

Requirement 307 – Health and Safety

WEATHERIZATION PROGRAM REQUIREMENTS REQUIREMENT NO. 307 HEALTH AND SAFETY EFFECTIVE April 1, 2018

I. CONTRACTUAL REQUIREMENTS

- A. Although the Weatherization Assistance Program (WAP) is primarily an energy efficiency program, the health and safety (H&S) of both clients and workers is of great concern to DOE, and part of the WAP mission, which is to “reduce energy costs for low-income households by increasing the energy efficiency of their homes, while ensuring their health and safety¹”. Allowable energy related H&S issues, which are within an agency’s budget, should be addressed as necessary in order to commence or finish weatherization measures.
- B. A H&S cost is allowable when it meets all of the following criteria²:
1. The H&S cost is listed as allowable within this Requirement and within the Oklahoma DOE approved State Plan, or allowable per ODOC written approval in the case of a unique situation that is not explicitly covered in these policies.
 2. The H&S cost is reasonable according to market standards, DOE, and ODOC policies. Procurement procedures, to include both informal and formal price comparisons, should be followed as per Requirement 108.
 3. The H&S cost is necessary to effectively perform weatherization work OR is necessary as a result of weatherization work.
- C. H&S expenditures must not exceed 14% of Program Operations expenditures or approximately 14% the average cost per unit (ACPU) for PY 2018. H&S expenditures shall be listed as a separate budget category. Subgrantee Recipients are strongly encouraged to leverage funds not associated with the WAP to abate or resolve any health and safety issues that are outside the limits of this requirement.
- D. All H&S weatherization related activities must comply with DOE Weatherization Program Notice 17-7 – Health and Safety Guidance, or newer guidance as issued. All measures, including any H&S installations, must follow [the National Resource Energy Laboratory’s Standard Work Specifications](#) (NREL’s SWS), the most current Oklahoma Field Guide, and all ODOC policies and procedures within the CAA Implementation Manual. All state [\(Oklahoma Uniform Building Codes\)](#) and local codes [\(Municode – Oklahoma\)](#) must also be followed in the event that they are in conflict or are more stringent than ODOC/DOE policy.

II. TERMS AND DEFINITIONS:

ACM	Asbestos containing materials ²
AHERA	Asbestos Hazard Emergency Response Act of 1986 ³

¹ DOE Weatherization Assistance Program Home Page - <https://energy.gov/eere/wipo/weatherization-assistance-program>

² Weatherization Program Notice 17-2 – August 9, 2017

³ AHERA - <https://www.gpo.gov/fdsys/pkg/USCODE-2011-title15/pdf/USCODE-2011-title15-chap53-subchapII.pdf>

AHJ	Authority Having Jurisdiction
At Risk Qualified Home	The home is owned by the occupant/applicant, and a child under age 5, and/or person over age 65, and/or a disabled person lives in the home.
Bathrooms	Defined as rooms that contain a bathtub, shower, spa or other similar sources of moisture ⁴ .
ECM	Energy Conservation Measure (ECM) are those measures that result in a Savings to Investment Ratio of 1.0 or higher in the NEAT/MHEA program.
Friable	Any ACM material that can be crumbled, pulverized, or reduced to powder by the pressure of an ordinary human hand. ⁵
Hazardous materials	Refrigerants, heating equipment, asbestos, lead, mercury, CLFs, and fluorescents
Household hazardous wastes	Household hazardous wastes are those that are generated by individuals on the premises of a household and the waste stream is composed primarily of materials found in the waste generated by consumers in their homes ⁶ . At the federal level, households wastes are exempt from regulation and regulation falls to the state.
Incidental repairs	Repairs that are necessary to ensure the effectiveness of weatherization measures. A repair is incidental to an ECM and must be combined with the cost of the associated ECM, and the entire cost must result in an SIR of 1.0 or higher in the NEAT or MHEA program. For example, if a home needs roof repair before attic insulation can be installed, then the cost of the insulation should be combined with the cost of the roof repair. If the result is an SIR of 1.0 or higher, then the repairs and the insulation installation should be completed. The maximum incidental repair cost cannot exceed \$750 for the unit.
Minor repairs	Those repairs that meet the definition of incidental repairs.
Primary System/unit	A primary system is that which is most relied upon to provide heating or cooling throughout the season ⁵
Safety Data Sheets (SDS)	The US Occupational Safety and Health Administration (OSHA), requires that chemical manufacturers, distributors, or importers provide Safety Data Sheets (formerly known as MSDS or Material Safety Data Sheet) for each hazardous chemical they manufacture, distribute or import. A SDS is comprised of sixteen 16 sections: Identification, Hazard Identification, Ingredient Composition, First-Aid Measures, Fire-Fighting Measures, Accidental Release Measures, Handling and Storage, Exposure Controls, Physical and Chemical Properties, Stability and Reactivity, Toxicological Information. Sometimes Disposal, Transit, Regulatory

⁴ ASHRAE 62.2.2016

⁵ Weatherization Program Notice 17-2 – August 9, 2017

⁶ <https://www.epa.gov/hw/household-hazardous-waste-hhw>

and Ecological Information is also included.

Secondary System/unit	A secondary unit is only employed in extreme weather ⁵
Solid-Fueled Space Heaters	Solid fueled space heaters include wood stoves, coal stoves, pellet stoves, and fireplaces. Wood, coal, and pellet fired furnace and boiler systems should be treated as vented heating systems.
System	A system can refer to 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 ⁵
WPN	Weatherization Program Notices are periodically released by the Department of Energy to provide States and Subgrantee Recipients with official guidance on WAP implementation.

III. PROCEDURES

Weatherization services must be provided in a manner that minimizes risk to workers and occupants. No weatherization testing or work should proceed in a home that puts workers or occupants at a health or safety risk. Although the WAP does not provide all the solutions, awareness of potential hazards is essential to providing quality services.

The following Health and Safety issues are outlined in this requirement:

1. Heating Systems
2. Cooling Systems
3. Asbestos
 - a. In siding, walls, ceilings, etc
 - b. In vermiculite
 - c. On pipes, furnaces, and other small covered surfaces
4. Biologicals and Unsanitary Conditions
5. Building Structure and Roofing
6. Code Compliance
7. Combustion Gases
8. Electrical
9. Formaldehyde, Volatile Organic Compounds (VOCs), Flammable Liquids, and other Air Pollutants
10. Fuel Leaks
11. Gas Ovens/Stovetops/Ranges
12. Hazardous Materials Disposal
13. Injury Prevention of Occupants and Weatherization Workers
14. Lead Based Paint
15. Mold and Moisture
16. Pests
17. Radon
18. Safety Devices: Smoke and Carbon Monoxide Alarms, Fire Extinguishers
19. Occupant Health and Safety Concerns and Conditions
20. Ventilation and Indoor Air Quality
21. Window and Door Replacement, Window Guards
22. Worker Safety (OSHA, etc)
23. Water Heater

ODOC recognizes that it is not possible to catalog all potential H&S problems. Should concerns not enumerated in this document be identified, it is the Subgrantee recipient's responsibility to notify ODOC of the problem and obtain specific directions on how to proceed before any weatherization work commences. Failure to adhere to this requirement may result in disallowed costs for the

Subgrantee recipient and potential liability for the subcontractor.

For each health and safety issue listed in this Requirement, the following regulations apply:

1. Assume that if a cost is NOT listed as allowable in each Section, it is not an allowable DOE WAP expense. If unsure, or if there is a unique situation that is not covered in these requirements, Subgrantees are always encouraged to ask ODOC about specific situations before deferral a home for H&S reasons.
2. All applicable State and local (or AHJ) codes must be followed and manufacturer approved materials and instructions must be used while installing any weatherization measures.
3. Workers shall know the limits of their knowledge, and when the AHJ requires a licensed professional to perform a certain task.
4. Subgrantee Recipients are required to ensure that all agency workers and sub-contractors are qualified and adequately trained to implement the DOE Standard Work Specifications as well as state and local (or AHJ) codes specific to the work being conducted (electrical, plumbing, etc.). For additional guidance and requirements on training, please see Requirement 311.
5. Under all circumstances, client education **MUST** be provided by the Subgrantee when an issue is found in a home, even if a home is deferred or if the issue is abated. This must be documented with the client signature on **Form 25**. It is a best practice to educate the client at the beginning and end of the weatherization work.
6. Whenever new equipment is installed – ventilation fans, HVAC, etc., - the paperwork that comes with the unit, including the user’s manual and warranties, must be provided to the client. A client signature should be obtained and maintained in the client file to document that both manuals [**Form 35**] and warranties [**Form 47**] were received.
7. Though not written out in every case, it is implied that workers responsible for carrying out the required tests described throughout the guidance will receive the training needed to competently perform those tests, as applicable. On the same note, where workers will have to make decisions in the field, it is understood that they will receive training on applicable policies that should inform those decisions.
8. Replacement appliances shall comply with the minimum standards of energy efficiency for major appliances established by the National Appliance Energy Conservation Act (NAECA) of 1987.
9. Agencies are required to document all measure installations and any health and safety findings on the Field Audit [**Form 28**].
10. Under no circumstance should weatherization work which would exacerbate health and safety problems, for either the occupant or the worker, proceed.
11. All procurement procedures (see Requirement 108) should be followed when procuring H&S services or products.
12. Many health and safety issues are beyond the scope or cost of the weatherization program. Therefore, standards are in place to allow for weatherization providers to refuse service, defer work, and/or refer applicants to other programs for assistance. These deferrals are explained and documented for the client [**Form 33**]. These deferrals must also be tracked and submitted to ODOC quarterly. For additional guidance on Deferrals/Referrals, please see Requirement 310.

1. HEATING SYSTEMS

1) Primary Heating System:

A. Allowability:

- a. “Red tagged”, inoperable, or non-existent heating system (including solid fuel heating units such as wood stoves) replacement, repair, or installation is allowed, following the

guidance listed below.

- b. Standalone electric space heater replacement, repair or installation is not allowed.
- c. DOE will not permit any DOE-funded weatherization work where the completed dwelling unit is heated with an unvented gas- and/or liquid-fueled space heater as the primary heat source. The primary heat source must be replaced with a vented unit prior to weatherization. The replacement unit should be sized so it is capable of heating the entire dwelling unit, consistent with audit requirements described in 10 CFR 440.21(e)(2).

B. Actions:

- a. Make sure primary systems are present, operable, and performing correctly. Unsafe units, including space heaters, and any unit that does not conform to ANSI Z21.11.2, must be repaired, removed or rendered inoperable, or deferral is required.
- b. Input the heating tune-up or replacement of the primary heating system in the NEAT/MHEA program to determine potential energy savings at an ECM with an SIR of 1.0 or above. Documentation to show this attempt of cost justification should be kept in client file.
 - i. If the heating tune-up or replacement results in an ECM with an SIR of 1.0 or above, replace or tune-up as a regular ECM
 - ii. If the NEAT/MHEA program does not determine the primary hearing system replacement or tune-up to be an ECM, repair or replace the primary heating system using H&S funds.
- c. 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 appliance.
- e. If a primary heating system is unsafe, and cannot be repaired, replaced, or removed, then weatherization services cannot be provided and the home must be deferred.
- f. See Section 12 - Hazardous Materials Disposal section for proper disposal of any heater that is removed from a client's home.

C. Testing Protocols:

- a. On combustion equipment, inspect chimney and flue and test for CAZ depressurization
- b. For solid fuel appliances look for visual evidence of soot on the walls, mantel or ceiling or creosote staining near the flue pipe.

2). Secondary Heating System:

A. Allowability:

- a. Replacement or installation of secondary heating systems with DOE funds are not allowed.
- b. Maintenance or repair of secondary systems is allowed.

B. Actions:

- a. During initial Energy Audit, all secondary units must be identified and noted.
- b. Any noted unsafe secondary units, including space heaters, and any unit that does not conform to ANSI Z21.11.2, must be repaired, removed or rendered inoperable, or deferral is required.
- c. Secondary unvented units that conform to the safety standards ANSI Z21.11.2 may remain as back-up heat sources. DOE is allowing this flexibility primarily to provide low

income clients an emergency backup source in the event of an electrical power outage.

- d. Secondary unvented units that meet the ANSI Z21.11.2, but are not operating safely, must be removed and properly disposed of.
 - i. Unsafe secondary unvented units that meet ANSI Z21.11.2 are defined as those with yellow flame, corroded wiring, and noticeable scorch soot.
- e. **Weatherization work cannot begin until any identified unsafe secondary heating units have been removed. If the occupants refuses removal, the home must be deferred.**
- f. See Section 12 - Hazardous Materials Disposal section for proper disposal of any secondary heater that is removed from a client's home.

C. Testing Protocols:

- a. On combustion equipment, inspect chimney and flue and test for CAZ depressurization
- b. For solid fuel appliances look for visual evidence of soot on the walls, mantel or ceiling or creosote staining near the flue pipe.
- c. Check circuitry to ensure adequate power supply for existing space heaters that remain in the home that are safe.

D. Client Education for Heating Systems

- a. 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 **[Form 33]**
- b. Discuss appropriate use and maintenance of units.
- c. Provide all paperwork, warranties, and manuals for any installed equipment **[Form 35 and 47]**
- d. Discuss and provide information on proper disposal of bulk fuel tanks when not removed as part of the weatherization work.
- e. Where combustion equipment is present, provide safety information including how to recognize depressurization.
- f. Provide information sheet on appropriate use and maintenance of units, including tune-ups, cleaning, and discuss the risks and warning signs associated with high CO in a household.
- g. If a client refuses to have an unsafe heating unit removed from the home, educate client of hazards and defer the home.
- h. The homeowner shall be notified of the results of all combustions safety tests.

2. COOLING SYSTEMS

1) Primary Air Conditioning Systems

A. Allowability:

- a. Replacement, repair, or installation of a primary air conditioning system is allowed in at risk occupant homes when there is an existing air conditioning unit in the home that is not working, and climate conditions warrant.
- b. Primary air conditioning units cannot be replaced if the client does not meet at risk definition as defined in Section II of this Requirement. A client is at risk if they can provide documentation of the following:
 - i. Home ownership (either the applicant themselves or one of the occupants) AND that at least one of the following individuals is an occupant in the home:

- *a child under the age of five (5)*
- *a person over the age of 65*
- *a disabled person*

B. Actions:

- Make sure primary systems are present, operable, and performing correctly.
- Input the air conditioning unit replacement, repair or installation in the NEAT/MHEA program to determine potential energy savings at an ECM with an SIR of 1.0 or above. Documentation to show this attempt of cost justification should be kept in client file.
 - If the air conditioning unit replacement, repair or installation results in an ECM with an SIR of 1.0 or above, replace or tune-up as a regular ECM.
- Use proper sizing protocols according to (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 appliance.
- If the NEAT/MHEA program does not determine the primary air system replacement, repair, or installation to be an ECM, and the client meets the at risk definition, H&S funds can be used to repair, replace, or install a new primary air conditioning unit.
- If a primary air conditioning unit is unsafe, and cannot be repaired, replaced, or removed, either because the client does not give permission or the client does not meet the at-risk definition, then weatherization services cannot be provided and the home must be deferred.
- See Section 12 - Hazardous Materials Disposal section for proper disposal of any air conditioning unit that is removed from a client's home.

C. Testing Protocols:

- On combustion equipment, inspect chimney and flue and test for 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.

2) Secondary Air Conditioning Systems

A. Allowability:

- Replacement or installation of secondary air conditioning systems with DOE funds are not allowed.

B. Actions:

- Unsafe secondary units, including any secondary air conditioning units, must be repaired, removed or rendered inoperable, or deferral is required.
- See Section 12 - Hazardous Materials Disposal section for proper disposal of any secondary air conditioning unit that is removed from a client's home.

C. Testing Protocols:

- On combustion equipment, inspect chimney and flue and test for 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

D. Client Education for Cooling Systems:

- a. 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. **[Form 33]**
- b. Discuss appropriate use and maintenance of units.
- c. Provide all paperwork, warranties, and manuals for any installed equipment. **[Form 35 and 47]**
- d. Discuss and provide information on proper disposal of bulk fuel tanks when not removed as part of the weatherization work.
- e. Where combustion equipment is present, provide safety information including how to recognize depressurization.
- f. Provide information sheet on appropriate use and maintenance of units, including tune-ups, cleaning, and discuss the risks and warning signs associated with high CO in a household.

E. Training for both Heating and Cooling Systems:

- a. The Oklahoma WAP network contracts out all HVAC work replacement units. Subgrantee Recipients are required to ensure their sub-contractors are trained per DOE rules and regulations to ensure that the most current Oklahoma Field Guide is followed and that all weatherization work is in compliance with NREL's most current SWS, and all ODOC policies and procedures.
- b. CAZ depressurization testing and inspection.

3. ASBESTOS

1) General Asbestos Requirements

- A. During the initial energy audit, all homes should be visually inspected for suspected asbestos. Close attention should be paid to the exterior wall surfaces and subsurface, floors, walls, and ceilings. In Oklahoma asbestos is commonly found on pipes, so use caution, and thoroughly inspect units. Any suspected asbestos should be noted and, depending on where the suspected asbestos is located, the appropriate required actions should be taken. **Asbestos can only be identified and confirmed by a certified AHERA tester. When budget and time constraints prevent AHERA testing, suspected ACM materials should be treated as though asbestos has been confirmed.** See below for further guidance on what that required action must be taken and what costs are allowable regarding asbestos found in siding, walls, ceilings, vermiculite, or pipes, furnaces, other small covered surfaces.
- B. A blower door test should NOT be setup and performed in a home with suspected ACM when any of the following situations apply:
 - a. Any home built prior to 1930 that has an old furnace system with fibral asbestos insulated ducting systems.
 - b. A home with popcorn ceilings in which the grinding or disturbing the ceiling would be required.
 - c. Any home with suspected friable ACM in which the blower door test will disturb it. A blower door test can only be run after encapsulation is completed by an appropriately trained AHERA asbestos control professional.
 - d. A home in which vermiculite is present. A blower door test can only be run after encapsulation is completed by an appropriately trained AHERA asbestos control professional.

- C. In order to find a licensed AHERA asbestos control professional, or to become a licensed professional visit the [Oklahoma Department of Labor](#) Asbestos Abatement Program for more information.

1) In siding, walls, ceilings, etc

A. Allowability:

- a. General abatement of asbestos siding or replacement with new siding is NOT an allowable H&S cost.
- b. Siding removal and reinstallation is allowable, however, when possible, insulate instead.

B. Actions:

- a. Visually inspect exterior wall surface and subsurface, floors, walls, and ceilings for suspected ACM.
- b. The existence of asbestos siding that is in good condition does not prevent installing dense-pack insulation from the exterior.
- c. All reasonable and necessary precautions must be taken to prevent asbestos contamination in the home.
- d. Suspected ACM siding should never be cut or drilled.
- e. Siding may be removed and reinstalled in order to perform the ECM and the associated costs may be charged as part of the ECM.
- f. Where possible, insulate through home interior and avoid removal of asbestos siding.

C. Testing Protocols:

- a. Inspect exterior wall surface and subsurface, floors, walls, and ceilings for suspected ACM prior to drilling or cutting.
- b. AHERA sample collection and testing must be conducted by a certified tester.

D. Client Education

- a. Inform client in writing that suspected asbestos siding is present and what precautions will be taken to ensure the occupants' and workers' safety during weatherization.
- b. Provide client with asbestos information info sheet.
- c. If testing was conducted by a certified AHERA tester, formally notify the client in writing of results. Client should provide a signature stating that they were informed.
- d. When deferral is necessary provide information in writing describing conditions that must be met in order for weatherization to commence.

E. Training:

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

2) In Vermiculite

A. Allowability:

- a. Encapsulation by an appropriate trained asbestos professional is allowed. Removal is not allowed.

- b. Baseline environmental asbestos sampling is an allowable cost if authorized in the Oklahoma DOE approved State Plan.

- In PY18, baseline environmental asbestos sampling is not allowable cost.

B. Actions:

- a. When vermiculite is present, unless testing determines otherwise, assume it contains asbestos.
- b. Use proper respiratory protection while in areas containing vermiculite.
- c. A blower door test CANNOT be done on a home when vermiculite is present.
- d. Encapsulation by an appropriately trained asbestos control professional must be done prior to any weatherization work before conducting a blower door testing and completing any weatherization work.
- e. When deferral is necessary due to asbestos, and it cannot be encapsulated OR there are budgetary or occupant objections, the occupant must provide documentation that a certified professional performed the remediation before work continues. This documentation must be kept in the client file.

C. Testing Protocols:

- a. AHERA sample collection and testing must be conducted by a certified tester.
- b. Baseline environmental asbestos sampling, if an allowed cost.

D. Client Education

- a. Clients must be instructed in writing not to disturb ACM.
- b. Provide asbestos safety information to the client.
- c. If testing was conducted by a certified AHERA tester, formally notify the client in writing of results. Client should provide a signature stating that they were informed.
- d. When deferral is necessary provide information in writing describing conditions that must be met in order for weatherization to commence [**Form 33**].

E. Training:

- a. Training on how to recognize vermiculite.
- b. AHERA course for testing.
- c. AHERA course or other appropriately trained or certified asbestos control professional training for encapsulation.

3) On pipes, furnaces, other small covered surfaces

A. Allowability:

Encapsulation is allowed by an appropriately trained AHERA asbestos control professional and should be conducted prior to blower door testing. Removal of ACM may be allowed by an AHERA professional on a case by case basis.

B. Actions:

- a. In Oklahoma asbestos is commonly found on pipes, so use caution, and thoroughly inspect units before blower door test.
- b. 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.

- c. If suspected friable ACM is present, encapsulation must be completed by an appropriately trained AHERA asbestos control professional before a blower door test if materials are friable.
- d. If a subgrantee recipient wishes to pay for removal of ACM, that is possible on a case-by-case basis provided the following criteria are met.
 - i. It is within the subgrantee recipient's health and safety budget. Only those costs directly associated with the testing, encapsulation, or removal may be charged to the health and safety budget category.
 - ii. At least one of the occupants meets the definition of at risk
 - ii. Written ODOC approval is provided and maintained in the client file.

C. Testing Protocols:

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

D. Client Education

- a. Clients must be instructed in writing not to disturb ACM.
- b. Provide asbestos safety information to the client.
- c. If testing was conducted by a certified AHERA tester, formally notify the client in writing of results. Client should provide a signature stating that they were informed.
- d. When deferral is necessary provide information in writing describing conditions that must be met in order for weatherization to commence [**Form 33**]

E. Training:

- a. How to identify ACM
- b. AHERA course or other appropriately trained or certified asbestos control professional training for encapsulation
- c. AHERA or other appropriate asbestos control professional certification/training is required to abate the ACM.

4. BIOLOGICAL AND UNSANITARY CONDITIONS – ODORS, MUSTINESS, BACTERIA, VIRUSES, RAW SEWAGE, ROTTING WOOD

A. Allowability:

- a. Remediation of conditions that may lead to or promote biological concerns and unsanitary conditions is allowed.
- b. Addressing bacteria and viruses is not an allowable cost.

B. Actions:

- a. Weatherization work may be deferred if the cost, scope, or nature of mitigating the biological hazard is beyond the reach of the weatherization provider. [**Form 33**]
- b. Deferral may also be necessary in cases where a known agent is present in the home that may create a serious risk to occupants or weatherization workers. [**Form 33**]
- b. See also Section 15 – Mold and Moisture

C. Testing Protocols:

- a. Sensory Inspections

D. Client Education

- a. Inform client in writing of observed conditions
- b. Provide information on how to maintain a sanitary home
- c. When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence [**Form 33**].

E. Training:

- a. How to recognize conditions and when to defer.
- b. Safe work practices when encountering any biological or unsanitary conditions

5. BUILDING STRUCTURE AND ROOFING

A. Allowability:

- a. Building Rehabilitation is not an allowable weatherization cost.
- b. Minor structural repairs are allowable and can be done on a home, ***provided*** they meet the definition of incidental repair.

B. Actions:

- a. Dwellings that require more than minor repairs should not be weatherized and should be deferred.
 - i. Minor repairs are those that meet the incidental repair definition.
 - ii. Applicants may be referred to the U.S. Department of Housing and Urban Development, United State Department of Agriculture or other non-DOE housing programs.
- b. See Section 15 - Mold and Moisture, Section 4 - Code Compliance, and Section 16 - Pests sections for more information.

C. Testing Protocols:

- a. Visual Inspection
- b. Ensure that access to areas necessary for weatherization are safe for entry and performance of assessment, work and inspection.

D. Client Education.

- a. Notify client of structurally compromised areas.
- b. When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence [**Form 33**].

E. Training:

- a. How to identify structural and roofing issues.

6. CODE COMPLIANCE:

A. Allowability:

- a. 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.
- b. Measures not triggered by weatherization measures are not required to be brought up to code per state law, nor is it an allowable use of DOE funds.

B. **Actions:**

- a. The Oklahoma Uniform Building Code Commission (OUBCC) was created by the Oklahoma Legislature in 2009 to develop state-wide minimum building codes for residential and commercial construction. On September 15, 2017, Oklahoma, adopted the International Residential Code (IRC) 2015 Edition, with modifications. The official rules are published in the Oklahoma Administrative Code and Oklahoma Register. The unofficial rules can be found at the [OUBCC website](#).
- b. Since NREL's SWS use IRC 2012 Edition codes, several weatherization measures will not meet minimum state building code compliance, unless further action is taken.
- c. DOE requires that state and local codes must be followed while installing weatherization measures, along with using licensed workers when work performed requires a license/registration. Therefore, at a minimum, OUBCC rules must be followed, unless a local code has a more stringent code, then that code must be followed.
 - i. State and local codes can be accessed at [Oklahoma Uniform Building Code Commission](#)⁷ [Oklahoma Construction Industries Board](#)⁸, and at [Municode](#)⁹.
- c. 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 by weatherization measures being installed in a specific room or area of the home. This documentation must be maintained in client file.
- d. Condemned properties where "red-tagged" health and safety conditions exist that cannot be corrected under this guidance should be deferred.
- e. In Oklahoma, the following OUBCC statewide code compliance issues are commonly identified during the course of weatherization work. The specific OUBCC codes are referenced.
 - i. Combustion Water Heaters
If a water heater is being replaced, the following issues must be addressed according to SWS standards:
 - (a) If the water heater is located in a bathroom or sleeping area (bedroom) it must be relocated elsewhere in the home or be isolated and receive combustion air from outside that room (e.g. from outside) [*OUBCC, 748:20-5 IRC 2015 - G2406.2 (5)*] .
 - (b) If the water heater is being replaced, it must have an expansion tank (if required by P2903.4 or local jurisdiction) and sediment trap [*OUBCC, 748:20-5 IRC 2015 - G2419*] as well as pan [*OUBCC, 748:20-5 IRC 2015 - P2801.6*].
 - (c) The water heater must also have a pressure and temperature relief pvc pipe [*OUBCC, 748:20-5 IRC 2015 - P2804.1*] installed and ran to the outside or 6" within the floor (if below the floor, it must be ran outside) [*OUBCC, 748:20-5 IRC 2015 - P2801.6 (1-14)*].
 - (d) Be constructed of those materials indicated in IRC 2015 Section P2906.5 or materials tested, rated and approved for such use in

⁷ https://www.ok.gov/oubcc/Codes_&_Rules/Adopted_Building_Codes/index.html

⁸ <http://cib.ok.gov/ruleslaws>

⁹ <https://library.municode.com/ok>

accordance with ASME A112.4.1^{10,11}

ii. Combustion Furnaces

If a combustion furnace is being replaced, the following issues must be addressed according to SWS standards:

- (a) A sediment trap must be installed if furnace is being replaced. [OUBCC, 748:20-5 IRC 2015 - G2419]

ii. Ventilation for Exhaust Fans

If ventilation for a home is being installed or already exists, the following issues must be addressed according to SWS standards:

- (a) Ventilation must be ran to the outside and when going through unconditioned sleeve, be insulated to R8. [OUBCC, 748:20-5 IRC 2015 – N1103.3.1]

C. Testing Protocols:

- a. Visual inspection.

D. Client Education.

- a. Inform client in writing of observed code compliance issues when it results in a deferral, to include information describing conditions that must be met in order for weatherization work to commence. [Form 33]

E. Training:

- a. How to determine what code compliance or licensing/registration Requirements for work performed may be required.

7. COMBUSTION GASES:

A. Allowability:

- a. Testing and repair of combustion appliances is allowed, as long as it follows all other guidance and is not prevented by any other guidance in this requirement.
- b. Replacement of combustion appliances is allowed if unsafe conditions, whose remediation is necessary to perform weatherization, cannot be remedied by repair or tuning, unless prevented by other guidance in other sections of this requirement. See Section 1 – Heating Systems, Section 11 – Gas Ovens/Stovetops/Ranges and Section 23 – Water Heaters, for additional guidance.
- c. The cost of tools and equipment used to test for dangerous concentrations of combustion products in the living space is allowable.

B. Actions:

- a. Combustion safety testing is required to be done when combustion appliances are present.
- b. Subgrantee recipients must follow the Ambient CO and CO Limit Action Tables in the BPI 1200 Standards Chart [Attachment 28]

¹⁰ American Society of Mechanical Engineers (ASME)

¹¹ 2016 IRC P2804.6.1. 13

- c. Proper venting to the outside for combustion appliances, including gas dryers, refrigerators, furnaces, vented space heaters, and water heaters, is required.
- d. Venting must be corrected when testing indicates a problem.
- e. State and local codes must be followed during testing, repair, or replacement. See Section 4 – Code Compliance for additional guidance.
- f. If a replacement of a combustion appliance is done, the following actions must be followed:
 - i. Ensure that replacement is not prohibited by any other guidance contained in this Requirement.
 - ii. Ensure that replacement is more cost effective than repair and maintain justification documentation in client file.
 - iii. Input the appliance the NEAT/MHEA program to determine potential energy savings at an ECM with an SIR of 1.0 or above. Documentation to show this attempt of cost justification should be kept in client file.
 - iv. If the replacement appliance results in an ECM with an SIR of 1.0 or above, replace as a regular ECM.
 - v. If the NEAT/MHEA program does not determine the combustion appliance to be an ECM, replace appliance using H&S funds.
 - vi. Replacement units must meet safety guidelines as determined in the DOE approved Oklahoma State Plan or Oklahoma Field Guide.

C. Testing Protocols:

- a. Combustion Safety testing is required when combustion appliances are present.
- b. 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).
- c. Inspect cook stove burners for operability and flame quality
- d. Inspecting venting of combustion appliances and confirm adequate clearances.

D. Client Education.

- a. Provide client with combustion safety and hazards information sheet.
- b. Discuss with client the importance of using ventilation when cooking and the importance of keeping burners clean to limit the production of CO.
- c. The homeowner shall be notified of the results of all combustions safety tests.

E. Training:

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

8. ELECTRICAL

A. Allowability:

- a. Visual inspection, voltage drop and voltage detection testing are allowed.
- b. H&S funds may be used to replace a circuit, if required for insulation. It would likely cost less than labor for this treatment, and will provide better insulation value for attic.
- c. Minor electrical repairs are allowable, provided the following two conditions are met:

- i. The health and safety of the occupant or workers is at risk
- ii. The repairs meet the definition of incidental repair.

B. Actions:

- a. 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

C. Testing Protocols:

- a. Visual inspection for the following should also always be conducted:
 - i. Presence and condition of knob-and-tube wiring
 - ii. Alterations that may create an electrical hazard
- b. Voltage drop and voltage detection should be done when applicable.

D. Client Education.

- a. Provide information sheet on Electrical Safety and discuss the risks on over-current protection, overloading circuits, and other electrical safety/risks.

E. Training:

- a. How to identify electrical hazards.
- b. Local or AHJ code compliance.

9. FORMALDEHYDE, VOLATILE ORGANIC COMPOUNDS, FLAMMABLE LIQUIDS, and OTHER AIR POLLUTANTS

A. Allowability:

- a. Removal of pollutants is allowed and is required if they pose a risk to workers.
- b. Correction of fire hazards is allowed when necessary to safely perform weatherization.

B. Actions:

- a. During initial inspection and during the course of weatherization work, check for fire hazards and any pollutants.
- b. If pollutants or fire hazards post a risk to workers and removal cannot be performed or is not allowed by the client, the unit must be deferred.
- c. Workers should take precautions to ensure that no weatherization measures will create or exacerbate potential fire hazards.
- d. Insulation should not cover the pressure relief valve, end of the drip leg, draft hood, burner air inlet, pilot light access door, thermostat control, drain valve, or the top of the water heater on natural gas or propane water heaters.
- e. Insulation shall not cover the pressure relief valve, end of the drip leg, high limit switch, and plumbing pipes or drain valve on electric water heaters.
- f. When adding insulation to attic, shielding shall be installed around heat and high heat sources, including double-walled pipes, as per SWS requirements.
- g. Weatherization materials shall not be installed over or adjacent to outlets, switches, or junction boxes that contain aluminum wiring. Open wire splices shall not be covered with insulation until they have been enclosed with proper junction boxes.
- h. If potentially dangerous creosote buildup in chimneys or wood stoves is identified, health and safety funds may be used to repair the unsafe solid fuel combustion heating system,

within DOE/ODOC budgetary limits.

- i. Refer to Hazardous Materials Disposal for more information regarding proper disposal of pollutants

C. Testing Protocols:

- a. Sensory Inspection

D. Client Education.

- a. Inform client in writing of observed hazardous condition(s) and associated risks
- b. Provide client written materials on safety issues and proper disposal of household pollutants
- c. When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence [**Form 33**].

E. Training:

- a. How to recognize potential hazards, including fire hazards, and when removal is necessary.

10. FUEL LEAKS (for all fuel types)

A. Allowability:

- a. Fuel leak testing is allowed.
- b. Fuel leak remediation/repair is not allowed.

B. Actions:

- a. During the initial audit, workers should test exposed gas lines for fuel leaks from utility coupling into and throughout the home. As long as a fuel leak is present, weatherization work may not proceed.
- b. When a leak is identified, it should be noted and the worker should determine whether it the responsibility of the utility company or the client.
 - i. When a minor gas leak is found on the utility side of service, the utility service must be contacted before work may proceed.
 - ii. Fuel leaks that are the responsibility of the client must be repaired (at the client cost) before weatherizing the unit.

C. Testing Protocols:

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

D. Client Education.

- a. Inform clients in writing if fuel leaks are detected.
- b. When a home is deferred due to a fuel leak, this should be explained to the client in writing [**Form 33**]

E. Training:

- a. Fuel leak testing

11. GAS OVENS/STOVETOPS/RANGES

A. Allowability:

- a. Standard maintenance on or repair of gas cooktop and ovens is allowed.
- b. Replacement is not allowed.
- c. Stovetop burner CO testing, while no longer required (as of April 1, 2018), is allowed.

B. Actions:

- a. All gas ovens should be tested for CO. Subgrantees recipients must follow the Ambient CO and CO Limit Action Tables in the BPI 1200 Standards Chart **[Attachment 28]**
- b. Inspect all cooking burners and ovens for operability and flame quality.
 - i. If burners do not ignite properly or do not burn cleanly (if there is any discoloration, flame impingement, an irregular pattern, or if burners are visibly dirty, corroded, or bent), a clean and tune of the appliance should be completed.
 - ii. If the appliance is located in a confined space and mechanical ventilation is not readily available, mechanical ventilation must be recommended. Ventilation provided for unvented gas ovens must provide a minimum capacity of 25 cfm continuous airflow or 100 cfm intermittent.
- c. A thorough visual inspection of all gas appliances' venting must be conducted, including that portion of the vent running through attic space as well as the roof. Vents that are loose, rusted, or poorly connected shall be noted in the client file and corrective action taken.

C. Testing Protocols:

- a. Test gas ovens for CO.
 - i. Remove any items/foil on or in oven.
 - ii. Make sure self-cleaning features are not activated, set oven to highest setting.
 - iii. Test oven for CO in flue, before dilution of air.
 - iv. After 5 minutes of operation, check for steady-state.
 - v. If the CO reading is below 225ppm, no action is needed.
 - vi. If the CO reading is 225 ppm or greater, advise the home owner/occupant that the appliance should be serviced immediately by a qualified professional. Weatherization must stop and not proceed until the appliance is serviced.
 - vii. CONTINUALLY MONITOR AMBIENT CO LEVELS DURING ALL TESTING and follow the table below **[Attachment 28]**

Ambient CO	Result	Action Required
Ambient CO Per ANSI/BPI Page 5	9ppm - 35ppm	*Advise homeowner/occupant of elevated levels of ambient CO. *Open all Windows and doors. *Recommend all possible sources of CO be tested. *Where it appears that the source of CO is a permanently installed appliance, the homeowner/occupant shall be advised to contact a qualified professional.

	36ppm - 69ppm	<p>*Advise homeowner/occupant of elevated levels of ambient CO.</p> <p>*Open all Windows and doors.</p> <p>*Recommend all possible sources of CO turned off immediately.</p> <p>*Where it appears that the source of CO is a permanently installed appliance, the homeowner/occupant shall be advised to contact a qualified professional.</p>
	70ppm	<p>*Immediately terminate inspection, notify homeowner & occupants to evacuate building. The appropriate emergency services shall be notified from outside the home.</p>

D. Client Education.

- a. Inform clients of the importance of using exhaust ventilation when cooking and the importance of keeping burners clean to limit the production of CO.
- b. Provide client with Combustion Safety info sheet and discuss the risks and warning signs associated with high CO in a household.

E. Training:

- a. Testing techniques
- b. CO Action Levels

12. HAZARDOUS MATERIALS DISPOSAL – Refrigerant, Asbestos, Lead, Mercury, CFLs/Fluorescents

A. Allowability:

- a. Costs associated with hazardous materials waste disposal generated in the course of weatherization work is allowable, as outlined in this requirement.

B. Actions:

- a. All hazardous materials waste that needs to be disposed of shall be disposed of according to all federal, state, and local laws, regulations, and guidelines, as applicable.
 - i. Household hazardous wastes are excluded from the federal Resource Conservation Recovery Act (RCRA) regulations¹². Furthermore, “the EPA does not distinguish between waste generated at a household by a homeowner and waste generated at a household by a person other than the homeowner (e.g. contractor) provided that the waste is generated as part of daily living (e.g. routine residential maintenance)¹³.”
- b. Oklahoma Subgrantee Recipients likely meet the EPA definition of a Very Small Quantity Generator¹⁴, which are exempt from the federal hazardous waste regulations provided

¹² <https://www.epa.gov/hw/household-hazardous-waste-hhw>

¹³ [https://yosemite.epa.gov/osw/rcra.nsf/0c994248c239947e85256d090071175f/237012C5A1EC5AFD8525670F006BF20D/\\$file/11897.pdf](https://yosemite.epa.gov/osw/rcra.nsf/0c994248c239947e85256d090071175f/237012C5A1EC5AFD8525670F006BF20D/$file/11897.pdf)

¹⁴ Conditionally Exempt Small Quantity Generators will be known as Very Small Quantity Generators when the Hazardous Waste Generator Improvements Rule become effective in Oklahoma in September 2018. Very Small Quantity Generators generate less than 220lbs monthly, <https://www.epa.gov/hwgenerators/categories-hazardous-waste-generators>.

they meet specific requirements, as specified in 40 CFR 262.14¹⁵. The following wastes have specific disposal requirements or recommendations that must be followed:

i. **Refrigerant Disposal - REQUIRED**

- (a) Subgrantee Recipients contract out refrigerator replacement and disposal to third party contractors. Subgrantees Recipients are responsible for obtaining assurances from the third party contractor that refrigerants were handled of according to the Clean Air Act 1990, section 608, as amended, and 40 CFR Part 82, 5/14/93.
- (b) Subgrantee Recipients must retain the following disposal information for subcontractors:
 - 1. Name of subcontractor;
 - 2. Date and time of removal;
 - 3. Client signature;
 - 4. Disposal site;
 - 5. Certification of proper disposal.

ii. **Lead Based Paint Disposal¹⁶-REQUIRED**

- (a) Collect and control all waste including dust, debris, paint chips, protective sheeting, HEPA filters, dirty water, clothes, mop heads, wipes, protective clothing, respirators, gloves, architectural components and other waste.
- (b) Use heavy plastic sheeting or bags to collect waste. Seal the bag securely with duct tape. Consider double bagging waste to prevent tears. Large components should be wrapped in protective sheeting and sealed with tape.
- (c) Bag and seal all waste before removing it from the work area.
- (d) Store all waste in a secure container or dumpster until disposal
- (e) Limit on-site storage time.
- (f) Avoid transporting waste in an open truck or personal vehicle.

iii. **Water Heaters, Heating Systems, Unvented Space Heaters, Cooling Systems, Bulk Fuel Tank Disposal - REQUIRED**

- (a) Subgrantee Recipients contract out these replacements and disposal to third party contractors. Subgrantees Recipients are responsible for obtaining assurances from the third party contractor that these items were disposed of according to applicable State and Federal laws, when appropriate.
- (b) Subgrantee Recipients must retain the following disposal information for subcontractors:
 - 1. Name of subcontractor;
 - 2. Date and time of removal;
 - 3. Client signature;
 - 4. Disposal site;
 - 5. Certification of proper disposal.

¹⁵ Effective in Oklahoma in September 2018, formerly 40 CFR 261.5

¹⁶ EPA-HUD (2009), Lead Safety for Renovation Repair, and Painting Model Certified Renovator Initial Training Course, Student Manual, p. 23

iv. **All other potential hazardous materials waste, including, but not limited to, oil based paint or solvent, paint thinners, glue, and spray foam** – RECOMMENDED

- (a) Although not required, as Very Small Quantity Generators, in the interest of client and environmental safety, Subgrantee Recipients are strongly encouraged to purchase a drum to store these types of wastes, and contact a hazardous waste disposal services company to periodically pick up for proper disposal. Subgrantee Recipients would need to properly identify the hazardous material waste, following RCRA and EPA code requirements. For assistance with this, Subgrantee Recipients should contact the Oklahoma Department of Environmental Quality.

C. Testing Protocols

- a. EPA testing protocols.

D. Client Education

- a. Inform clients in writing of hazards associated with hazardous waste materials being generated/handled in the home.
b. Clients should not disturb any refrigerant.

E. Training

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

13. INJURY PREVENTION OF OCCUPANTS AND WEATHERIZATION WORKERS

A. Allowability:

- a. When necessary to effectively weatherize the home, workers may make minor repairs and installations, as defined by ODOC.

B. Actions:

- a. During initial inspection, make any notes in client file regarding potential hazards to either workers or occupants, and if these hazards need to be fixed before weatherization can proceed. Workers must take all reasonable precautions against performing work on homes that will subject workers or occupants to health and safety risks.
b. If the hazards can be fixed through minor repairs and installations, and are within ODOC policy, workers can take the necessary actions to fix the hazards.
i. Minor repairs are those that meet the following criteria:
(a) \$750 dollars or less
(b) Do not require a special license
(c) Can be justified as injury prevention in the course of weatherization work through photo documentation.
c. Some examples of allowable injury prevention measures are: repairing a stair, replacing a handrail, patching a hole,
d. If hazards cannot be fixed or are outside the scope of ODOC/DOE policy, defer the home. When in doubt, request ODOC advisement.

C. Testing Protocols:

- a. Inspect for dangers that would prevent weatherization.

D. Client Education:

- a. If conditions are outside the scope of ODOC and DOE policy, inform client in writing of observed hazards and associated risks, and what repairs must be made before weatherization work can proceed if deferral becomes necessary **[Form 33]**.

E. Training:

- a. Hazard identification

14. LEAD BASED PAINT

A. Allowability:

- a. Testing to determine the presence of lead in paint that will be distributed by WAP measure installation is allowed with EPA-approved testing methods.
- b. Only those costs directly associated with the testing and lead safe practices for surfaces directly disturbed during weatherization activities should be charged to the health and safety budget. Testing methods must be economically feasible and justified.

B. Actions:

- a. 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. Homes built from 1978 on may be assumed free of lead based paint without testing.
 - i. In homes built prior to 1940, it is logical to assume the presence of lead based paint and save the cost of testing.
- b. When a WAP measure might disturb paint in a home built before 1978, testing must be done to determine the presence of lead by a Certified Renovator. The following documentation must be kept in the client file to verify that proper RRP procedures and testing was taken on the home:
 - i. The agency verified date of the home must be documented in the client file
 - ii. Full documentation of lead safe testing and assessment, with clear indication of the test, and the results must be maintained in client file **[Form 42]**
 - iii. Documentation of all Lead Safe work, with clear indication of the process and specific actions taken on the unit must be documented in client file **[Form 43]**
 - iv. A Signed copy of "Confirmation of Receipt of Lead Pamphlet," client approval to proceed with work;
 - v. Documenting all lead safe training for new or uncertified RRP employees and that all work was supervised by a Certified Renovator **[Forms 40 and 41]**
 - vi. Completed "Cleanup" checklist. **[See Attachment 12]**
 - vii. Before photos of site, containment photos, and after photos of site must be included as per the client file checklist **[Form 39]**
 - viii. Copy of the Certified Renovator certification.
- c. All weatherization providers must comply with Certified Renovator requirements as stipulated by EPA/DOE.
- d. Deferral is required when the extent and condition of lead-based paint in the house

would potentially create further H&S hazards. The mere presence of lead based paint is not considered a justifiable reason to defer or walk away from a home.

C. Testing Protocols:

- a. Job site cleaning verification is required by a Certified Renovator.

D. Client Education:

- a. Fully notifying client of potential lead safe hazards prior to and after weatherization work on Form 25- Client Health and Safety Checklist. This must be signed and kept in client file.

E. Training:

- a. 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. For additional training guidance, see Requirement 311.
- b. In Oklahoma, Certified Renovator training and certification is through Oklahoma's Department of Environmental Quality (ODEQ). The Oklahoma Association of Community Action Agencies provides ODEQ RRP training regularly.
- c. ODOC will monitor for lead safe practice compliance with SWS and EPA protocols. The State Quality Control Inspector that does the quality assurance inspections must be a certified renovator.
- d. Training for Lead Safe Weatherization, although no longer required as of April 1, 2018, can still be paid for with DOE WAP funds.

15. MOLD AND MOISTURE

A. Allowability:

- a. 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.
- b. Source control (the correction of moisture and mold creating conditions, independent of latent damage and related repairs) is allowed when necessary in order to weatherize a home and to ensure the long-term stability and durability of the measures.
- c. Mold testing, remediation, and cleanup are not an allowable costs.
- d. Surface preparation where weatherization measures are being installed (e.g., cleaning mold off window trim in order to apply caulk, repair/replace deteriorated sheetrock or ceiling tile.) are allowable, but as part of the ECM, not the H&S budget category.
- e. Adding mechanical ventilation is allowed

B. Actions:

- a. Subgrantee Recipients should ensure that regular weatherization work is performed in a manner that does not contribute to mold problems and when the work is performed properly, can alleviate many mold conditions.
- b. During the initial audit, visual testing for mold and exterior drainage should be done. Anything found should be noted in client file **[Form 28]**
- c. Diagnostics such as moisture meters are recommended pre-weatherization and at the final inspection.

- d. If indoor relative humidity (RH) is at or above 60% or there is obvious evidence that a moisture problem exists (such as indoor mold or mildew) and cannot be abated within WAP cost limitations, then air sealing work must not be done. This does not include incidental repair items or repair/replacement of doors and windows. A unit with an indoor RH at or above 60% is to be considered "non-feasible" for blower door testing

Excess Moisture	Mitigation Methods
Bathroom (not from leaky pipes)	Install vent fan
Kitchen (not from leaky pipes)	Install vent fan
Dryer	Vent Properly

- e. When it is determined that weatherization activities can be accomplished, the Subgrantee Recipient shall provide information to the client that specifically entails what was/will be done to the home that is expected to alleviate the mold condition and/or should not promote new mold growth. The notification/disclaimer shall be discussed with and signed by the client and/or property owner. **[Form 32]**

C. Testing Protocols:

- a. Visual assessment and
- b. Diagnostics such as moisture meters are recommended pre and prior to final inspection.

D. Client Education:

- a. Provide client with notification and disclaimer on mold and moisture awareness, **A Brief Guide to Mold, Moisture, and Your Home**
- b. Provide information on importance of cleaning and maintaining drainage systems.
- c. Provide information on proper landscape design and how this impacts site drainage and moisture control.
- d. When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization work to commence **[Form 33]**.

E. Training:

- a. National Curriculum on mold and moisture or equivalent.
- b. How to recognize drainage issues

16. PESTS

A. Allowability:

- a. Pest removal is allowed only where infestation would prevent weatherization.
- b. Screening of windows and points of access is allowed to prevent infestation.

B. Actions:

- a. During initial audit and during the course of weatherization work, workers should be aware of and conduct visual inspections for pests.
- b. Pests removal can be done (and should be when possible) in situations which meet the following:
 - i. infestation prevents weatherization
 - ii. Pests can be reasonably removed

- c. As long as the invoice dates are within the program year, a lease, if required by vendor, may be paid for upfront, provided the cost is reasonable and within the agency's H&S budget, and the pest problem warrants multiple treatments.
- d. Infestation of pests may be cause for deferral where it cannot be reasonably removed or poses health and safety concerns for workers.

C. Testing Protocols:

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

D. Client Education:

- a. Inform client in writing of observed conditions and associated risks.
- b. Provide Pest Health Threats information sheet client if applicable.
- c. When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence [**Form 33**].

E. Training:

- a. How to assess presence and degree of infestation, associated risks, and need for deferral.

17. RADON

A. Allowability:

- a. Radon mitigation is not an allowable H&S cost.
- b. Testing may be allowed in locations with high radon potential. Contact ODOC for approval if this situation occurs.

B. Actions:

- a. Clients must sign an informed consent form prior to receiving weatherization services. This form must be kept in the client file. Major radon problems should be referred to the appropriate local environmental organization or agency for abatement.
- b. 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.
- c. 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.
- d. 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.

C. Testing Protocols:

- a. Radon testing with ODOC approval.

D. Client Education:

- a. Provide all clients EPA's [A Citizen's Guide to Radon](#) and inform them of radon related

risks.

- b. All clients must sign consent form and must receive the following information:
 - i. Information from the results of the IAQ Study that there is a small risk of increasing radon levels when building tightness is improved;
 - ii. 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
 - iii. Confirmation that EPA's *A Citizen's Guide to Radon* was received and radon related risks discussed with the client.

E. Training:

- a. 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.
- b. Workers must be trained in proper vapor retarder installation.
- c. The EPA Radon map uses 3 "zones" to indicate the likelihood of radon being present and levels determined to be potentially dangerous. Most of Oklahoma's counties are in Zone 3, although Cimarron, Texas, Beaver, Ellis, Delaware, Mayes, Cherokee, Adair, and Sequoyah are all in Zone 2. A zonal map can be located at <http://www.epa.gov/radon/pdfs/zonemapcolor.pdf>
 - Zone 1 indicates average indoor screening levels above the recommended maximum of 4 pCi/L.
 - Zone 2 ranges from 2 – 4 pCi/L.
 - Zone 3 average indoor screening levels are less than 2 pCi/L.

18. SAFETY DEVICES: SMOKE AND CARBON MONOXIDE ALARMS, FIRE EXTINGUISHERS

A. Allowability:

- a. Smoke alarms, limited to the relatively inexpensive, battery operated type, must be installed where alarms are not present or are inoperable.
- b. Replacement of operable detectors is not an allowable cost.
- c. Digital CO alarms must be installed where alarms are not present or are inoperable, regardless of fuel source.
- d. Providing fire extinguishers is an allowable cost when solid fuel is present.

B. Actions:

- a. During the energy auditor, a unit should be inspected for smoke and carbon monoxide alarms, and fire extinguishers.
- b. If an alarm or fire extinguisher is located, it should be tested to determine whether it is an operable device.
 - i. If not operable, the assessor should determine how many smoke alarms are necessary for the home and if any fire extinguishers are warranted (if solid fuel is present).
 - (a) Subgrantee Recipients should only install the more expensive smoke detectors, which require wiring to the home's electrical system, when these types of units are required by applicable codes.
 - ii. All units must have a digital CO installed, regardless of fuel source.

- (b) Carbon Monoxide detectors must be installed according to Underwriters Laboratories Standards for Safety ANSI/UL 2034-09 or newer if available.

C. Testing Protocols:

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

D. Client Education:

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

E. Training:

- a. Where to install alarms.
- b. Local code compliance.

19. OCCUPANT PRE-EXISTING OR POTENTIAL HEALTH CONDITIONS

A. Allowability:

N/A

B. Actions:

- a. During the application process, occupants must complete the Indoor Air Quality and Safety Checklist **[Form 22A]**. This checklist asks the occupants to indicate any health problems of anyone in the households. Workers should carefully consider the responses to this checklist.
- b. When a person's health may be at risk and/or the worker's activities could constitute a health and safety hazard, the occupants at risk will be required to take appropriate action based on the severity of the risk.
- c. Failure or the inability to take appropriate actions may result in deferral.
- d. Some weatherization materials and activities have the potential to create or exacerbate clients' health problems. Weatherization crews should use caution when weatherizing homes with clients with asthma, COPD (pulmonary lung diseases), allergies, etc., which can worsen during and after weatherization work.

C. Testing Protocols:

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

D. Client Education:

- a. Inform client in writing of any known risks.
- b. Provide client with agency contact information in writing so client can inform of any issues.
- c. When deferral is necessary, provide information in writing describing the conditions that must be met in order for weatherization to commence **[Form 33]**.

E. Training:

- a. How to assess preexisting conditions and determining what action to take if the home is not deferred.

- b. Awareness of potential hazards.

20. VENTILATION AND INDOOR AIR QUALITY

A. Allowability:

- a. Costs associated with implementing and following ASHRAE 62.2 2016 are allowed.
- b. Continuous kitchen exhaust not permitted for non-enclosed kitchens

B. Actions:

- a. Subgrantees will follow ASHRAE 62.2 2016 per DOE policy. Most of Oklahoma is in Climate Zone 3; the panhandle is in Climate Zone 4.
- b. 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.
- c. During initial inspection, agency will inventory existing viable fans
- d. Measure Exhaust Fan Flow with Fan Flow Meter and Digital Manometer (you will need pre blower door reading @CFM50 prior to conducting pre fan flow measurements) [Form 38].
- e. Estimate post weatherization blower door @CFM50
- f. Fill out ASHRAE 62.2.2016 Ventilation Calculation Spreadsheet.
<http://www.residentialenergydynamics.com/REDCalcFree/Tools/ASHRAE6222016>.
- g. If Continuous Ventilation to Add is above 15 CFM, per the ASHRAE 62.2 2016 Ventilation Calculation Spreadsheet, determine the best solution to provide ventilation required to reach CFM required by considering the following options:
 - i. Exhaust only Fans (Spot Ventilation) - best in moderate and cold- climates
 - (a) Continuous or intermittent (must have an adjustable switch)
 - ii. Balanced
 - (a) Continuous or intermittent (must have adjustable switch if intermittent)
 - (b) Fan driven air in & out, controlled air
 - iii. Sone rating requirement
 - (a) Must be met at or below 1 sone whole building fan at or below 3 sones for local occupant controlled fans (kitchen and bath exhaust)
- h. Verify the operation of all local and/or whole building ventilation equipment (Before and After using the Ventilation Calculation Spreadsheet).
- i. NOTE for areas located outside of the thermal boundary that are having issues reaching the 6% requirement¹⁷, per DOE: seal all exposed ductwork as completely as possible using reasonably diligent efforts, but leave any inaccessible ductwork alone.
- j. Before and After fan flow must be verified in client file (Form 38 APD & CAZ)

¹⁷ HVAC systems that include air handlers or ducts located outside the pressure boundary shall have total air leakage of no more than 6% of total fan flow when measured at 0.1 in. of water (25 Pa) using California Title 24 10 or equivalent. [ASHRAE Standard 62.2.2016 Section 6.5.2](#)

C. Testing Protocols:

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

D. Client Education:

- a. Educate client on function, use, and maintenance (including location of service switch and cleaning instructions) of ventilation system and components.
- b. Provide info sheet on Indoor Air Quality, to include a disclaimer that ASHRAE 62.2 does not account for high polluting sources or guarantee indoor air quality.
- c. Provide client with equipment manuals for installed equipment.
- d. Provide client with Ventilation client information sheet.

E. Training:

- a. ASHRAE 62.2 2016 training is required and includes proper sizing, evaluation of existing and new systems, depressurization tightness limits, critical air zones, and etc.

21. WINDOW AND DOOR REPLACEMENT, WINDOW GUARDS

A. Allowability:

- a. Not allowed

B. Actions:

- a. N/A

C. Testing Protocols:

- a. N/A

D. Client Education:

- a. If lead is present in home, provide client with Renovate Right Brochure and educate client on the risks of lead in the home.

E. Training:

- a. Awareness of guidance

22. WORKER SAFETY

A. Allowability:

- a. Costs to comply with these requirements may be charged to the Health and Safety budget.

B. Actions:

- a. Workers must follow Occupational Safety and Health Administration Standards and Safety Data Sheets (SDS) and take precautions to ensure the health and safety of themselves and other workers.
- b. SDS must be posted wherever workers may be exposed to hazardous materials. This could include keeping all SDS in weatherization work vehicles while working at a client home.
- c. Workers should check for Spray Polyurethane Foam (SPF) penetrations in the building

envelope. If detected:

- i. Use EPA recommendations at http://www.epa.gov/dfe/pubs/projects/spf/spray_polyurethane_foam.html when working within the conditioned space or when SPF fumes become evident within the conditioned space. When working outside the building envelope, isolate the area where foam will be applied, take precautions so that fumes will not transfer to inside conditioned space, and exhaust fumes outside the home.

C. Testing Protocols:

- a. Grantees (ODOC monitors) must perform assessments to determine if crews are utilizing safe work practices.
- b. Subgrantee Weatherization Directors and crew leaders are responsible to provide safe working environments (with training, and the proper tools and safety equipment) for their crews and weatherization clients.
- c. Sensory inspection inside the home for SPF fumes during foam application

D. Client Education:

- a. If using SPF, Provide notification to the clients of plans to use two-part foam and the precautions that may be necessary.

E. Training:

- a. Use and importance of personal equipment.
- b. OSHA 10 hour training is required for all workers.
- c. OSHA 30 training is required for Crew Leaders.
- d. Ongoing training is required in Hazard Communication Program.
- e. Training on use of various products with specification for each application type.
- f. SDS sheets.
- g. Temp sensitivity.
- h. If time and resources allow, ODOC may periodically conduct in-progress inspections to observe the health and safety practices of the workers.

23. WATER HEATERS

A. Allowability:

- a. Repair and cleaning is allowed.
- b. If repair and cleaning is not sufficient, and the water heater is leaking and rusted, water heater replacement is allowed, provided the agency has first attempted to justify replacement as an ECM.

B. Actions:

- a. During the initial audit, determine whether the water heater is performing safely. Water heaters must be inspected to determine if they are operational, non-operational, repairable, and/or non-repairable. Relevant information must be entered into the NEAT.
- b. Subgrantee Recipients shall accomplish the following services for electric water heaters not replaced, if audit justified:
 - i. Pipe insulation;

- ii. Water heater blanket;
 - iii. Thermostat set to 120 degrees maximum;
 - iv. Check for leakage;
 - v. Replacement of low-flow showerhead.
- c. Electric water heaters shall be replaced with another electric water heater only. Gas water heaters may be replaced under health and safety only. Fuel change is not allowable.

C. Testing Protocols:

- a. Combustion testing

D. Client Education:

- a. Provide client with Combustion Safety info sheet and discuss the risks and warning signs associated with high CO in a household

E. Training:

- a. Awareness of guidance
- b. CAZ testing

III. FORMS

Form 22	Application
Form 22A	Indoor Air Quality and Safety Checklist
Form 23	Priority List
Form 25	H&S Client Education Summary
Form 28	Work Plan and Diagnostics
Form 32	Mold Disclosure
Form 33	Deferral and Denial
Form 35	Client Satisfaction Form
Form 39	Client File Checklist
Form 40	On the Job Training Log
Form 42	Test Kit Documentation
Form 43	Renovation Recordkeeping Checklist
Form 46	Insulation Summary Sheet
Form 47	Warranties

AHSRAE Calculation Form

<http://www.residentialenergydynamics.com/REDCalcFree/Help/ASHRAE6222016.aspx>

IV. ATTACHMENTS

All attachments can be found in the Community Action Implementation Manual

V. RESOURCES

Federal:

- Allowable Expenditure Federal Guidelines:
[10CFR Part 440.18\(d\)\(15\)](https://www.ecfr.gov/current/title-10/chapter-II/subchapter-D/part-440/subpart-18/section-440.18(d)(15))
- Weatherization Program Notice 17-2
<https://www.energy.gov/eere/wipo/downloads/wpn-17-7-weatherization-health-and-safety-guidance>

- Environmental Protection Agency Mold
<https://www.epa.gov/mold>
- Asbestos
<https://www.epa.gov/asbestos/learn-about-asbestos#asbestos>
- Information for Owners and Building Managers regarding Asbestos:
<https://www.epa.gov/asbestos/information-owners-and-managers-buildings-contain-asbestos#o&m>

State:

- [Oklahoma Uniform Building Code Commission](#)
- Oklahoma Department of Labor - [Oklahoma Asbestos Control Act](#)
- [Oklahoma Construction Industries Board](#)