop and voltage detection testing are allowed.

Client Education

- When electrical issues are the cause of a deferral, provide information to client on over-current protection, overloading circuits, and basic electrical safety/risks.

Training

- How to identify electrical hazards.
- Local (or AHJ) code compliance.

Formaldehyde, Volatile Organic Compounds (VOCs), Flammable Liquids and other Air Pollutants

Action/Allowability

- Removal of pollutants is allowed and is required if they pose a risk to workers.
- If pollutants pose a risk to workers and removal cannot be performed or is not allowed by the client, the unit must be deferred.
- Refer to *Hazardous Materials Disposal* section for more information.

Testing

- Sensory inspection.

Client Education

- Inform client in writing of observed hazardous condition and associated risks.
- Provide client written materials on safety issues and proper disposal of household pollutants.
- When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.

Training

- How to recognize potential hazards and when removal is necessary.

Fuel Leaks

Action/Allowability

- When a minor gas leak is found on the utility side of service, the utility service must be contacted before work may proceed.
- Fuel leaks that are the responsibility of the client (vs. the utility) must be repaired before weatherizing a unit.
- Notify utilities and temporarily halt work when leaks are discovered that are the responsibility of the utility to address.

Testing

- Test exposed gas lines for fuel leaks from utility coupling into, and throughout, the home.
- Conduct sensory inspection on bulk fuels to determine if leaks exist.

Client Education

- Inform clients in writing if fuel leaks are detected.

Training

- Fuel leak testing.

Gas Ovens /Stovetops/Ranges

Action/Allowability

- When testing indicates a problem, entities may perform standard maintenance on or repair gas cooktops and ovens.
- Replacement is not allowed.

Testing

- Test gas ovens for CO.
- Inspect cooking burners and ovens for operability and flame quality.

Client Education

- Inform clients of the importance of using exhaust ventilation when cooking and the importance of keeping burners clean to limit the production of CO.

Training

- Testing techniques
- CO action levels

Hazardous Materials Disposal -- *Refrigerant, Asbestos, Lead, Mercury, including CFLs/Fluorescents*

Action/Allowability

- Hazardous Waste Materials generated in the course of weatherization work shall be disposed of according to all local laws, regulations and/or Federal guidelines, as applicable.
- Document proper disposal requirements in contract language with responsible party.
- Refer to *Lead* and *Asbestos* sections for more information on those topics.

Testing

- Not applicable.
- Refer to *Lead* and *Asbestos* sections for more information on those topics.

Client Education

- Inform client in writing of hazards associated with hazardous waste materials being generated/handled in the home.

Training

- Appropriate Personal Protective Equipment (PPE) for working with hazardous waste materials.
- Disposal requirements and locations.
- Health and environmental risks related to hazardous materials.

Injury Prevention of Occupants and Weatherization Workers -- *Repairing Stairs, Replacing Handrails, etc.*

Action/Allowability

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

Testing

- Inspect for dangers that would prevent weatherization.

Client Education

- If conditions will not be repaired, inform client in writing of observed hazards and associated risks.

Training

- Hazard identification.

Lead Based Paint

Action/Allowability

- Crews must follow EPA's Lead; Renovation, Repair and Painting Program (RRP) when working in pre-1978 housing unless testing confirms the work area to be lead free.
- Deferral is required when the extent and condition of lead-based paint in the house would potentially create further H&S hazards.
- Only those costs directly associated with the testing and lead safe practices for surfaces directly disturbed during weatherization activities are allowable.
- Documentation in the client file must include Certified Renovator certification; any training provided on-site; description of specific actions taken; lead testing and assessment documentation; and, photos of site and containment set up. Include the location of photos referenced if not in file.

Testing

- Testing to determine the presence of lead in paint that will be disturbed by WAP measure installation is allowed with EPA-approved testing methods.
- Testing methods must be economically feasible and justified.
- Job site set up and cleaning verification by a Certified Renovator is required.
- Grantees must verify that crews are using lead safe work practices during monitoring.

Client Education

- Follow pre-renovation education provisions for RRP.
- When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.

Training

- All employees and contractors working on pre-1978 homes must receive training to install measures in a lead-safe manner in accordance with the SWS and EPA protocols, and installation must be overseen by an EPA Certified Renovator.
- Grantee Monitors and Inspectors must be Certified Renovators.

Mold and Moisture -- Including but not limited to: drainage, gutters, down spouts, extensions, flashing, sump pumps, dehumidifiers, landscape, leaking roofs, vapor retarders, moisture barriers, etc.

Action/Allowability

- Limited water damage repairs that can be addressed by weatherization workers are allowed when necessary in order to weatherize the home and to ensure the long-term stability and durability of the measures.
- Source control (i.e. correction of moisture and mold creating conditions) is allowed when necessary in order to weatherize the home and to ensure the long-term stability and durability of the measures. Source control is independent of latent damage and related repairs.
- Where severe Mold and Moisture issues cannot be addressed, deferral is required.
- Mold cleanup is not an allowable H&S cost.
- Surface preparation where weatherization measures are being installed (e.g., cleaning mold off window trim in order to apply caulk) must be charged as part of the ECM, not to the H&S budget category.

Testing

- Visual assessment including exterior drainage.
- Diagnostics such as moisture meters are recommended pre-weatherization and at the final inspection.
- Mold testing is not an allowable cost.

Client Education

- Provide client written notification and disclaimer on mold and moisture awareness.
- Provide information on importance of cleaning and maintaining drainage systems.
- Provide information on proper landscape design and how this impacts site drainage and moisture control.
- When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.

Training

- National curriculum on mold and moisture or equivalent.
- How to recognize drainage issues.

Occupant Pre-existing or Potential Health Conditions

Action/Allowability

- When a person's health may be at risk and/or WAP work activities could constitute an H&S hazard, the occupant will be required to take appropriate action based on severity of risk.
- Failure or the inability to take appropriate actions must result in deferral.

Testing

- Screen occupants to reveal known or suspected health concerns either as part of initial application for weatherization, during the audit, or both.

Client Education

- Inform client in writing of any known risks.
- Provide client with Subgrantee point of contact information in writing so client can inform of any issues.
- When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.

Training

- How to assess occupant preexisting conditions and determine what action to take if the home is not deferred.
- Awareness of potential hazards.

Pests**Action/Allowability**

- Pest removal is allowed only where infestation would prevent weatherization.
- Infestation of pests may be cause for deferral where it cannot be reasonably removed or poses H&S concern for workers.
- Screening of windows and points of access, and incorporating pest exclusion into air sealing practices to prevent intrusion is allowed.

Testing

- Assessment of presence and degree of infestation and risk to worker.

Client Education

- Inform client in writing of observed condition and associated risks.
- When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.

Training

- How to assess presence and degree of infestation, associated risks, and deferral policy.

Radon**Action/Allowability**

- Radon mitigation is not an allowable H&S cost.
- Clients must sign an informed consent form prior to receiving weatherization services. This form must be kept in the client file.
- In homes where radon may be present, work scope should include precautionary measures based on [EPA Healthy Indoor Environment Protocols](#) for Home Energy Upgrades, to reduce the possibility of making radon issues worse.
- Whenever site conditions permit, cover exposed dirt floors within the pressure/thermal boundary with 6 mil (or greater) polyethylene sheeting, lapped at least 12” and sealed with appropriate sealant at all seams, walls and penetrations.
- Other precautions may include, but are not limited to, sealing any observed floor and/or foundation penetrations, including open sump pits, isolating the basement from the conditioned space, and ensuring crawl space venting is installed.

Testing

- Grantees may allow testing at their discretion in areas with high radon potential.

Client Education

- Provide all clients EPA’s [A Citizen’s Guide to Radon](#) and inform them of radon related risks.
- Informed consent form must include:
- Information from the results of the IAQ Study that there is a small risk of increasing radon levels when building tightness is improved;
- A list of precautionary measures WAP will install based on EPA Healthy Indoor Environment Protocols;
- Some of the benefits of Weatherization including energy savings, energy cost savings, improved home comfort, and increased safety; and

- Confirmation that EPA's [A Citizen's Guide to Radon](#) was received and radon related risks discussed with the client.

Training

- Auditors, assessors and inspectors must have knowledge of radon, what it is and how it occurs, including what factors may make radon worse, and precautionary measures that may be helpful.
- Workers must be trained in proper vapor retarder installation.
- A zonal map can be located at <http://www.epa.gov/radon/pdfs/zonemapcolor.pdf>

Safety Devices: Smoke and Carbon Monoxide Alarms, Fire Extinguishers

Action/Allowability

- Smoke alarms may be installed where alarms are not present or are 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 an allowable H&S measure.

Testing

- Check existing alarms for operation.
- Verify operation of installed alarms.

Client Education

- Provide client with verbal and written information on use of devices installed.

Training

- Where to install alarms.
- Local code compliance.

Ventilation and Indoor Air Quality

Action/Allowability

- Install ventilation as required by ASHRAE 62.2 - 2016.
- Grantees may voluntarily elect to adopt the most recent version of ASHRAE 62.2 as soon as they are prepared to implement the Standard.
- If the ASHRAE normative Appendix A is employed and an existing fan is being replaced or upgraded to meet whole-house ventilation requirements, take actions to prevent zonal pressure differences greater than 3 pascals across the closed door, if one exists.
- In Climate Zone 1: Homes that are designed to have free movement of air between the indoors and outdoors where no effort is being made through weatherization to establish an air barrier are NOT required to meet the ventilation requirements outlined in ASHRAE 62.2, except in any room that may be enclosed and contain a source of water or combustion. All other ASHRAE 62.2 requirements must be complied with in Climate Zone 1.

Testing

- ASHRAE 62.2 evaluation to determine required ventilation.
- Measure fan flow of existing fans and of installed equipment to verify performance.

Client Education

- Provide client with information on function, use, and maintenance (including location of service switch and cleaning instructions) of ventilation system and components.
- Provide client with equipment manuals for installed equipment.
- Include disclaimer that ASHRAE 62.2 does not account for high polluting sources or guarantee indoor air quality.

Training

- ASHRAE 62.2 training, including proper sizing, evaluation of existing and new systems.
- If the Grantee opts to adopt a new version of ASHRAE 62.2 then training and technical assistance should be planned prepare crews to implement the new Standard.

Window and Door Replacement, Window Guards

Action/Allowability

- Replacement, repair, or installation is not an allowable H&S cost.

Testing

- Not applicable

Client Education

- Provide written information on lead risks wherever issues are identified.

Training

- Awareness of guidance.

Worker Safety

Action/Allowability

- Workers must follow OSHA standards where required and take precautions to ensure the H&S of themselves and other workers.
- All Subgrantees and contractors must maintain compliance with the current OSHA Hazard Communication Standard, including on-site organized Safety Data Sheets (SDS) (formerly called MSDS).

Testing

- Grantees must verify that Subgrantees, crews and contractors follow safe work practices.

Client Education

- Not applicable.

Training

- Use and importance of PPE.
- Safety training appropriate for job requirements. OSHA 10 hour training meets this requirement.
- Ongoing training as required in Hazard Communication Program.