



Arizona Department of Housing

WEATHERIZATION HEALTH AND SAFETY PLAN

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CONTACT INFORMATION:

KATHY BLODGETT, ADMINISTRATOR
COMMUNITY DEVELOPMENT & REVITALIZATION PROGRAMS
1110 W. WASHINGTON, SUITE 310
PHOENIX, AZ 85007
602-771-1021

Kathy.Blodgett@azhousing.gov



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V.7 Health and Safety

Allowable energy related health and safety (H&S) actions are those actions necessary to maintain the physical well-being of both the occupants and/or weatherization workers where:

- Costs are reasonable as determined by The Department of Energy (DOE) in accordance with this approved Master Plan;
- The actions must be taken to effectively perform weatherization work; or
- The actions are necessary because of completed weatherization work.

If Deferral is necessary, it is required that the sub-grantee inform the client in writing, describing the condition(s) causing the deferral and what must be done prior to weatherization work. If the sub-grantee knows of another program that could help, they must provide that information to the client in the letter. A copy of this letter must be in the client file.

Prior to a measure being considered an allowable H&S measure, it must first be determined that it is not an energy conservation measure (ECM) or incidental repair to an ECM.

Budgeting/H&S Expenditure Limits

H&S costs are a separate category and, thereby, exclude such costs from the average cost per unit cost (ACPU) limitation. This separate category also allows these costs to be isolated from energy efficiency costs in program evaluations.

For DOE, each sub-grantee will have just under 15% of their non-carryover program operations set aside for energy related H&S repairs. Each sub-grantee will be responsible for the management of their H&S budget and will be required to bill H&S repairs as a separate budget line item. Sub-grantees will also be required to obtain written approval from The Arizona Department of Housing (ADOH) for all H&S repairs exceeding \$2,000. Any H&S expenses exceeding the 15% cap of the sub-grantee non-carryover program operations budget will not be reimbursed.

Incidental Repair Measures

In order to be considered an incidental repair, the measure must fit the following definition and be cost justified along with the associated efficiency measure; Incidental repairs means those repairs necessary for the effective performance or preservation of weatherization materials. Such repairs include, but are not limited to:

- Framing or repairing windows and doors which could not otherwise be caulked or weather-stripped
- Providing protective materials, such as paint, used to seal materials installed under this program.

Any repair that does not meet the above definition of incidental repair is considered an H&S measure. If a measure could be treated as an incidental repair to an Energy Conservation Measure (ECM), it is a requirement of ADOH that it is treated as such. ADOH chooses not to specifically identify any H&S measure listed in this plan as strictly an incidental repair.

Home Assessment & Client Evaluation

The sub-grantee must determine presence of at-risk occupants and structures before proceeding with weatherization services. Required H&S evaluation forms must be completed and retained in each client file. These forms are available on the ADOH website and can be found at;

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<https://housing.az.gov/documents-links/forms/weatherization>.

Crew and client H&S issues must be considered when determining site conditions and work scopes. Working from this concept assumes that any hazard associated with a work site, whether it is a work practice, an existing condition, client behavior, etc., has the potential of harming both crew and client. An all-inclusive approach must be taken towards H&S throughout the entire process of weatherizing a home, with special emphasis given during the initial audit.

The initial audit, by a qualified auditor, should include sensory inspections and diagnostic testing, as listed in the Weatherization Assistance Program (WAP) guidelines. This testing is to verify the existing conditions of the home and any H&S issues that could arise or halt production on the home. Details on existing conditions that could hinder weatherization work are listed below.

Training

As H&S repairs are vital to the program, it is essential to utilize well-trained auditors and assessors that can identify H&S concerns and hazards. Auditors must be able to both identify and understand how to resolve these concerns and hazards correctly. Auditors will be trained through classroom and in-field training. The established classroom training used at this time is "Weatherization Boot Camp" which introduces the different H&S concerns and hazards that may be found in a home and the proper way(s) to handle those situations. Field training will be based on findings and/or missed opportunities. ADOH staff will continue to work with Southwest Building Science Training Center to develop any necessary additional training as issues and the needs of the current workforce are identified in the field.

Weatherization Boot Camp is a requirement for most of the measures below. This course combines Energy 101, Pressure Diagnostic 101, General Thermal Performance, Residential Retrofit Application 101, and Combustion Safety course into a weeklong training course that will provide weatherization professionals with an introduction to energy principles, thermal performance, health and safety standards, lead safe weatherization (LSW), auditing, pressure diagnostics, and field repair. This course provides a combination of classroom and hands-on instructions that will prepare candidates to perform the tasks required of weatherization technicians within the current Weatherization Program Guidelines.

In Boot Camp attendees are expected to learn to:

- Recognize H&S issues including (but not limited to):
 - Radon
 - Lead
 - Mold/Moisture
 - Electrical
 - Carbon Monoxide (CO)
- Understand causes and effect of the above H&S issues
- Properly identify through testing or sensory inspection
- Mitigate those issues if mitigation is allowed within H&S measures

**All H&S guidance is contingent upon having well trained auditors.
H&S issues must be established before any work begins.**

Occupant Pre-existing or Potential Health Conditions

An important aspect of any inspection is client education, where the occupant(s) health problems are recognized and addressed. Once there is a clear understanding between the auditor and the client(s), work that will not aggravate any preexisting condition shall begin. In some rare instances, a deferral may be required.

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Special consideration should be given to at-risk clients. At risk clients include but are not limited to children (5 or younger); elderly (60 or older); person(s) with disabilities or currently under the care of a doctor for asthma or other conditions that could be affected by extreme heat or cold.

When a person's health may be at risk and/or the work activities could create a H&S hazard, the at risk occupant will be required to take appropriate action based on severity of risk. Temporary relocation of at-risk occupants may be necessary. Failure or inability to take appropriate actions will result in a deferral. Relocation during weatherization work will not be an allowable expense with Weatherization Assistance Program (WAP) funding.

Hazard Identification and Notification

Forms have been developed that include but is not limited to: the client's name and address, dates of the audit/assessment and when the client was informed of a potential H&S issue, a clear description of the problem, a statement indicating if, or when weatherization could continue, and the client(s) signature(s) indicating that they understand and have been informed of their rights and options. The forms can be found on the ADOH website and are titled:

- Health & Safety Evaluation Form
- Hazard Disclosure Form
- Residential Diagnostic Evaluation Form

Additional information and recommendations can be found in the following ORNL Report: Buildings Assessment of Radon Reduction Interventions with Energy retrofits Expansion Study (The BEX Study) (https://weatherization.ornl.gov/wp-content/uploads/2021/01/ORNL-_TM-2020_1769.pdf)

Health & Safety Categories

Potential hazards are identified by the intake specialist and/or auditor. The findings are then analyzed and ranked by severity and determined how they will be handled, up to and including deferral. Wherever possible, measures should be considered through the cost justification method of the saving to investment ratio (SIR) at 1 or greater, as an Energy Conservation Measure (ECM) first, before using funds from the H&S allocation. The client must be informed of any H&S risks that are discovered during the evaluation process, in writing, and written confirmation of receipt must be retained in the client file. A list of H&S concerns and hazards are compiled below. Any that cannot be corrected, may result in a project deferral. They are as follows:

Air Conditioning and Heating Safety

Arizona climate involves a defined heating and cooling season with a Heating Degree Day (HDD) measurement range from 1180 to over 7200. The Cooling Degree Day (CDD) measurements in Arizona range from 573 to more than 5100. Arizona has a vast difference across the state due to the three recognized climate zones and a vast difference in elevation changes from a few hundred feet above sea level to more than 7000 feet above sea level.

"Red tagged", unsafe, in-operable (more than 6 months) or non-existent HVAC system replacement, repair, or installation is allowable (only as a health and safety measure), where climate conditions warrant, unless prevented by state law. Clients must also be at-risk. At-risk occupants are defined as children under the age of 6 and under and adults 60 and above. It is an accepted medical fact that infants and children 5 and under are very sensitive to the effects of high temperatures and rely on others to regulate their environment. Data provided by Maricopa County Public Health for 2021 detailed 133 heat related deaths, 33 % of which were indoor. Of the 33%, 24 were due to non-functional AC units, one (1)

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was due to no electricity, seven (7) were due to AC units not being used, and one (1) was for unknown reasons. Of the heat related deaths/illnesses, 68% were age 60 and above. Deaths attributed to lung disease, diabetes and hypertension increase more than 50 percent during heat waves.

Heat stroke occurs 15% more frequently in people ages 60 and older than in younger persons. It is also an accepted medical fact that infants and children up to five years of age are very sensitive to the effects of high temperatures and rely on others to regulate their environment. The following requirements must be followed:

- An approved waiver is required from ADOH.
- WPN 22-7 attachment A knowledge is required.
- Evaporative Cooling is a H&S measure and does not require a waiver unless exceeding the \$2000 threshold.
- Size of unit must be decided using Manual J.
- If a unit is operable but deemed unsafe, it must be repaired, replaced, rendered inoperable or deferral is required.

All mobile home, fuel burning, heat producing appliances except for ranges and ovens must be vented to the outside and draw their combustion air from outside.

Air conditioning is the number one protective factor against heat-related illness and death affecting people with health issues. Therefore, air conditioning system replacement, repair or installation are categorized as allowable H&S measures in homes with occupants under six years old, over 59 years old and/or where there are at-risk occupants. First, air conditioning system replacement, repair or installation must be attempted through cost justification as an ECM, before using H&S funding. All replacement of HVAC equipment shall first be modeled in REM Design to attempt a SIR of 1 or greater prior to being installed as a H&S measure.

Houses with occupants between the ages of 6-59, requesting the need for air conditioning based on health risk, must provide a letter from a doctor defining said health risk that requires an air conditioned environment and the maximum allowable air temperature relevant to that person's individual condition.

Rental Property Exception:

Air conditioning units cannot be installed on rental properties, as it is the responsibility of the Landlord pursuant to the Arizona Landlord Tenant Act.

Repair of all combustible fuel line leaks from the meter or tank to the heating system or appliance are allowable H&S measures. Materials must meet federal, state, and local code. In the living area, the only allowable H&S costs are of gas cooking appliances to eliminate gas leaks and reduce unsafe levels of carbon monoxide. Repair materials must meet federal, state and local code. Installation of protective materials on combustible surfaces adjacent to energy systems to meet National Fire Protection Association (NFPA) clearance codes are allowable H&S costs. Materials and installation must meet NFPA specifications. Materials must meet federal, state and local code.

Heating Systems

Heating systems repaired or replaced under H&S are non-operational or unsafe. This measure occurs in order to eliminate unsafe levels of carbon monoxide in the living area and to ensure adequate heating. Justification documentation in the form of the appropriate heat system checklist (per energy source) which includes all required diagnostic recordings for the individual unit, and photos demonstrating the specific issue(s) with the system must be retained in the client file. For replacement of operational units, where diagnostic readings are attainable, cost justification as a ECM must be attempted, to use regular weatherization funds with an SIR>1 before using H&S funds. Replacement through cost justification as an ECM must be attempted on a unit with a cracked heat exchanger, where diagnostic readings are attainable, prior to using H&S funding. Replacement of non-operational units only occur under H&S funding.

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Unsafe or Non-Functioning Secondary Heating Systems

- Secondary unvented units that conform to the safety standards of ANSI Z21.11.2 may remain as back-up heat sources.
- Secondary unvented units that do not meet ANSI Z21.11.2 must be removed and properly disposed of prior to weatherization but may remain until a replacement heating system is in place.
- Repair or replacement of secondary unvented units is not allowed.
- Secondary unvented units that meet the ANSI Z21.11.2, but are not operating safely, must be removed and properly disposed of.
- WPN 22-7 attachment A knowledge is required.

Solid Fuel Heating (Wood Stoves, etc.)

The weatherization agency must inspect the stove, chimney and flue for proper operation. Combustion zone depressurization (CAZ) testing is required per WAP standards.

Maintenance, repair, and replacement of primary indoor heating units is allowed where occupant health and safety is a concern. Maintenance and repair of secondary heating units are allowed. Replacement of secondary heating units is not allowed. This system must be operational and inspected before any other WAP work begins.

Stand Alone Electric Heaters

Stand-alone electric heaters are defined as heaters that do not have a permanent connection to electric power or stand-alone heaters that have been connected to the power supply against code. Repair, replacement or installation is not allowed. Removal is recommended. Circuitry must be checked by a licensed electrician, to ensure there is adequate power supply for existing space heaters.

Clients must be informed of the hazards associated with these types of heaters and the WAP agency must collect a signed waiver from the client if removal is not allowed.

Space Heaters, Unvented Combustion

Unvented combustion space heaters are not considered a primary heat source. Removal is required, except as secondary heat source and where the unit conforms to ANSI Z21.11.2. Units that do not meet ANSI Z21.11.2 must be removed prior to weatherization but may remain until a replacement heating system is set up. Testing for air-free carbon monoxide (CO) is an allowable expense per WAP standards. All units must have an ANSI Z21.11.2 label.

The client must be informed of the dangers of unvented space heaters, as CO, Moisture, NO₂, can be dangerous even if CO alarm does not sound. The replacement system must be inspected, operational and combustion tested per WAP standard test protocols before any other weatherization work begins

Space Heaters, Vented Combustion

These units will be treated as furnaces and test in the same manner as furnaces during an evaluation. The replacement system must be inspected, operational and combustion tested per WAP standard test protocols before any other weatherization begins.

Air Conditioning (AC) & Cooling System

When replacing an AC system that is not justified as an ECM replacement, it is an allowable expense under H&S, for at-risk clients and requires an approved waiver from ADOH WAP. Evaporative Cooling is a H&S measure and does not require a waiver unless exceeding the \$2000 threshold.

Package Unit Systems:

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When working with a package unit and only one component of that system is inoperable, attempt to service the unit, using H&S funds. If servicing the unit does not work and replacement of the inoperable component is determined to be less economical than the replacement of the entire unit, H&S funds may be used. Prior approval from ADOH WAP will be required.

The sub-grantee must determine if there are at-risk occupant(s) while ensuring the system is present, operable and performing. Sub-grantees must discuss and provide clients with information on the appropriate use and maintenance of the unit.

Client Education

- Client must be provided paperwork, manuals and warranty information for any installed equipment
- If a new thermostat is installed, the client must be given a tutorial on how to use it.
- Client must be informed on the appropriate use and maintenance requirements of installed equipment.
- If combustible equipment is installed, client must be provided with safety information on how to recognize depressurization.

Training

- WAP Boot Camp (refer to section 1.0 for description of training curriculum)
- Building Performance Institute- Building Analyst (BPI BA)
- Installers must meet the requirements for the state of Arizona on licensing, certifications, and contracting.
- Installers must have training on building science principles including CAZ depressurization testing and inspection.

Appliances and Water Heaters

Replacement of water heaters is allowed on a case-by-case basis. The replacement of a water heater is an allowable cost under H&S when it cannot be replaced as an ECM, under one or both of the following conditions:

- When high CO levels or drafting issues cannot be resolved on the old unit
- When the cost of repair exceeds the cost of replacement; or if the broken water heater is more than 10 years old.

Pictures of the old and new water heater must be obtained in the client file.

Provide information and explanation on appropriate use and maintenance to the client, after installation. The sub-grantee or contractor must have the old appliances and/or water heater disposed of.

Replacement and installation of appliances other than water heaters (such as stoves or washing machines) are not allowable under H&S.

Asbestos

Asbestos found inside of the dwelling that needs addressing, directly or incidentally, is not allowable under H&S. Testing by an Asbestos Laws and Regulations Act (AHERA) professional for Asbestos is an allowable H&S cost. However, abatement of asbestos is not an allowable H&S cost. Policies have been in effect for asbestos presence and related work practices for many years. The approach is not to disturb, cut or drill contaminated material and avoid those measures that might do so. In instances where measures can be completed without disturbing asbestos surfaces or materials, that approach should be

used. In instances where a local authority, such as code enforcement, imposes specific guidelines or requirements, program staff are to make themselves aware of those restrictions and comply.

Prior to drilling or cutting an exterior wall, inspect the subsurface asbestos. If it is determined that weatherization work cannot be performed without creating a hazard, the project must be deferred. The client must be informed in writing of the potential hazard and the agency must not return to weatherize until an AHERA certified professional issues a clearance statement. Retain a copy of this statement/report in the client file.

Testing Protocols

- 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. This is an allowable H&S cost.

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.
- Notify client in writing of results, if testing was performed. A copy of the letter must be put in the client file.

Training and Certification Requirements

- WAP Boot Camp (refer to section 1.0 for description of training curriculum)
- Licensing/certification for removal and reinstallation of asbestos siding if required by AHJ

Vermiculite

When vermiculite is present, unless testing determines otherwise, the unit is to be deferred. Where blower door tests are performed, prior to asbestos free vermiculite certification, it is a best practice to perform pressurization instead of depressurization. Encapsulation by an appropriately trained professional is allowed. However asbestos encapsulation and/or removal costs are not reimbursable by the ADOH WAP.

Testing Protocols

- AHERA sample collection and testing must be conducted by a certified tester.
- Baseline environmental asbestos sampling is an allowable cost. Instruct clients, in writing, not to disturb suspected ACM.
- Provide asbestos safety information to the client.
- Notify client in writing of results, if testing was performed. A copy of the letter must be put in the client file.

Client Education

- Instruct clients, in writing, not to disturb suspected ACM.
- Provide asbestos safety information to the client.
- Notify client in writing of results, if testing was performed. A copy of the letter must be put in the client file.

Training and Certification Requirements

- AHERA or state certification to conduct testing

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- AHERA or other appropriate asbestos control professional certification/training for encapsulation

Pipes, Furnaces, Other Small Covered Surfaces

Assume asbestos is present in the covering materials. Encapsulation is allowed by an AHERA asbestos control professional and should be conducted prior to blower door testing. Removal may be allowed by an AHERA asbestos control professional on a case-by-case basis with prior approval from ADOH..

Testing Protocols

- 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.
- Notify client in writing of results, if testing was performed. A copy of the letter must be put in the client file.

Training and Certification Requirements

- WAP Boot Camp (refer to section 1.0 for description of training curriculum)
- AHERA or other appropriate asbestos control professional certification/training is required to abate the ACM

Biologicals and Unsanitary Conditions – odors, mustiness, bacteria, viruses, raw sewage, rotting wood, etc.

A sensory inspection is required. The client must be informed of any observed conditions. Clients must be provided information and explanation on how to maintain a sanitary home and steps to correct deferral conditions, if applicable.

Remediation of conditions that may lead to and/or promote biological concerns and unsanitary conditions is an allowable expense up to \$300.00. Addressing bacteria and viruses and/or cleaning or repairing biological and unsanitary conditions to perform weatherization is **not** an allowable cost. Deferral may be necessary in cases where a known agent is present in the home that may create a serious risk to occupants or weatherization workers. Also, see Mold and Moisture bullet below.

Testing Protocols

- Sensory inspection.

Client Education

- Inform client in writing of observed conditions.
- Provide information on how to maintain a sanitary home.

Training

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- WAP Boot Camp (refer to section 1.0 for description of training curriculum)

Building Structure and Roofing

Site conditions identified and documented by the Initial Auditor, which pose a safety hazard to its employees and subcontractors and cannot be corrected within the scope of the program, may result in a deferral. Evaluate building structure & roofing visually so that no existing conditions are disturbed.

Building Structure – Structural problems with dwellings often lead to deferral because the scope is beyond the means of the program to treat. Beyond simple incidental repairs, such as roof patching, there is no feasible means to address severe structural defects.

During the pre-inspection or initial audit/inspection of the dwelling, the auditor must have access to all aspects of the structure to ensure that adequate data is gathered for the REM energy audit, and/or to conduct the weatherization work. Items such as clothing, dogs, trash or other impediments restricting access to any portion or portions of the dwelling that blocks necessary access may constitute a deferral.

Building rehabilitation is beyond the scope of the WAP. H&S funds should not be used when the repair is a component of an ECM. In that case, the repair should be cost justified as an incidental repair. Clients must be notified of structurally comprised areas, if applicable.

Minor/Allowable Structure and Roofing Repairs

Repairs that cannot be included in the ECM and do not exceed \$300. These repairs are recognized as a H&S issue when it puts the client, sub-grantee, or contractor at risk of harm. This would include (but not limited to):

- Unsafe entry stairs
- Minor roof leaks to prevent mold
- Inoperable/broken entry doors

Code Compliance

Correction of pre-existing code compliance issues is not an allowable cost unless generated because of a completed weatherization measure. State and local (or jurisdiction having authority) codes must be followed while installing weatherization measures. Condemned properties and properties where “red tagged” H&S conditions exist that cannot be corrected under this guidance should be deferred. If a permit is required for weatherization work to be completed and the local jurisdiction requires additional measures for code compliance due to permit being pulled, those measures are allowable costs. Depending on the jurisdiction and the codes applicable to the area, a permit may be required. The contractor performing the work would be responsible to understand and be fully aware of the code requirements and when a permit would be necessary.

Clients must be notified of observed code compliance issues, if applicable. H&S funds should not be used when the repair is a component of an ECM, such as fixing a light fixture in order to install a LED/CFL bulb. These costs should be cost justified as an ECM with the associated incidental repair.

As Arizona is a home rule and sub-grantees and energy auditors are not certified code officials, state code compliance is very complicated. Knowledge of codes in each area is essential in performing weatherization work. Each sub-grantee should reach out the AHJ’s for their area for proper code compliance details. Ultimately, it is the responsibility of the licensed contractor to know and acquire applicable permits pertinent to their trade as/if required per locality.

Combustion Gases

Proper venting to the outside for combustion appliances, including gas dryers is required. Correction of venting is allowed when testing or inspection indicates a problem. Combustion safety testing is required when combustion appliances are present.

Correction of venting issues shall be completed and should be done as an incidental repair when it is a component of an ECM. Proper venting to the outside for combustion appliances, including gas dryers is required. Combustion safety testing is required when combustion appliances are present. Inspections by the auditor as listed above must include:

- Combustion safety testing is required when combustion appliances are present.
- Proper venting to the outside for combustion appliances, including gas dryers, furnaces, vented space heaters and water heaters is required.
 - Correct venting when testing indicates a problem.
 - Inspect venting of combustion appliances and confirm adequate clearances.
- Inspection of cooking burners for operability and flame quality.
 - Repair of cooking burners is an allowable H&S cost if CO readings are high and/or another H&S concern is found. Replacement of cook stoves is not an allowable cost.
- Testing by approved WAP procedures of ambient air in combustion appliance zones & undiluted flue on applicable appliances are above the allowable limits.
- 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 State Plan or Technical Field Guide.
- 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).

Crews should address any issue(s) that they are qualified to repair and are an allowable expense(s). If unable to repair, they must have a qualified individual complete the work. Follow BPI standards on combustion safety and protocols. When CO issues arise, crews should follow BPI standards on action levels and protocols.

Ambient Combustion Safety Test Action Levels <i>*CO testing is started at time of entry to the home</i>	
CO Test Results*	Retrofit Action
9-35 ppm	Open windows and doors, determine source, service unit
36-69 ppm	Open windows and doors, disable responsible appliance, service unit
>69 ppm	Terminate inspection. Evacuate building, call emergency services from outside the home

CO Thresholds for Fossil-Fuel Fired Combustion Appliances <i>*CO testing is started steady state</i>		
Appliance	Threshold Limit*	Retrofit Action
Central Furnace (all categories)	400 ppm air free	UNACCEPTABLE CO LEVEL: Sub-grantee/contractor must service or replace the appliance. If issue cannot be addressed under the weatherization program, advise the homeowner/occupant that the appliance should be serviced or replaced. Work may not commence until the issue is resolved. Note: If ambient CO levels do not exceed 70 ppm, testing of other appliances and other audit procedures may continue at the discretion of the auditor. ACCEPTABLE CO LEVEL: No action required.
Boiler	400 ppm air free	
Floor Furnace	400 ppm air free	
Gravity Furnace	400 ppm air free	
Wall Furnace (BIV)	200 ppm air free	
Wall Furnace (Direct Vent)	400 ppm air free	
Vented Room Heater	200 ppm air free	
Unvented Room Heater	200 ppm air free	
Water Heater	200 ppm air free	
Oven/Broiler	225 ppm air free	
Clothes Dryer	200 ppm air free	
Refrigerator	400 ppm air free	
Gas Log (gas fireplace)	25 ppm air free	
Gas Log (installed in wood burning fireplace)	400 ppm air free	

Follow BPI standards on CAZ:

Action Levels for Spillage in Combustion Appliances <i>If CAZ zone is lower (more negative) than -3 pa corrective action must be performed to alleviate the condition</i>	
Test Result	Action Required
If greatest CAZ depressurization occurs with the air handler on*	Conduct further analysis of the distribution system to determine if leaky ducts or other HVAC-induced imbalances are the cause of the spillage. If so, recommend distribution system repairs that will reduce or eliminate the CAZ depressurization
If greatest CAZ depressurization occurs with the door to CAZ closed, but is alleviated when door to CAZ is open*	Recommend measures to improve air transfer between the CAZ and the core of the house
If the Cause of spillage has been traced to excessive exhaust** independent of CAZ door position, air handler, or a problem with the flue***	Verify that sufficient combustion air is available per ANSI Z223.1/NFPA 54 for gas-fired appliances and NFPA 31 for oil-fired appliances or recommend verification by a qualified professional And/or Recommend further evaluation/service by a qualified professional to address the venting/combustion air issues
<i>*In the case where both spillage and excessive CO are present, in addition to the specific recommendations above, recommend that the appliance be shut down until it can be serviced by a qualified professional.</i>	

****Refers to exhaust caused by mechanical ventilation and/or other means of exfiltration.**

*****When a recommendation to replace atmospherically-vented combustion equipment inside the pressure boundary is made, and when cost-effective, recommend replacement with direct-vented, or power-vented equipment (or non-combustion equipment, such as a heat pump).**

Client Education

- Provide client with combustion safety and hazards information.
- Clients must be provided with information and an explanation of combustion safety and hazards information, including the importance of using exhaust ventilation when cooking and the importance of keeping burners clean to limit the production of CO.

Training

- WAP Boot Camp (refer to section 1.0 for description of training curriculum)
- BPI BA

Electrical (Not Knob-and Tube Wiring)

Minor electrical repairs, under \$300, are allowed where H&S of the occupant(s) is at risk. Upgrades and repairs are allowed when necessary to perform specific weatherization measures (such as relocating an electrical outlet to allow a dryer to be relocated to ensure proper ventilation or proper connection of an existing water heater). Other examples include, but are not limited to installing a GFCI in bathroom outlets; replacement of wall outlets that are broken; replacement of bad breakers.

- When the H&S of the occupant/worker(s) is at risk, minor repairs are allowed when necessary for weatherization measures or the health and safety of the occupant(s), such as
 - Installation of a GFCI in wet locations
 - Replacement of wall outlets that are broken
 - Replacement of bad breakers
 - Relocating an electrical outlet to allow a dryer to be relocated to ensure proper ventilation.
- When addressing homes with knob and tube wiring:
 - Evaluate and if necessary provide sufficient over-current protection
 - Voltage drop and voltage detection testing are allowable costs when determining conditions of wiring.
 - Damming is required prior to insulating building components containing knob and tube wiring, if not already included in the ECM.

Inspections include

- 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.

Client Education

- Sub-grantees are required to discuss and provide information to the client on the hazards of overloading circuits, basic electrical safety/risks and over current protection.

Training

- WAP Boot Camp (refer to section 1.0 for description of training curriculum)
- BPI BA

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Sub-grantees are required to discuss and provide information to the client on the hazards of overloading circuits, basic electrical safety/risks and over current protection, when applicable. H&S funds should not be used when the repair is a component of an ECM such as a service upgrade to handle increased load of a new HVAC system.

Electrical (Knob-and-Tube Wiring)

If Knob and Tube wiring is present in a home and cannot be replaced under an ECM (like insulation), that home will be a deferral until the wiring can be upgraded to current wiring codes. Any replacement of knob-and-tube wiring must be done by a qualified, licensed electrician. Sub-grantees are encouraged to seek all available programs to assist low-income households.

Sub-grantees are required to discuss and provide information to the client on the hazards of overloading circuits, basic electrical safety/risks and over current protection, if applicable.

Fire Hazards

Current inspection criteria must take into account fire hazards associated with combustion appliances, including clearances and venting systems. Through fuel specific checklists, auditors identify such hazards and scope repairs accordingly, with respect to budgetary and program limitations. Adherence to appropriate NFPA codes when repairing or replacing equipment is required and it minimizes the potential for fire hazards.

Corrections of fire hazards are allowable when necessary, to safely perform weatherization work. Home evaluations include checking for fire hazards during the audit. Clients must be informed of any hazards observed, even if they will not be treated during the weatherization process.

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

Formaldehyde and Volatile Organic Compounds (VOCs) – Formaldehyde, tobacco smoke, thinners, solvents, cleaners, and any other substances capable of negatively impacting indoor air quality must be identified during the initial audit. Basic strategies such as proper storage and ventilation are used to eliminate problems. Air sealing thresholds are maintained so that the presence of these pollutants are not concentrated and allowed to reach toxic levels. However, this is primarily the responsibility of the client. In some cases, deferral may be necessary.

Removal of pollutants is allowable and is required if they pose a risk to workers. If determined, by the auditor, that pollutants pose a risk to workers and removal cannot be performed or is not allowed by the client, the unit must be deferred. Removal of pollutants that are not necessary to perform weatherization (e.g. cleaning old paint cans and oil out of the garages) is not allowed.

Allowable actions:

- Removal of pollutants is allowed and is required if they pose a risk to workers.
- Removal of pollutants that are not necessary to perform weatherization (e.g. cleaning old paint cans and oil out of the garages) is not allowed.
- 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 Protocols:

- Sensory inspection

Client Education:

- Inform client in writing of observed hazardous condition and associated risks.
- If necessary, provide client written materials on safety issues and proper disposal of household pollutants.

Training:

- WAP Boot Camp (refer to section 1.0 for description of training curriculum)

Fuel Leaks

Remediation Protocols:

- When a minor gas leak is found on the utility side of service, the utility service must be contacted before work may proceed. Work can commence when the utility considers it safe.
- Fuel leaks that are the responsibility of the client must be repaired before weatherizing a unit.
- When leaks are discovered during the course of weatherization, that are the responsibility of the utility, temporarily halt work and notify the utility. Work can commence when the utility considers it safe.

Testing:

- Test exposed gas lines for fuel leaks from utility coupling into, and throughout, the home using BPI standards.
- Conduct sensory inspection on bulk fuels to determine if leaks exist.
- If any gas leak is detected, it must be repaired by the responsible party. If it is the client's responsibility, it can be repaired as an incidental repair or H&S.

Client Education:

- Inform clients in writing if fuel leaks are detected.

Training:

- WAP Boot Camp (refer to section 1.0 for description of training curriculum)
- BPI BA

Repairs that cannot be included in the ECM and do not exceed \$300 are considered "beyond the scope of weatherization". These items can either be addressed by other fund sources or allowable weatherization work must be deferred until the issues are addressed.

Gas Ovens/Stovetops/Ranges

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

Testing:

- Test gas ovens for CO.
- Inspect cooking burners and ovens for operability and flame quality.
- Follow BPI standards on combustion safety and protocols. (See the combustion table above)

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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:

- WAP Boot Camp (refer to section 1.0 for description of training curriculum)
- BPI BA

Hazardous Materials Disposal [Lead, Refrigerant, Asbestos, Mercury (including CFL's/Fluorecents), etc.]

Refrigerant

Refrigerators may be replaced as an ECM only. All reclaimed refrigerant processes must follow the Clean Air Act 1990, section 608, as amended by 40 CFR82, 5/14/93. All EPA testing protocols must apply to any testing. Clients are to be advised not to disturb refrigerant. Anyone working with refrigerant, within or employed by the WAP, must have the appropriate training, either an EPA-approved section 608 type I or universal certification. For any appliance that contains refrigerant, disposal must include refrigerant reclamation.

Non-certified technicians may not attach or disconnect hoses of gauges to measure pressure within the appliances, top-off or remove refrigerant from appliances or otherwise damage the integrity of the appliance.

Appliances and mechanical equipment to be replaced must be properly removed from the project site, refrigerant must be properly evacuated per EPA requirements, and all items must be properly disposed of and removed from the energy grid/system permanently. Record/documentation of these steps must be available and provided upon request. It would be considered best practice to retain disposal information/documentation in each client file.

Client Education:

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

Training:

- WAP Boot Camp (refer to section 1.0 for description of training curriculum)
 - Appropriate Personal Protective Equipment (PPE) for working with hazardous waste materials.
 - Disposal requirements and locations.
 - Health and environmental risks related to hazardous materials.
- Workers are required to have Safety Data Sheet (SDS) Training.
- LEAD Renovation, Repair and Paint (RRP)

Disposal Procedures and Documentation Requirements:

- 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.

Injury Prevention of Occupants and Weatherization Workers – Measures such as repairing stairs and replacing handrails

Workers must take all reasonable precautions when working on homes that will subject workers or occupant(s) to health and/or safety risks. Minor repairs and installation may be done when necessary, to effectively weatherize the home. Otherwise, these types of measures are not permissible. The auditors and workers on a job should observe if dangers that may prevent completion of the weatherization work are present. If applicable, clients must be informed of any observed hazards and associated risks. Repairs that cannot be included in the ECM and do not exceed \$300 are defined as “minor” or allowable injury prevention measures. Items and measures that exceed this provision must be addressed with other fund sources that allow for such items/measures or the project must be deferred until said measures have been repaired or corrected.

- When necessary to effectively weatherize the home, workers may make minor repairs and installations, such as, but not limited to:
 - Unsafe entry stairs
 - Loose or broken hand rails
 - Trip/fall hazards
- Inspect for dangers that would prevent weatherization.
- If conditions will not be repaired, inform client in writing of observed hazards and associated risks.

Training:

- WAP Boot Camp (refer to section 1.0 for description of training curriculum)
- OSHA 10

Lead Based Paint

The cost of lead paint abatement is not an allowable expense. However, the cost to test building materials for the presence of lead paint and the cost of taking precautions needed to prevent contamination while weatherizing are allowable expenses. Lead-based paint (LBP) was used on the majority of houses built before 1978. Therefore, it is probable that LBP will be present on pre-1978 homes to be weatherized. If lead-based paint might be disturbed (cut, scraped, sawn, drilled, etc.) during the weatherization work, that work must be done in a "lead-safe" manner. Arizona will follow the approach defined by the Environmental Protection Agency (EPA) under their Lead Renovation, Repair, and Painting Rule.

Read about lead-hazard information for renovation, repair and painting activities in the EPA lead hazard information pamphlet [Renovate Right: Important Lead Hazard Information for Families, Child Care Providers, and Schools](#) (PDF) (11 pp, 1.1MB) | [en Español](#) (PDF) (11 pp, 2.4MB)

All providers are required to provide a copy of "Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools" to an adult occupant prior to work commencing on the home. The auditor will also conduct a client education segment of the initial inspection to ensure that the occupants are fully aware of the hazards posed by lead based paint exposure. This procedure must be documented by a written acknowledgement that an adult occupant has received the brochure and that the information was not only distributed, but also explained. Or, certify in writing that a brochure has been delivered to an adult occupant and the provider has been unsuccessful in obtaining a written acknowledgement, as directed in the publication. Obtain confirmation of receipt of this brochure by the client, in the client file.

State policy mandates that all workers on site of any weatherization project, whether they be a crew based; employee(s) of one of the sub-contractors; or a private sector contractor, must complete an eight (8) hour Lead Safe Worker Practices Workshop. New staff will be required to attend the training within 180 days of their start date of employment in the WAP. The purpose of this course is to inform the worker about lead hazards and the proper ways to deal with them. All crews and contractors are required to carry

a High-Efficiency Particulate Air (HEPA) vacuum; respirators; disposable bio suits; and follow all other safe lead work practices, including:

- Wear a tight fitting respirator and disposable coveralls.
- Seal work areas within a home using tape and plastic. Cover furniture, carpet, and other surfaces with plastic drop cloths or tarps.
- Spray water on disturbed areas to minimize dust.
- Clean-up work area each day. Sweep carefully and wet mop, as needed. Use a HEPA vacuum cleaner to collect dust and paint chips.
- Keep children away from work area at all times.

While this represents only a summary of the overall Lead Safe Practices and training, it illustrates ADOH WAP awareness of the issue and how it is essential to any weatherization project.

Because Lead Safe Weatherization work practices only occur due to health and safety concerns and cannot be considered as part of an efficiency measure, it shall always be calculated and charged as a H&S cost.

ADOH WAP monitoring staff will have oversight responsibility in this area. While lead safe work practices have long been part of the program, the monitors will focus more directly on this area as they conduct their monitoring visits. Sub-grantees will be required to show that all lead based paint protocols are up to date and in compliance to all regulations, including: information sharing; lead safe work practices; proper equipment; etc. While monitoring, ADOH WAP will write up any sub-grantee performing weatherization services without working lead safe practices on any home built prior to 1978. The sub-grantees that are not in compliance will be required to attend the WAP Boot Camp Course, offered by the Southwest Building Science and Training Center (SWBSTC), which includes Lead Safe Weatherization (LSW) information. Failure to comply and correct there practices for lead safe weatherization could result in reduced allocation or termination of ADOH WAP contract with the sub-grantee.

Sub-grantees must follow EPA's Lead Renovation, Repair and Painting (RRP Rule). In addition to RRP Rule, ADOH WAP requires that all weatherization crews working on pre-1978 homes, be trained in LSW. Arizona's Deferral Policy will be used in instances where the homeowner or Landlord has notified the sub-grantee of existing lead paint issues where lead poisoning has occurred to a member of the household, or when the extent and condition of lead-based paint in the house would potentially create further health and safety hazards. This policy requires possible referral to other programs

Arizona's status is: All sub-grantees have applied for and received Lead Renovator Firm status. All auditors have acquired Lead Renovator Certification (RRP) as well as select crew leaders. Additionally, private contractors (excluding HVAC and Plumbers) have also applied for and received Lead Renovator Firm status, as required by ADOH WAP. Private contractors have also met the requirement of having adequate RRP certified employees. Arizona met the EPA requirements by the April 2010 deadline. As new contractors apply to work on ADOH WAP projects, the EPA requirements are explained during the application process. No private contractors will be awarded work on any pre-1978 dwellings that do not meet the EPA rules.

Private contractors will be required to furnish proof of RRP and Lead Renovator Firm status as a condition of working for the ADOH WAP program. The ADOH WAP staff will routinely check that documentation is on file at each agency verifying compliance to EPA rules.

All weatherization crews working on pre-1978 homes must receive the 8 hour LSW training and a certified renovator must be assigned to the project and be readily available.

ADOH WAP Monitor(s)/Trainer(s) must be certified renovators and receive the 8-hour LSW training.

An adult of each household receives the informational pamphlet: "Renovating Right". The inspector also conducts a client education segment as part of the initial inspection to assure that the occupant(s) understand the hazards posed by lead based paint exposure.

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The RRP requirements of client education apply. The agencies must give the client a copy of the EPA publication: July 2011 Edition of: ***The Lead-Safe Certified Guide to Renovate Right Pamphlet*** and have the client sign-off that the pamphlet was received. The signed form must be obtained in the client file.

The certified renovator must be physically present at the work site while signs are being posted; containment is being established; and the work area is being cleaned after the renovation to ensure that these tasks are performed correctly. Although the certified renovator is not required to be on-site at all times, a certified renovator must direct the work being performed, to ensure that the work practices are being followed correctly. When a certified renovator is not physically present at the work site, the workers must have access to contact the renovator. The certified renovator must perform the post-renovation cleaning verification.

Safe Work Protocols:

- 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. Whole house remediation is not an allowable cost.
- 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
 - photos of site and containment set up (include the location of photos referenced if not in file)
- All crews and contractors are required to:
 - Carry a High-Efficiency Particulate Air (HEPA) vacuum.
 - Wear a tight fitting respirator and disposable coveralls.
 - Seal work areas within a home using tape and plastic. Cover furniture, carpet, and other surfaces with plastic drop cloths or tarps.
 - Spray water on disturbed areas to minimize dust.
 - Clean-up work area each day. Sweep carefully and wet mop, as needed. Use a HEPA vacuum cleaner to collect dust and paint chips.
 - Keep children away from work area at all times.

Testing Protocols:

- 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 i.e. test swabs.
- 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.
- Provide a copy of "Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools" to an adult occupant prior to work commencing on the home, within the EPA guidelines. Written acknowledgement must be received.

Training and Certification Requirements:

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- 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. An EPA Certified Renovator must oversee the installation.
- Grantee Monitors and Inspectors must be Certified Renovators.
- Any agency/contractor that works in a pre-1978 home must be a Lead Certified Firm.
- WAP Boot Camp, including Lead Safe Weatherization (refer to section 1.0 for description of training curriculum)
- Lead RRP Certification

Documentation Requirements:

- Sub-grantees will be required to show that all lead based paint protocols are up to date and in compliance to all regulations, including:
 - Client communication
 - Lead safe work practices
 - Proper equipment including (but not limited to):
 - Tyvek Suit
 - Booties
 - Respirators
 - Hoods
 - Goggles
 - Tack pad

Mold and Moisture

The WAP does not encompass mold remediation. WAP funds are not to be used to test; abate; remediate; purchase insurance; or alleviate existing mold conditions identified during the assessment, the work performance period or the quality control inspection (QCI). Where multiple funding sources are used, the performance of any of the aforementioned activities must be expensed to a non-DOE funding source. Most typically, weatherization services are delayed. All local agencies must include notification or a disclaimer to the client upon the discovery of a mold condition. Also, if corrected provide clarification on what was specifically done to the home to alleviate the condition and/or that the work performed should not promote new mold growth.

Where existing mold could pose a health risk to the occupants and/or the weatherization crew, DOE funds may be used to correct energy-related conditions to guarantee the immediate health of workers and clients. Limited water damage repairs can be addressed if it is in connection with the correction of moisture and mold creating conditions that are allowed when necessary in order to weatherize the home and to ensure the long-term stability and durability of the measures. Weatherization of a home, and air sealing in particular, could potentially increase the risk of moisture and mold in a home, resulting in structural damage and/or a health risk to the occupants. Extreme caution should be taken not to increase mold or moisture issues when weatherization work is performed. Where severe mold and moisture issues cannot be addressed, deferral is required.

In Arizona, the following protocols have been adopted to ensure that these risks are minimized during weatherization.

- 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 clean-up 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.
- Mold testing is not an allowable cost.

Inspecting includes, (not limited to):

- Visual assessment including exterior drainage.

The use of diagnostic tools, such as moisture meters, are recommended at pre-weatherization and at the final inspection.

A) Moisture Assessment

All homes should be checked for previous or existing moisture problems. Mold issues in homes arise from conditions of excess moisture. During the initial audit, auditors must assess the home with special attention to the following signs: evidence of condensation on windows and walls indicated by stains or mold; standing water; water stains; if supply or waste pipes are leaking; if attic roof sheathing shows signs of mold or mildew; etc. Identification of any existing or potential moisture problems shall be documented in the client file.

If existing moisture problems are found, no air sealing should be done unless the source of the moisture can be substantially reduced or effective mechanical ventilation can be added to cost effectively remove the moisture. In some cases, air sealing must be done in order to reduce the source of the moisture (i.e. sealing off crawlspaces from the house, or sealing attic leakage to eliminate condensation on the roof deck). Because air tightening may cause an increase in relative humidity, client education should include information about moisture problems and possible solutions. Any low-cost measures that help reduce the humidity levels in the house should be installed. Some examples of these low-cost measures include but are not limited to:

- venting dryers;
- venting existing bath exhaust fans;
- venting existing kitchen exhaust fans

B) Repair or Elimination of Moisture Problems

Repair of moisture problems that might result in health problems for the client; damage the structure over the short-term or long-term; or diminish the effectiveness of the weatherization measures must be done before the job is completed. Repairs that cannot be included in the ECM and do not exceed \$300 are defined as “minor” or allowable moisture-related measures. Moisture problems can be reduced or eliminated by controlling the source of the moisture. Some examples of these measures include but are not limited to:

- venting dryers to the outside of the building;
- providing positive drainage away from foundation (unless only a small area needs to be addressed, regarding the foundation perimeter which is not allowed);
- repairing small roof leaks and flashing issues
- educating the client about the sources of moisture that they can control
- Moisture problems can be reduced or eliminated by ventilating areas where excessive moisture is produced, such as bathrooms and kitchens. This should include installation of a high quality exhaust fan in the subject area and informing the client of the related moisture issues and the proper operation and use of the fan.

Major moisture problems that cannot be corrected within the scope of the program include, but are not limited to:

- an enclosed crawlspace or basement that has standing water for 24 hours due to inadequate ground or surface water drainage;
- any building with no overhangs and no gutters, exhibiting signs of major moisture problems such as blistering paint and extensive mold/mildew on the inside of the house;

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- needing to regrade foundation perimeter to create opposite water flow away from the foundation

Client Education:

The clients must be provided with a disclaimer on mold and moisture awareness.

The EPA publication, "A Brief Guide to Mold, Moisture, and Your Home", is available in [HTML](#) and PDF formats in English ([PDF](#), 20 pp., 257 K) and Spanish ([PDF](#), 20 pp., 796 K). The Guide provides information and guidance for homeowners and renters on how to clean up residential mold problems and how to prevent mold growth.

- Provide client written notification and disclaimer on mold and moisture awareness.
- Provide information, when necessary, on the following (not limited to):
 - The importance of cleaning and maintaining drainage systems.
 - Proper landscape design and how this impacts site drainage and moisture control.
 - Proper bathroom ventilation to release humidity and moisture.

Training:

- WAP Boot Camp (refer to section 1.0 for description of training curriculum)

Drainage – gutters, down spouts, extensions, flashing, sump pumps, landscapes, etc.

Drainage repairs are allowed with H&S funds only as they relate to code compliance. A repair is allowed as incidental repair when it is a component of an efficiency measure, but must be cost justified with the ECM(s).

Major drainage issues are beyond the scope of the WAP. Homes with conditions that may create a serious health concern and require more than incidental repair should be deferred. See Mold and Moisture bullet below.

What are major drainage issues?

- where there is a need for excavating equipment
- when installing gutters on more than half the home is necessary
- when dirt is required to be moved in an area of more than 40 square feet

Clients must be provided information and an explanation of the importance of cleaning and maintaining drainage systems, as well as the benefits of landscape design, if applicable.

Pests

If any pest infestation is found within the dwelling or in any area outside of the dwelling where workers would have to be in order to perform weatherization work, pest control is an allowable expense. The cost of pest control cannot exceed \$300. If the cost is greater than that amount, the home will need to be deferred until the problem is resolved. (Pests include, but are not limited to: fleas, roaches, rodents, etc. Clients must be informed of conditions observed and the risks associated.

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:

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

Client Education:

- Inform client in writing of observed condition and associated risks.

Training:

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

Radon

Whenever site conditions permit, exposed dirt within the thermal/pressure boundary of the home must be covered with a vapor barrier. In homes where radon may be present, precautions shall be taken to reduce the likelihood of making radon issues worse. In extreme cases, deferral may be required.

In the State of Arizona, Radon testing or remediation is not an allowable H&S measure. Clients must be provided with the EPA consumer's guide to radon.

- 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 shall 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
 - Isolating the basement from the conditioned space
 - Ensuring crawl space venting is installed.
- Sump well/pits must be covered with airtight covers (if applicable).

Testing:

- In the State of Arizona, radon testing and/or remediation is not an allowable H&S measure.

Client Education:

- Provide all clients with the EPA's "A Citizen's Guide to Radon" and inform them of radon related risks. Confirmation that the EPA's "A Citizen's Guide to Radon" was received must be in the client file.
- If other funds are used for testing, 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

Training and Certification Requirements:

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- WAP Boot Camp (refer to section 1.0 for description of training curriculum)
- A zonal map can be located at <http://www.epa.gov/radon/pdfs/zonemapcolor.pdf>
- EPA Healthy Indoor Environment Protocols

Documentation Requirements:

- Confirmation that the EPA's "A Citizen's Guide to Radon" was received must be in the client file.

Safety Devices: Smoke, Carbon Monoxide Alarms, and Fire Extinguishers

1. All homes must have a CO detector installed per ASHRAE 62.2-2016 standard.
2. WAP agencies must install smoke alarms in dwelling units where these devices are non-existent or non-functioning.
3. CO alarms must be, UL listed, installed in accordance with the manufacturer's recommendations and located in compliance with state and local building codes and must have the capability to accurately detect and display low levels of carbon monoxide to 10 ppm and comply with other program requirements.

Local agencies must provide the occupants of the dwelling unit with verbal and written information regarding the following:

- A. dangers of CO and smoke;
 - B. how to operate and reset the CO and smoke alarms;
 - C. how to read the CO alarm if there is a digital display;
 - D. how to respond to CO levels above 10 ppm;
 - The most common symptoms of CO poisoning are headache, dizziness, weakness, nausea, vomiting, chest pain, and confusion.
 - If the above symptoms are present shut off gas appliances, open windows and doors, get out of the home, seek medical help (if needed) and call a repair person.
 - E. how to change the batteries of CO and smoke alarms
4. Smoke alarms must be, installed in accordance with the manufacturer's recommendations, listed in accordance with UL 217, comply with NFPA 72 and other program requirements.
 5. Where multiple smoke alarms are required interconnection is required. Activation of any one smoke alarm shall activate all of the alarms in the individual unit. Hard wiring and interconnection is not required in existing areas provided:
 - A. The alteration or repair does not cause the removal of wall or ceiling finishes exposing the structure, and
 - B. No attic, crawl or basement is available which can provide access for hard wiring and interconnection without the removal of interior finishes.
 6. On average no more than two smoke alarms will be installed in a home unless a permit is pulled and code compliance for the municipality states differently
 7. Supplying a fire extinguisher is allowed only when solid fuel is present. Fire extinguishers must be installed, according to the manufactures recommendations, be type ABC, UL listed, ≤ 10lb and with a permanently affixed wall bracket to receive the extinguisher. The client must sign a written agreement to allow fire extinguisher installation in the home within sight of the solid fuel burning heat system when standing at the unit. The agency must discuss and provide information on the use and upkeep of the extinguisher to the client.

Testing:

- Check existing alarms for operation. If they fail to operate properly, they must be replaced.
- Verify operation of installed alarms.

Client Education:

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

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Training:

- WAP Boot Camp (refer to section 1.0 for description of training curriculum)
- Each sub-grantee should reach out the AHJ's for their area for proper code compliance details.

Occupant Health and Safety Concerns and Conditions

Workers must follow OSHA standards and OSHA Hazard Communication Standard (HCS) Safety Data Sheets (SDS) and take precautions to ensure the health and safety of themselves and other workers. SDS must be posted wherever workers may be exposed to hazardous materials. Sub-grantee and contractors will be monitored for OSHA compliance during grantee field monitoring visits. However, as ADOH WAP is not an enforcement agency, grantee staff can only document any violations observed and provide on-site training.

Special consideration should be given to at-risk clients. At risk clients include but are not limited to children (5 and under); elderly (age 60 and above); person(s) currently under the care of a doctor for asthma or other conditions that could be affected by extreme heat or cold.

The use of Health and Safety Evaluation Form is required to screen occupants to reveal known or suspected health concerns as part of initial assessment/audit.

- If it is determined there is a potential health risk with one or more materials to be used, an alternative material may be substituted if the cost is justified.
- If normal practices of material installation may put the client at-risk, alternative methods may be used. An example is: going through a gable to install insulation instead of going through an interior access point/ attic hatch.
- When a person's health may be at risk and/or WAP work activities could constitute a 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.

OSHA training is an allowable DOE cost. OSHA 10 hour training is required for all workers, including contractors, assessors, and inspectors. OSHA 30 hour training is required for all crew leaders, ADOH WAP monitors and trainers. All new employees must obtain OSHA 10 or OSHA 30, depending on their position, within 180 days of employment. Any accredited training can be obtained. Below are some suggestions:

Classroom Training for OSHA 10 and OSHA 30:

1. Southwest Building Science Training Center (SWBSTC)

Online Training: (OSHA has accepted the below sites for online outreach training. We suggest that you sample them before choosing.)

Construction 10 hour

1. [Advance Online](#)
2. [Click Safety](#) (also Roadway, Cal-OSHA, and Spanish)
3. [Summit Training Source](#) (also Spanish version)
4. [Pure Safety](#) (also Spanish version)
5. Career Safe - ([Youth](#) and [Corporate](#) versions)

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6. [Redvector](#)
7. [360Training](#)
8. [University of South Florida](#)
9. [Coastal Training Technologies](#)
10. [Turner Construction](#)

Construction 30 hour

1. [Turner Construction](#) (also Spanish version)
2. [Click Safety](#)
3. [360Training](#)
4. [Summit Training Source](#)
5. [University of South Florida](#)
6. [Pure Safety](#)
7. [Advance Online](#)

Verification of safe work practices and in-progress monitoring

- Annual submission to ADOH of Employee Certification Verification Form is required (including OSHA certification(s)).
- ADOH does in-progress monitoring when training and technical assistance is requested.
- During monitoring ADOH staff will verify compliance with the current OSHA Hazard Communication Standard, including on-site organized Safety Data Sheets (SDS).

Training and Certification Requirements:

- WAP Boot Camp (refer to section 1.0 for description of training curriculum)
- Use and importance of Personal Protection Equipment (PPE)
- OSHA 10 hour training
- Ongoing training as required in Hazard Communication Program
- Workers must follow OSHA standards where required and take precautions to ensure the H&S of themselves and other workers.

For other Information on obtaining OSHA classes by an authorized OSHA Outreach Trainer try:

- A. See: www.OutreachTrainers.org to find outreach trainers and/or their schedules
- B. OSHA Education Center: www.osha.gov/dte/edcenters/map.html
- C. The OSHA Consultation office: www.osha.gov/dcsp/smallbusiness/consult_directory.html

Client Education:

- Review Health and Safety Evaluation Form with client and have client sign in acknowledgement. A copy of this signed form should be provided to the client.
- Provide client with Sub-grantee point of contact information in writing so client can inform of any issues.

Spray Polyurethane Foam (SPF)

Use EPA recommendations (available online) 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. Testing will include checking for penetrations in the building envelope. Sensory inspection inside the home for fumes during foam application must also occur.

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The client must be informed of plans to use two-part foam and the precautions that may be necessary. Workers using foam products must receive training on the proper use of these various products and understand the specification for each application type. Documentation evidencing the installers have viewed an installation video or taken online training; and verification of reading and understanding product use information must be kept at the service provider agency. SDS are mandatory for any foam product used and a thorough understanding of the temperature sensitivity of the product in use is required.

Ventilation

Arizona will follow ASHRAE 62.2-2016 to the fullest extent possible. Grantee will require all sub-grantees to have an ASHRAE calculator in the client files demonstrating whether a ventilation system was required; and the CFM requirement. As this is a requirement of DOE, DOE health and safety funds are allowed for this measure. The grantee will require the sub-grantee to explain, to the homeowner, why the ventilation was added and the importance to keeping it.

- Install ventilation as required by ASHRAE 62.2 - 2016.
- 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.

Testing and Field Verification Protocols:

- ASHRAE 62.2 calculator 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:

- WAP Boot Camp (refer to section 1.0 for description of training curriculum)
- ASHRAE 62.2 training, including proper sizing, evaluation of existing and new systems.

Window and Door Replacement, Window Guards

Replacement, repair or installation of doors, windows, or window guards is not an allowable DOE H&S cost. These measures may be allowed as an ECM if cost is justified. If disturbing lead paint, follow LSW practices and the client must be informed on lead risks, as indicated in this H&S plan, when applicable. Window Glass pane is an allowable cost if it is an immediate danger to occupants, if budget permits

Deferrals/Referrals

Deferrals, Referral and/or "walkaways" must be processed accordingly:

- A. The client shall be informed in writing as to why the dwelling cannot be weatherized. If there are conditions that the client must correct before service is available, those conditions must also be stated in writing.
- B. The service provider is required to refer the client to any alternate program such as home rehab, if one is available in the area.

- C. The service provider shall clearly indicate in the client file why the dwelling was given "deferral" status.
- D. The service provider must document all referrals given to other programs or services in the client file.
- E. The client will receive any appropriate information prescribed in the H&S section.

Client Education

This procedure is documented by using a signed receipt from the head of household, which confirms that the information was not only distributed, but also explained. This receipt is kept in the client file. Forms have been developed to document all information discussed and given to the sub-grantees.