Weatherization Grantee Health and Safety Plan Colorado Weatherization Assistance Program

DOE-7908 State Plan

Grantees are encouraged to enter additional information here that does not fit neatly in one of the other sections of this document.

Grantees are encouraged to budget Health & Safety (H&S) costs as 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. Grantees are reminded that, if H&S costs are budgeted and reported under the program operations category rather than the H&S category, the related H&S costs must be included in the calculation of the ACPU and cost-justified through the approved energy audit.

Select which option is used below.

Separate Health and Safety Budget ☒ Contained in Program Operations □

Pursuant to 10 CFR 440.16(h), Grantees must set H&S expenditure limits for their Program, providing justification by explaining the basis for setting these limits and providing related historical experience.

Low percentages should include a statement of what other funding is being used to support H&S costs, while larger percentages will require greater justification and relevant historical support. It is possible that these limits may vary depending upon conditions found in different geographical areas. These limits must be expressed as a percentage of the ACPU. For example, if the ACPU is $5,000, then an average expenditure of $750 per dwelling would equal 15 percent expenditures for H&S.

15 percent is not a limit on H&S expenditures but exceeding this amount will require ample justification. These funds are to be expended by the Program in direct weatherization activities. While required as a percentage of the ACPU, if budgeted separately, the H&S costs are not calculated into the per-house limitation. DOE strongly encourages using the table below in developing justification for the requested H&S budget amount. Each H&S measure the Grantee anticipates addressing with H&S funds should be listed along with an associated cost for each measure, and by using historical data the estimated frequency that each measure is installed over the total production for the year.

It is also recommend reviewing recent budget requests, versus expenditures to see if previous budget estimates have been accurate. The resulting “Total Average H&S Cost per Unit” multiplied by the Grantee’s production estimate in the Annual File should correlate to the H&S budget amount listed in the Grantee’s state plan.

Should a Grantee request to have more than 15 percent of Program Operations used for health and safety purposes, DOE will conduct a secondary level of review. DOE strongly encourages use of this H&S template and matrix to help expedite this process.
**Note:** Water heater tank replacement will be allowed due to unsafe conditions, on a case-by-case basis.

**Note:** The above table captures all regular H&S activities and associated costs that are tracked individually. Measures captured in the H&S Other category above may include H&S activities such as, but not limited to:

1) Natural gas/propane leaks
2) Venting repairs or replacement for combustion appliances
3) Spillage issues on combustion appliances
4) Air leakage at garage/house areas (per ASHRAE requirement)
5) Lead Safe Weatherization (plastic/tenting) for wall or ceiling insulation
6) Plumbing repairs associated with mold or IAQ
7) Exhaust fans (non-ASHRAE)
8) Chimney cleaning/lining
9) Minor repairs to stairs to be able to perform weatherization work
10) Isolation of the sleeping area from the CAZ
11) Burner replacement

<table>
<thead>
<tr>
<th>Measure</th>
<th>Cost</th>
<th>Frequency</th>
<th>Auto Calculates</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS ASHRAE Fan</td>
<td>$483.57</td>
<td>76.8%</td>
<td>$371.09</td>
</tr>
<tr>
<td>HS Furnace/Boiler</td>
<td>$2,168.08</td>
<td>8.5%</td>
<td>$184.02</td>
</tr>
<tr>
<td>HS CO Alarms</td>
<td>$91.59</td>
<td>78.7%</td>
<td>$72.00</td>
</tr>
<tr>
<td>HS Smoke Alarms</td>
<td>$52.77</td>
<td>56.3%</td>
<td>$29.00</td>
</tr>
<tr>
<td>HS Dryer Vent Repair/Installation</td>
<td>$72.09</td>
<td>35.6%</td>
<td>$25.00</td>
</tr>
<tr>
<td>HS Vapor Barrier</td>
<td>$270.15</td>
<td>31.3%</td>
<td>$84.00</td>
</tr>
<tr>
<td>HS Combustion Appliance Repair</td>
<td>$174.02</td>
<td>16.1%</td>
<td>$28.00</td>
</tr>
<tr>
<td>HS Water Heater</td>
<td>$1,407.46</td>
<td>7.5%</td>
<td>$105.00</td>
</tr>
<tr>
<td>HS Other</td>
<td>$38.47</td>
<td>96.2%</td>
<td>$37.00</td>
</tr>
</tbody>
</table>

Total Average H&S Cost Per Unit: $938

Estimated Production (Annual File: IV.2 WAP Production Schedule): 0

Estimated Program Operations Budget: 4,121

H&S Budget (Total Average H&S Cost Per Unit * Estimated Production): $643,649

Requested H&S Percentage Per Unit (H&S Budget/Program Operations): 15.
If Grantees choose to identify any H&S measures as incidental repair measures (IRM), they must be implemented as such under the Grantee’s weatherization program in all cases – meaning, they can never be applied to the H&S budget category. In order to be considered IRMs, 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 and providing protective materials, such as paint, used to seal materials installed under this program. (10 CFR 440 “Definitions”)

Per Colorado Technical Standards, Incidental Repair Measures (IRM) such as minor plumbing to repair a minor leak in a pipe, minor roof leak repair, and minor structural repairs may only be made when necessary to preserve weatherization measures such as insulation. Door and window replacement, repair, and/or installation are not eligible WAP health and safety expenses. They must be qualified as energy efficiency measures for replacement or meet the definition for incidental repair when repaired. In instances where repair or replacement of doors or windows is recommended because the door/window could not otherwise be caulked or weather-stripped effectively this measure should not be billed as a Health and Safety cost; it should be categorized as an IRM. Providing protective materials such as primer or paint to seal and protect the weatherization materials installed shall be categorized as an incidental repair and shall be billed as such. Such materials shall only be allowed to protect weatherization materials installed. They shall not be allowable for cosmetic reasons alone. Incidental Repair Measures must be assessed in a site specific audit and must be associated with an Energy Conservation Measure(s) that has an SIR of 1.0 or greater and the cumulative project SIR must be 1.0 or greater as well.

The CEO WAP does not have a cap for IRMs. The CEO WAP is seeking approval to run IRMs for the PY20-21 provided that the cumulative SIR (one number that includes the combination of IRMs and ECMs SIRs) is 1.0 or greater. This route was chosen because site specific audits are done in Colorado, and many units require IRMs to install ECMs. By using this method, a full assessment of costs and SIRs can be completed for each unit.

Per DOE WPN 12-9 guidance, IRMs are not to be included with the ECMs and since Weatherization is a one-time service, the CEO WAP’s goal has been to provide cost-effective IRMs necessary to install ECMs. In lieu of an IRM dollar amount limitation, the CEO WAP requires that IRMs are cost-effective to install. There is no specific language, but the intent is to allow cost-effective IRMs, based on the electronic energy audit, provided that the State PUA is not exceeded.

Incidental Repair Measure (IRM): is a repair that is necessary for the effective performance or preservation of weatherization materials. IRMs require cost justification through the electronic energy audit and photos in the client file; however, they are not to be included with the cost of an ECM. Written justification for the necessity of the repair must be in the client file and the repair must be associated with an ECM identified on the Recommended Measures Report. Include the documentation in the comments section of the ECM that the IRM is associated with in NEAT or MHEA. Subgrantees determine if incidental repairs are necessary and
cost-effective for the home. Incidental repairs must be listed on NEAT/MHEA recommended measure report and a cumulative SIR (total project) of 1.0 must be maintained.

Deferral of services may be necessary if H&S issues cannot be adequately addressed according to WPN 17-06 guidance. The decision to defer work in a dwelling is difficult but necessary in some cases. This does not mean that assistance will never be available, but that work must be postponed until the problems can be resolved and/or alternative sources of help are found. If, in the judgment of the auditor, any conditions exist which may endanger the health and/or safety of the workers or occupants, the unit should be deferred until the conditions are corrected. Deferral may also be necessary where occupants are uncooperative, abusive, or threatening. Grantees must be specific in their approach and provide the process for clients to be notified in writing of the deferral and what conditions must be met for weatherization to continue. Grantees must also provide a process for the client to appeal the deferral decision to a higher level in the organization.

Grantee has developed a comprehensive written deferral/referral policy that covers both H&S, and other deferral reasons?

| Yes ☑ | No ☐ |

Where can this deferral/referral policy be accessed?

CEO-WAP-406.

Per Colorado’s Health & Safety Plan, a dwelling unit should not be weatherized where there is a major code violation or where there is a potentially harmful situation that may adversely affect the occupants or agency’s weatherization crew and/or other staff. When such issues are found to be present, the owner/occupant is notified verbally and in writing; and, only after the owner corrects the identified issues satisfactorily and to code shall any weatherization work begin. The audit form shall include the client’s name and address, dates of the audit/assessment, date the client was informed, a clear description of the issue(s), a clear description of the condition(s) under which weatherization work could begin/continue, a clear description of the responsibilities of all parties involved, client’s signature(s) indicating that they have been informed of their rights and options and that they understand the issues and their responsibilities.

Deferral conditions may include, but are not limited to:

1. Client/ Access Issues:
   a. The client, or other household member, has known health conditions that prohibit the installation of insulation materials or other weatherization materials.
   b. The client is uncooperative, abusive, hostile, or threatening to the crew, subcontractors, auditors, inspectors, or others who must work on or visit the home or who, based upon the judgment of the senior staff person in the field, makes the working conditions intolerable for workers.
   c. Client cannot be reached at telephone number on file due to the service being disconnected or due to client unavailability. Follow up mail goes unanswered.
   d. Client refuses to allow energy auditor(s) access to all areas of the home necessary to conduct the comprehensive energy audit.
   e. Presence of animals which pose a risk to the weatherization workers. The work may be deferred until such animal threats have been secured adequately so that they no longer pose a threat.
f. Unable to gain access to the area to perform the work. The work may be deferred until the blocked access is cleared to allow the necessary access to perform the work.

g. Illegal activity.

2. Human Health Issues:
   a. The house has raw sewage, excessive animal feces, or other sanitation problems that would further endanger the client and weatherization crews if the weatherization work were performed.
   b. The house has been condemned or electrical, heating, plumbing, or other equipment has been “red tagged” by local, county, or state building officials or utilities due to safety or code issues.
   c. Dangerous conditions exist due to high carbon monoxide levels associated with combustion appliances which cannot be resolved under existing health and safety measures and guidance.
   d. The extent and condition of lead-based paint in the house would potentially create increased health and safety hazards for both the occupants and crew members.
   e. Volatile organic compounds (VOC’s) and other chemicals on the premises and poorly stored which represent a health risk (via breathing or skin contact) to the workers or client’s safety.
   f. In the judgment of the energy auditor, any condition exists which may endanger the health and/or safety of the work crew or subcontractor, the work should not proceed until the identified condition is satisfactorily corrected.

3. Combustion Appliance Issues:
   a. Open combustion heating systems situated in a bedroom, bathroom or closet that cannot be replaced under the CEO WAP guidelines. This includes all rooms that are used or designed to be used as a bedroom or any enclosed space that has access only through such a room.
   b. Combustion systems that are operating in an unsafe manner, and cannot be repaired or replaced within the scope of the program.
   c. Furnaces that have no service access. Examples include attic furnaces with access doors which crew cannot enter through, furnaces where the client has finished the room around the unit but did not allow enough room to get to the controls and vents. Such situations should be discussed with supervisory staff.
   d. Mobile homes with non-mobile home type furnaces. This includes all furnaces that are added to the unit.
   e. Furnaces with no cold air return or hot air delivery system (ductwork). Typically, this type of installation is in the middle of a room with limited ductwork. It is particularly important if it has a delivery or return but not both.
   f. Any unvented heater. This includes all types of unvented heaters, portable kerosene space heaters or freestanding gas and propane heaters. Work should only be done at the home if the portable heater can be permanently disabled or vented (with client/owner permission).
   g. Any furnace that is installed in a dangerous manner or cannot be brought to code at a reasonable cost (under $400 cost to the program). Examples: units installed in an area where it could easily be broken.

4. Structural Issues:
   a. The building structure or its mechanical systems, including electrical and plumbing, are in such a state of disrepair that failure is imminent and the conditions cannot be resolved cost effectively or within the scope of the Weatherization Assistance Program guidance.
   b. If the house is structurally in a condition that is unsafe or beyond repair (the home needs significant rehabilitation work from another funding source) and presents a risk to the worker or client safety.
5. Electrical Issues:
   a. Major electrical problems where a major portion of the total electrical system appears to be questionable (consult an “expert”);
   b. There are major electrical problems and when the cost is included with measures it is not cost effective to repair.

6. Miscellaneous Issues:
   a. Moisture problems that are so severe they cannot be resolved under existing health and safety measures or as incidental minor repairs. This includes standing water in the crawl space or any other source that is beyond the scope of the program to resolve.
   b. Friable Asbestos or Vermiculite in the home or significant enough in various locations that it precludes performing most of the cost-effective energy conservation work.
   c. If a mold condition is discovered during the initial audit of the home by an energy auditor and cannot be adequately addressed by the weatherization crew, the unit will be referred to the appropriate public or non-profit subgrantee for remedial action. Subgrantees shall defer work on the home until another funding source or the owner completes mold remediation.
      Colorado weatherization shall distribute the pamphlet from the U.S. Environmental Protection Subgrantee (EPA), Indoor Environment Division, (IED), “A Brief guide to Mold, Moisture, and Your Home” to clients whose homes have a moisture and/or mold problem. The pamphlet can be found at: https://www.epa.gov/mold/brief-guide-mold-moisture-and-your-home
   d. The area is condemned or is slated to be redeveloped (highway development, economic development, flood area).

Combustion appliance situations that threaten client safety are of great concern to the WAP. Attempts should be made to remedy the situation, rather than deferring the unit.

Documentation forms must be developed that include at a minimum: 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.

<table>
<thead>
<tr>
<th>Documentation Form(s) have been developed and comply with guidance?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ☑   No ☐</td>
</tr>
</tbody>
</table>

Forms may be accessed on the CEO Weatherization policy site.
Explain whether you concur with existing guidance from WPN 17-06 and how that guidance will be implemented in your Program, if you are proposing an alternative action/allowability, or if the identified category will not be addressed and will always result in deferral. Alternatives must be comprehensively explained and meet the intent of DOE guidance.

Where an Action/Allowability or Testing is “required” or “not allowed” through WPN 17-06, Grantees must concur, or choose to defer all units where the specific category is encountered.

“Allowable” items under WPN 17-06 leave room for Grantees to determine if the category, or testing, will be addressed and in what circumstances.

Declare whether DOE funds or alternate funding source(s) will be used to address the particular category.

Describe the explicit methods to remedy the specific category.

Describe what testing protocols (if any) will be used.

Define minimum thresholds that determine minor and major repairs

Identify minimum documentation requirements for at-risk occupants

Discuss what explicit steps will be taken to educate the client, if any, on the specific category if this is not explained elsewhere in the Plan. Some categories, like mold and moisture, require client education.

Discuss how training and certification requirements will be provided for the specific category. Some categories, like Lead Based Paint, require training.

Describe how occupant health and safety concerns and conditions will be solicited and documented.

Grantees may include additional H&S categories for their particular Programs. Additional categories must include, at a minimum, all of the same data fields as the DOE-provided categories. Two additional tables have been created to utilize.

### 7.1 – Air Conditioning and Heating Systems

<table>
<thead>
<tr>
<th>Concurrence with Guidance</th>
<th>Alternative Guidance</th>
<th>Results in Deferral</th>
<th>Air Conditioning Unallowable Measure</th>
<th>Heating Unallowable Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOE</td>
<td>LIHEAP</td>
<td>State</td>
<td>Utility</td>
<td>Other</td>
</tr>
</tbody>
</table>

**How do you address unsafe or non-functioning primary heating/cooling systems?**

“Red tagged”, inoperable, or nonexistent heating system replacement, repair, or installation is allowed where climate conditions warrant. In most cases, Colorado does not allow air conditioning system replacement, repair, or installation because Colorado is mostly a cold weather state for the majority of the year. Colorado does allow a waiver process to be used to allow for exceptions to elderly clients where health and safety would be at risk. Heating systems should be evaluated for cost effective replacement first and if the heating systems qualify for both ECM and H&S replacement the measure should be treated as an ECM. Heating system installation as a health and safety measure is allowable if the system does not have an SIR of 1.0 or greater and there is a condition that could potentially affect the health and safety of the occupant or crew such as a cracked heat exchanger and excessive CO that cannot be remediated.

**How do you address unsafe or non-functioning secondary heating systems, including unvented secondary space heaters?**

Test for carbon monoxide (CO).

Inform the client of dangers of unvented space heaters – CO, moisture, NO2, CO can be dangerous even if the CO alarm does not sound.

If the client will not allow removal, defer the weatherization work to the home.
Removal is required, except as secondary heat 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 in place.

Replacement or installation of secondary units is not allowed.

**Indicate Documentation Required for At-Risk Occupants**

Per Colorado’s Health & Safety Plan, a dwelling unit should not be weatherized where there is a major code violation or where there is a potentially harmful situation that may adversely affect the occupants or agency’s weatherization crew and/or other staff. When such issues are found to be present, the owner/occupant is notified verbally and in writing; and, only after the owner corrects the identified issues satisfactorily and to code shall any weatherization work begin. The audit form shall include the client’s name and address, dates of the audit/assessment, date the client was informed, a clear description of the issue(s), a clear description of the condition(s) under which weatherization work could begin/continue, a clear description of the responsibilities of all parties involved, client’s signature(s) indicating that they have been informed of their rights and options and that they understand the issues and their responsibilities.

The documentation required for at-risk occupants to justify the replacement, repair, or installation of air-conditioning is a formal recommendation from a licensed physician for a controlled/conditioned environment given the specific client’s health condition(s).

For the purposes of the CEO WAP program, “At Risk Clients” are defined as:

1. Elderly (over 60 years old)
2. Children (under 6 years old)
3. Clients with health conditions that warrant the need for cooling

**Minimal standards for remedy include, but are not limited to the following:**

- Flex connectors that are brass, damaged or older than 1973 must be replaced. Copper supply lines for natural gas must be replaced (health and safety) with Gastite™ or black pipe.
- Any home using a combustion appliance zone for a sleeping room shall not be weatherized (sealed combustion appliances in sleeping areas are excluded) until such situation is remedied by either:
  1. Client education on the dangers of carbon monoxide resulting in the client permanently removing the bedroom furniture from the area. Before and after documentation both digital and written must be placed in the client file.
  2. Isolating the sleeping area from the CAZ in order to mitigate the possibility of CO entering the sleeping area. Proper combustion air must be supplied to the CAZ if this is the avenue taken. The cost of this work may utilize health and safety dollars.

Defer the home if either of the above remedies cannot be provided.

- Testing for gas leakage at connections of natural gas and propane piping systems. Leakage will be located using an approved combustible gas detector, a noncorrosive leak detection fluid or an equivalent nonflammable solution. Matches, candles, open flames or other methods that could provide a source of ignition cannot be used. Where leakage or other defects are located, the affected portion of the piping system will be repaired or replaced and retested. Reported to the occupant immediately.
- Ensure the venting system is installed properly.
● Baseline pressure will be measured in Combustion Appliance Zone with reference to outdoors.
● Depressurization test will include exhaust fans, interior door closure or opening of a door, or duct leakage, or a combination thereof accounting for base pressure.
● With the combustion appliance zone (CAZ) in the worst case depressurized state, test spillage on the smallest btu appliance first. A spillage test must be performed within two (2) minutes of the appliance start up using smoke or a mirror. Spillage must be completed for all natural draft space heating systems and water heaters. Spillage must first be tested under worst-case conditions and then repeated for natural conditions if the appliance fails under worst-case. If appliance fails spillage repairs must be made to mitigate.
● CO will be tested for in undiluted flue gases of combustion appliances. If CO levels exceed 200 ppm as measured, service should be performed to reduce CO to below these levels (unless CO measurement is within manufacturer specifications).
● If the outlet of the exhaust is accessible, include a CO test on all sealed-combustion, direct vent, and power-vented appliances (without atmospheric chimneys).
● Heat exchangers must be inspected for cracks.
● Furnaces with defective manual pilot assemblies are to be replaced as an Incidental Repair Measure associated with furnace tune up. If furnace tune up is not cost effective and the pilot assembly leaks gas which creates an unsafe situation and compromises the health and safety of the occupant or crews, the pilot assembly may be replaced under health and safety repair.
● Stop work on multifamily units including duplexes, triplexes, 4-plexes, and buildings with 5 or more units, where the heating system is unsafe and will be replaced until the owner has agreed to participate in the replacement cost.

The goal of all testing shall be to make sure heating systems are present, operable, and performing safely.

### Client Education

Clients shall be given all pertinent information on the appropriate use and maintenance of heating units as well as information regarding the proper disposal of bulk fuel tanks when not removed, if applicable.

Some subgrantees make an effort to educate the client on symptoms of CAZ depressurization when atmospheric appliances are present or chronic low-level CO exposure, however, they mainly educate clients on the fact that CO monitors were installed and what actions to take if a CO alarm sounds.

### Training

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

Stated training is provided by subgrantee trainers, as well as, by CEO WAP T&TA staff. The majority of trainings are Specific, however, when certification relative to the employees’ job classification is sought, an IREC accredited training entity is utilized. CEO WAP requires training based on QA monitoring deficiencies and any repeat Findings associated with CAZ testing.

### 7.2 - Asbestos – All

What is the blower door testing policy when suspected Asbestos Containing Material (ACM) is identified?
Blower door testing is not allowed (pressurization nor depressurization), unless testing results prove negative for asbestos containing materials in the vermiculite or friable asbestos.

<table>
<thead>
<tr>
<th>7.2a – Asbestos - in siding, walls, ceilings, etc.</th>
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</thead>
<tbody>
<tr>
<td><strong>Concurrence, Alternative, or Deferral</strong></td>
</tr>
<tr>
<td>Concurrence with Guidance ☑</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOE ☑</td>
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</tbody>
</table>

**How do you address suspected ACM’s in siding, walls, or ceilings that will be disturbed through the course of weatherization work?**

**Sampling & Testing:** Sampling of suspected asbestos containing material is allowed by a certified Colorado Department of Public Health and Environment (CDPHE), Asbestos Building Inspector for suspected asbestos containing materials (SACM) and testing of sample(s) is allowed by a certified testing laboratory. Samples for interior and exterior wall finished where drill and blow work might be completed should be taken where the holes will be drilled or siding removed for insulation installation.

**Trigger Levels & Allowable Work:** Work for sidewall insulation should be done from the exterior whenever feasible. Sidewall Surfacing Material that has been sampled, tested, and contains 1% or greater asbestos, must follow Class I – IV requirements per OSHA, and is considered beyond the scope of weatherization. If the test results are positive for asbestos, the areas where asbestos is located must be deferred for this measure or the entire unit may be deferred. Prior to taking samples and testing, the homeowner must be presented with the CDPHE client education pamphlet on Asbestos (appendix 01- A2), testing procedure, potential outcomes, and disclosure requirements. If testing is done, the homeowner and client must be notified of the results in writing. If the homeowner does not allow for testing, the individual measure may be deferred or entire unit may be deferred.

Blower door testing is not allowed (pressurization nor depressurization), unless testing results prove negative for asbestos containing materials in the vermiculite or friable asbestos.

If the material to be disturbed is less than 1% containing asbestos material, work may proceed where the Thermal System Insulation (TSI) to be disturbed is 25 linear or less or the Surfacing Material to be disturbed is 10 square feet or less. The disturbance amount for holes drilled is for the circumference and kerf of the hole saw or the entire hole size if using other than a hole saw. The debris associated with the work is considered household waste and must be disposed of properly. Areas where drilling will occur should be spritzed with water prior to drilling. If the structures/components to be disturbed exceed the trigger levels, it is considered abatement and is not allowed with program funds.

**Drill and Blow:** All safety protocols as required for the Renovation, Repair, and Painting Rule (RRP Rule) including client education, signage, PPE, isolation of work areas - tenting, HEPA Vacuums, Drill Shrouds, Bit Buddies, etc., wet clean up, and clean up verification must be completed.

**Encapsulation:** Encapsulation is allowed by an Asbestos Hazard Emergency Response Act (AHERA) asbestos control professional. Removal is allowed by an AHERA asbestos control professional if less than 25 linear of thermal system insulation (TSI) or 10 square feet of or surfacing material for known or suspected ACM/ACBM.
Transite Siding: Removal of transite siding is allowed to perform conservation measures. All precautions must be taken not to damage siding. Asbestos siding (transite siding) should never be cut or drilled. It is recommended, where possible, to insulate through the home interior. The client must be informed of the suspected ACM/ACBM and that precautions will be taken.

Vermiculite: When vermiculite is present, blower door tests are not allowed (pressurization nor depressurization), unless testing results prove negative for asbestos containing materials in the vermiculite. The subgrantee Asbestos Building Inspector or the subgrantee may hire a certified Asbestos Building Inspector to take samples for testing. Samples must be taken as required (e.g. 3 samples per 1000 square feet), and must include top, middle and bottom of the vermiculite material as asbestos tends to settle to the bottom. Samples taken are to be combined into one sample for testing.

Testing must include a point count analysis and if less than 1% is considered as non-asbestos containing. If test results are less than 1%, weatherization services/measures are to be installed per Recommended Measures Report where vermiculite is present.

If the test results are positive for asbestos (1% or greater), the areas where the vermiculite is located must be deferred or the entire unit may be deferred. The unit should be deferred if ASHRAE 62.2 or other health and safety measures cannot be installed completely or properly due to the presence of vermiculite insulation containing asbestos (positive results). Removal of vermiculite is not allowed with program funds.

If the vermiculite is tested and is positive for ACM, the vermiculite may be removed by a certified asbestos abatement contractor without program funds, and prior to any weatherization work being performed within the contaminated area. Written documentation (proof) that the vermiculite insulation was removed by a certified asbestos abatement contractor, and any air monitoring, and/or clearance testing as required by the Colorado Department of Public Health and Environment must be included in the client file.

Asbestos – on pipes, furnaces, other small covered surfaces: Assume asbestos is present in suspected asbestos-containing covering materials. Encapsulation is allowed by an Asbestos Hazard Emergency Response Act (AHERA) asbestos control professional. Removal is allowed by an AHERA asbestos control professional if less than 25 linear of thermal system insulation (TSI) or 10 square feet of or surfacing material for known or suspected ACM/ACBM. Debris must be disposed of properly; any removal exceeding these amounts is considered abatement and is not allowed with program funds.

Testing Protocols

Sampling & Testing: Sampling of suspected asbestos containing material is allowed by a certified Colorado Department of Public Health and Environment (CDPHE), Asbestos Building Inspector for suspected asbestos containing materials (SACM) and testing of sample(s) is allowed by a certified testing laboratory. Samples for interior and exterior wall finished where drill and blow work might be completed should be taken where the holes will be drilled or siding removed for insulation installation.

Client Education

Prior to taking samples and testing, the homeowner must be presented with the CDPHE client education pamphlet on Asbestos (appendix 01-A2), testing procedure, potential outcomes, and disclosure requirements. If testing is done, the homeowner and client must be notified of the results in writing. If the client and or the homeowner does not allow for testing, the unit or the measure may be deferred.

Training and Certification Requirements
All Subgrantees must have a Colorado Certified Asbestos Inspector on staff. This staff person will be responsible for regulatory compliance and for providing guidance to the subgrantee, regarding asbestos-related situations and issues. In addition training will include:

- Safe practices for siding removal and replacement,
- How to identify suspected ACM

### 7.2b – Asbestos - in vermiculite

**Concurrence, Alternative, or Deferral**

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How do you address suspected ACM’s in vermiculite that will be disturbed through the course of weatherization work?

If the test results are positive for asbestos (1% or greater), the areas where the vermiculite is located must be deferred or the entire unit may be deferred. The unit should be deferred if ASHRAE 62.2 or other health and safety measures cannot be installed completely or properly due to the presence of vermiculite insulation containing asbestos (positive results). Removal of vermiculite is not allowed with program funds.

If the vermiculite is tested and is positive for ACM, the vermiculite may be removed by a certified asbestos abatement contractor without program funds, and prior to any weatherization work being performed within the contaminated area. Written documentation (proof) that the vermiculite insulation was removed by a certified asbestos abatement contractor, and any air monitoring, and/or clearance testing as required by the Colorado Department of Public Health and Environment must be included in the client file.

**Testing Protocols**

Samples must be taken as required (e.g. 3 samples per 1000 square feet), and must include top, middle and bottom of the vermiculite material as asbestos tends to settle to the bottom. Samples taken are to be combined into one sample for testing.

Testing must include a point count analysis and if less than 1% is considered as non-asbestos containing. If test results are less than 1%, weatherization services/measures are to be installed per Recommended Measures Report where vermiculite is present.

**Client Education**

Prior to taking samples and testing, the homeowner must be presented with the CDPHE client education pamphlet on Asbestos (appendix 01- A2), testing procedure, potential outcomes, and disclosure requirements. If testing is done, the homeowner and client must be notified of the results in writing. If the client and or the homeowner does not allow for testing, the unit may be deferred.

**Training and Certification Requirements**

All Subgrantees must have a Colorado Certified Asbestos Inspector on staff. This staff person will be responsible for regulatory compliance and for providing guidance to the subgrantee, regarding asbestos-related situations and issues. In addition training will include training on how to recognize vermiculite.
7.2c – Asbestos - on pipes, furnaces, other small covered surfaces

**Concurrence, Alternative, or Deferral**

| Concurrence with Guidance ✓ | Alternative Guidance □ | Results in Deferral □ |

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How do you address suspected ACM's (e.g., pipes, furnaces, other small surfaces) that will be disturbed through the course of weatherization work?

Surfacing Material that has been sampled, tested, and contains 1 % or greater asbestos, must follow Class I – IV requirements per OSHA, and is considered beyond the scope of weatherization. If the test results are positive for asbestos, the areas where asbestos is located must be deferred for this measure or the entire unit may be deferred.

Assume asbestos is present in suspected asbestos-containing covering materials. Encapsulation is allowed by an Asbestos Hazard Emergency Response Act (AHERA) asbestos control professional. Removal is allowed by an AHERA asbestos control professional if less than 25 linear of thermal system insulation (TSI) or 10 square feet of or surfacing material for known or suspected ACM/ACBM. Debris must be disposed of properly; any removal exceeding these amounts is considered abatement and is not allowed with program funds.

**Testing Protocols**

Testing must include a point count analysis and if less than 1% is considered as non-asbestos containing. If test results are less than 1%, weatherization services/measure are to be installed per Recommended Measures Report.

**Client Education**

Prior to taking samples and testing, the homeowner must be presented with the CDPHE client education pamphlet on Asbestos (appendix 01- A2), testing procedure, potential outcomes, and disclosure requirements. If testing is done, the homeowner and client must be notified of the results in writing. If the client and or the homeowner does not allow for testing, the unit may be deferred.

**Training and Certification Requirements**

All Subgrantees must have a Colorado Certified Asbestos Inspector on staff. This staff person will be responsible for regulatory compliance and for providing guidance to the subgrantee, regarding asbestos-related situations and issues. In addition training will include training on how to recognize suspected ACM.

7.5 – Biologicals and Unsanitary Conditions

(odonts, mustiness, bacteria, viruses, raw sewage, rotted wood, etc.)

**Concurrence, Alternative, or Deferral**

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What guidance do you provide Subgrantees for dealing with biological and/or unsanitary conditions in homes slated for weatherization?
“Remediation of conditions that may lead to or promote biological concerns and unsanitary conditions is allowed. However, addressing bacteria and viruses 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 crews.

The subgrantee may spend up to $500 for the mitigation of Unsanitary Conditions. Any amount over that must be sent to CEO for approval in the form of a Waiver Request.

### Testing Protocols
This health and safety category shall require sensory inspection for the purpose of detection. Types of health and safety hazards that may be included under this category include, but are not limited to: Odors, mustiness, bacteria, viruses, raw sewage, rotting wood, garbage, etc.

### Client Education
Building owners and clients must be notified in writing of any Health & Safety problems that require weatherization work to be terminated.

Clients are given Home Energy handout that contains information on home energy savings tips and health and safety precautions such as LEAD, Asbestos, mold, humidity, and unsanitary conditions.

### Training
Colorado has conducted and continues to conduct training for energy auditor and crews on initial audit hazard assessment and crew hazard identification when at job working. In addition training will include:
- How to recognize unsafe conditions and when to defer.
- Safe work practices when encountering such conditions.

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### 7.6 – Building Structure and Roofing

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**What guidance do you provide Subgrantees for dealing with structural issues (e.g., roofing, wall, foundation) in homes slated for weatherization?**

Minimal standards for remedy include, but are not limited to the following:

- Visual inspection.

- Ensure that access to areas necessary for weatherization is safe for entry and performance of assessment, work, and inspection.

- Notify client of structurally compromised areas; defer weatherization work to those areas.

**How do you define “minor” or allowable structure and roofing repairs, and at what point are repairs considered beyond the scope of weatherization?**
While conducting the initial audit, the building structure shall be inspected for structural integrity. Minor repairs to protect the DOE materials installed may be performed to protect the energy saving investment. However, building rehabilitation is beyond the scope of the WAP. Dwellings whose structural integrity is in question should be referred to HUD or other appropriate local and state agencies. Weatherization services may need to be delayed or deferred until the dwelling can be made safe for crews and occupants. Incidental (minor) repairs necessary to effectively perform or preserve weatherization materials/measures are allowed. Examples of these include sealing minor roof leaks to preserve new attic insulation and repairing water-damaged flooring as part of replacing a water heater. Incidental structural repairs shall not include cosmetic applications, such as replacing a floor covering such as a carpet or linoleum. Only the structural part shall be replaced/repaired.

If priority lists are used, and these repairs are designated as Incidental Repairs, at what point is a site-specific audit required?

N/A

Client Education

Clients shall be notified verbally and in writing regarding any structurally compromised areas. Appropriate referral resources shall also be provided to the client.

Training

Colorado has conducted and continues to conduct training for energy auditor and crews on initial audit hazard assessment and crew hazard identification when at job working. In addition training will include how to identify structural and roofing issues.

7.7 – Code Compliance

Concurrence, Alternative, or Deferral

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| DOE ✓ | LIHEAP □ | State □ | Utility □ | Other □ |

What guidance do you provide Subgrantees for dealing with code compliance issues in homes receiving weatherization measures?

DOE funds may be used when weatherization measures are being conducted. They may not be used simply to correct pre-existing code compliance issues.

What specific situations commonly trigger code compliance work requirements for your network? How are they addressed?

Minimal standards for remedy include, but are not limited to the following:

Visual inspection as well as local code enforcement inspections shall be necessary to comply with WPN 17-7 guidance.

Follow all State and Local codes when installing weatherization measures.
Acquire all required permits and licenses pertinent to installing weatherization measures. These vary by jurisdiction and it is the responsibility of each subgrantee agency to know what the codes are in each of the areas they work in, as well as what permits and licenses are required in each of the areas they work in.

**Client Education**

Inform client of observed code compliance issues. Make appropriate referrals as necessary. Auditor must have Health and Safety inspection form (appendix 02-A7) filled out and signed by client. Agency must leave a signed copy of form with client and a copy kept in client file.

**Training**

Colorado has conducted and continues to conduct training for energy auditor and crews on initial audit hazard assessment and crew hazard identification when at job working. Crews are also trained on Colorado SWS Field Guide standards. In addition training will include how to determine what code compliance may be required.

### 7.8 – Combustion Gases

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#### Testing Protocols

Minimal standards for remedy include, but are not limited to the following:

- **Combustion safety testing is required when combustion appliances are present.** Combustion appliances include any appliance using combustible fuels, including gas water heaters, wood stoves, gas or oil fueled furnace/heat system (including free standing kerosene, natural gas, or propane space heaters), ovens, and gas clothes dryers. These requirements apply to all active combustion heating systems and appliances, whether they are primary or secondary systems. Combustion appliances must also be properly vented to the outside of the home. Diagnostic equipment should be calibrated per manufacturer’s instructions.

- **The combustion appliance safety inspection includes all of the following:** carbon monoxide testing, Ambient CO, spillage evaluation, and worst case depressurization of the combustion appliance zone (CAZ). Combustion safety test results must be acted upon appropriately according to the combustion safety tables. As applicable, every combustion appliance will be checked for a safe flue pipe, chimney or vent, adequate combustion air, and gas leakage.

- **A complete mechanical systems audit is required to be completed on every home.** All relevant information must be recorded on the Heating System Worksheet. The procedure includes collecting general information; collecting and recording mechanical systems information; visual and diagnostic inspection of the venting and distribution system; and, combustion analysis and diagnostic testing of gas/propane fired equipment. A post-installation safety inspection is also required.

- **Inspect venting of combustion appliances and confirm adequate clearances.**

- **Test naturally drafting appliances for spillage under worst case conditions before and after air tightening.**

- **Detect gas leaks with a combustible gas detector and/or soap.** Repair leaks.

- **Undiluted CO will be measured.** Clean and tune is an allowable Health and Safety repair.
- Solid fuel burning appliance that is the primary heat source and has signs of structural failure may be replaced.
- Combustion appliances must be installed by licensed contractors or under the guidance of a licensed contractor if allowed by local or state codes and regulations.

**How are crews instructed to handle problems discovered during testing, and what are the specific protocols for addressing hazards that require an immediate response?**

All hazardous situations, including gas leaks, fire hazards, CO, etc., that present an immediate threat, require immediate action. At a minimum, this includes notifying the client and contacting a supervisor.

Emergency Procedures:
- Clients may not be left without space heating during the heating season.
- Sub-grantees may loan only closed coil electric space heaters to clients without space heat.
- If there is a strong smell of leaking gas, workers must tell the client and ask them to leave the home. The auditor should leave the home and call either their supervisor, the utility company, or 911 depending on the seriousness of the matter.
- Sub-grantees must have an emergency medical procedure in place, and workers must be trained on subgrantee emergency medical procedures.

**Client Education**

Inform the client of observed issues. Make appropriate referrals as necessary. Auditor must have a Health and Safety inspection form (appendix 02-A7) filled out and signed by the client. Agency must leave a signed copy of the form with client and a copy kept in client file.

**Training**

Colorado Energy Office Technical Training team will conduct combustion safety testing with all agency field staff. Training resources available on the EERE Weatherization website, such as Powerpoint presentations, are utilized by local agency trainers to provide JTA aligned training to field crews. Additional training will include how to perform appropriate testing, determine when a building is excessively depressurized, the difference between air free and as-measured CO, and CO action levels.

**7.9 – Electrical**

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**What guidance do you provide Subgrantees for dealing with electrical hazards, including knob & tube wiring, in homes slated for weatherization?**

Wiring splices must be enclosed in metal or plastic electrical boxes, fitted with cover plates before being covered with insulation.

In most instances, Colorado codes require licensed electricians to perform most electrical repairs. When electrical repairs within the scope of the DOE WAP are required, the typical standard of remedy shall be to
sub-contract the repair work to a licensed electrician. All appropriate procurement procedures shall be followed when subcontracting.

Testing shall include visual inspection and voltage detection testing.
- Inspect and assess the house to identify knob and tube wiring. Non-contact testing method will be used to determine if wiring is live.
- Live knob and tube will not be covered or surrounded. A qualified auditor will verify wiring to be safe.
- Live knob and tube may be isolated to insulate around wiring. The dam will not cover the top of knob and tube will be created to separate insulation from the wiring. When isolation is performed a warning sign must be installed at all entries to the attic about the presence of knob and tube wiring.
- Knob and tube wiring may be replaced as an Incidental Repair Measure (IRM). IRM must be associated with an Energy Conservation Measure (ECM), provided the ECM SIR is 1.0 or greater and cumulative SIR is 1.0 or greater.
- Home electrical circuits must be grounded where a new refrigerator will be installed. Repairs to ground the outlet and/or circuit must be charged as an Incidental Repair Measure associated with the refrigerator.

CEO WAP has the following language in its Field Guide, “Proper clearance will be maintained around live knob and tube as required by the National Electrical Code (NEC) or authority having jurisdiction. When required, a dam that does not cover the top will be created to separate insulation from the wire path.”

However, subgrantees are primarily using electricians to replace knob and tube wiring, but when they utilize feasible and cost-effective shielding, a 6” air gap is created prior to installing fiberglass batt insulation.

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<th>How do you define “minor” or allowable electrical repairs, and at what point are repairs considered beyond the scope of weatherization?</th>
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<td>Allowable electrical repairs are those that are associated with an energy conservation measure, provided the ECM SIR is 1.0 or greater and the cumulative SIR is 1.0 or greater. If electrical wiring and circuitry is found to be in such a condition as to be a serious safety risk, work should be deferred until the electrical safety issue has been satisfactorily corrected.</td>
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<th>If priority lists are used, and these repairs are designated as Incidental Repairs, at what point is a site-specific audit required?</th>
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<td>Inform the client of observed issues. Make appropriate referrals as necessary. Auditor must have a Health and Safety inspection form (appendix 02-A7) filled out and signed by the client. Agency must leave a signed copy of form with client and a copy kept in client file.</td>
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<td>Colorado will conduct training that includes how to identify electrical hazards and how to ensure compliance with local codes.</td>
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7.10 - Formaldehyde, Volatile Organic Compounds (VOCs), Flammable Liquids, and other Air Pollutants
Concurrence, Alternative, or Deferral

Concurrence with Guidance ☑  Alternative Guidance □  Results in Deferral □

Funding

DOE ☑  LIHEAP □  State □  Utility □  Other □

What guidance do you provide Subgrantees for dealing with formaldehyde, VOCs, flammable liquids, and other air pollutants identified in homes slated for weatherization?

Sensory inspection shall be the primary detection method.

All reasonable steps shall be taken to limit worker exposure to VOCs. When using products known to emit VOCs, increase ventilation. Meet or exceed any label precautions. Identify, and if possible, remove the source. If not possible to remove, reduce exposure by using a sealant on all exposed surfaces of paneling and other furnishings. Educate clients regarding the use of integrated pest management techniques to reduce the need for continued use of pesticides. Properly dispose of partially full containers of old or unneeded chemicals. Because gases can leak even from closed containers, this single step could help lower concentrations of organic chemicals in the home and/or workplace. Do not simply toss these unwanted products in the garbage can. State and local codes and regulations regarding disposal of toxic household wastes must be followed.

At all times, crews are to look for potential fire hazards.

Crews and auditors shall check for potential fire hazards in the home during the audit and while performing the weatherization work.

Fire hazards must be remedied provided that they fall within the scope of the program and does not exceed the DOE health and safety dollar threshold.

If the remedy required to remove the fire hazard goes beyond the scope of the DOE WAP, weatherization work may have to be deferred until the fire hazard has been eliminated. Proper referral and deferral protocols shall be followed.

Testing Protocols

Sensory inspection shall be the primary detection method.

Client Education

Inform the client of observed issues. Make appropriate referrals as necessary. Auditor must have a Health and Safety inspection form (appendix 02-A7) filled out and signed by the client. Agency must leave a signed copy of the form with the client and a copy kept in the client file.

Always inform the client/occupant/building owner of observed condition and associated health risks. Provide written materials on safety and proper disposal of household pollutants. Such material is often located on the product label.

Training

Colorado training will include how to recognize potential hazards and when removal is necessary.
(please indicate specific fuel type if policy differs by type)

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Remediation Protocols

Raw fuel leaks will be monitored for before entering building spaces. If leaks are found, testing will be discontinued and condition reported to the occupant immediately. Testing for gas leakage at connections of natural gas and propane piping systems. Leakage will be located using an approved combustible gas detector, a non-corrosive leak detection fluid or an equivalent non-flammable solution. Matches, candles, open flames or other methods that could provide a source of ignition cannot be used. For the low-pressure, client-side of the meter, at the first joint past the meter, where leakage or other defects are located, the affected portion of the piping system will be repaired or replaced and retested.

**How do you define allowable fuel leak repairs, and at what point are repairs considered beyond the scope of weatherization?**

Fuel leaks at utility meters are outside the scope of weatherization.

Client Education

Inform the client of observed issues. Make appropriate referrals as necessary. Auditor must have a Health and Safety inspection form (appendix 02-A7) filled out and signed by the client. Agency must leave a signed copy of the form with client and a copy kept in client file.

Training

Colorado has conducted and continues to conduct statewide weatherization assistance program health and safety training to ensure that all agencies and crews are aware of the guidance in WPN 17-7. Additional training will be Fuel leak testing.

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7.12 – Gas Ovens / Stovetops / Ranges

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**What guidance do you provide Subgrantees for addressing unsafe gas ovens/stoves/ranges in homes slated for weatherization?**

Ambient CO will be monitored during combustion testing and testing will be discontinued if ambient CO level inside the home or work space exceeds 35 parts per million (ppm). If over 35 ppm turn off appliance, vent area and investigate source. Per WPN 17-7, replacement is not allowed.

**Testing Protocols**

Gas ovens will be tested for CO. A clean and tune may be conducted if measured CO in the undiluted flue gases of the oven vent at a steady state exceeds 225 ppm as measured. Gas range burners testing. Specify clean and
tune if the flame has any discoloration, flame impingement, or an irregular pattern or if burners are visibly dirty, corroded, or bent.

### Client Education

Inform the client of observed issues. Make appropriate referrals as necessary. Auditor must have a Health and Safety inspection form (appendix 02-A7) filled out and signed by the client. Agency must leave a signed copy of the form with client and a copy kept in client file.

### Training

Colorado has conducted and continues to conduct statewide weatherization assistance program health and safety training to ensure that all agencies and crews are aware of the guidance in WPN 17-7. Additional training will be on testing techniques, and CO action levels.

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### 7.13 – Hazardous Materials Disposal

[Lead, Refrigerant, Asbestos, Mercury (including CFLs/fluorescents), etc.]

*(please indicate material where policy differs by material)*

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### Client Education

Inform the client in writing of hazards associated with hazardous waste materials being generated and or handled in the home. Auditor must have a Health and Safety inspection form (appendix 02-A7) filled out and signed by the client. Agency must leave a signed copy of form with client and a copy kept in the client file.

### Training

Colorado has conducted and continues to conduct statewide weatherization assistance program health and safety training to ensure that all agencies and crews are aware of the guidance in WPN 17-7. Additional training will include:

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

### Disposal Procedures and Documentation Requirements

Follow all EPA testing protocols.

Colorado WAP subgrantees shall ensure that subcontractors who would be charged with refrigerant reclamation (e.g. removal of old refrigerators or air conditioning units) follow all EPA testing protocols and are EPA-approved section 608 type I certified or universal certified. Colorado is mostly a cold weather state and in most cases, does not replace air conditioning systems, so subgrantees do not typically have to deal with refrigerants except in refrigerator replacement. In cases where furnace replacements require handling, repairs, or removal of existing refrigerants, subgrantees and/or contractors will follow all EPA testing protocols and are EPA-approved section 608 type I certified or universal certified.
Clients should not disturb refrigerants. 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 the responsible party. When hazardous materials (refrigerant, mercury thermostats, lead paint dust/chips, etc.) are generated in the course of weatherization work, proper disposal is required, and removal/disposal costs must be included. When replacing existing thermostats, identify and dispose of any mercury-containing thermostats in accordance with Environmental Protection Agency (EPA) guidance.

### 7.14 – Injury Prevention of Occupants and Weatherization Workers
(Measures such as repairing stairs and replacing handrails)

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**What guidance do you provide Subgrantees regarding allowable injury-related repairs (e.g., stairs, handrails, porch deck board)?**

If crews encounter a situation where a staircase is deemed unsafe, for example, and the staircase is necessary to reach the area where the crews need to perform the weatherization work, and repairing the staircase requires only minor repair work and installation measures, crews shall perform the minor repair work so that they may safely perform the weatherization work to the home. The repair work must be associated with one energy conservation measure that has an SIR of 1.0 or greater and the cumulative SIR must remain greater than 1.0 for repair to be performed.

**How do you define “minor” or allowable injury prevention measures, and at what point are repairs considered beyond the scope of weatherization? Quantify “minor” or allowable injury prevention measures.**

If the repair work required is deemed to be beyond the scope of the DOE WAP (major repair is required such as rebuilding an entire staircase), the weatherization work to that area of the home shall be deferred or the unit shall be deferred until the homeowner has satisfactorily installed the required repair(s).

**Training**

Crews will complete all required OSHA 10 training and will also receive training on the awareness of potential hazards that fall within this category.

### 7.15 – Lead Based Paint

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## Safe Work Protocols

Colorado is currently in compliance with the DOE RRP rule with crew members having achieved Certified Renovator status. Certifications under this rule shall be kept current.

Colorado recommends assuming that lead paint and varnished surfaces may be present in any house built prior to 1978 and to follow the proper DOE LSW protocols, OSHA regulations and EPA regulations in all pre-1978 homes.

Testing is allowed per RRP requirements. Job site set up and cleaning verification is required by a Certified Renovator.

As a minimum guideline, the following weatherization activities require lead-safe practices. (Note that this is not a complete list of weatherization activities that may create lead hazards, so it is important to train all workers to follow LSW measures whenever they disturb or could potentially disturb painted surfaces on buildings built prior to 1978.)

- Drilling holes in interior walls
- Drilling holes in and removing siding from exterior walls
- Cutting attic access into ceilings
- Removing caulk or window putty (interior)
- Removing caulk or window putty (exterior)
- Removing weatherstripping
- Modifying doors
- Planing doors in place
- Installing door shoes
- Replacing door jambs and thresholds
- Replacing windows
- Replacing thermostats
- Replacing furnace filters
- Replacing furnaces
- Replacing HEPA filters and cleaning HEPA vacuums at a weatherization facility
- Replacing HEPA filters and cleaning HEPA vacuums at the work site

## Testing Protocols

Testing is allowed per RRP requirements. Job site set up and cleaning verification is required by a Certified Renovator.

## Client Education

Crews must follow all client notification requirements:

- Distribution of the EPA pamphlet, revised in September 2011, titled “Lead-Safe Certified Guide to Renovate Right”.
- The client file must include signed documentation that the client received the Renovate Right pamphlet.

## Training and Certification Requirements

Colorado requires 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. In addition all grantee monitors and inspectors must be Certified Renovators.
**Documentation Requirements**

Subgrantees must assign a Certified Renovator to each job requiring Lead Safe Work, and a copy of his/her current certification certificate must be left onsite until completion of the work. Any training that was performed, lead testing and assessment documents, and photos of containment.

Firms must retain all records necessary to demonstrate compliance for a period of six (6) years following completion of the weatherization, renovation. Records that must be retained include (where applicable):

- Reports certifying that a determination had been made by an inspector that lead-based paint and varnished surfaces is not present on the components.
- Signed and dated acknowledgments of receipt.
- Certifications of attempted delivery.
- Certificates of mailing.
- Notification activities performed regarding common areas.

### 7.16 – Mold and Moisture

(Including but not limited to: drainage, gutters, downspouts, extensions, flashing, sump pumps, dehumidifiers, landscape, vapor retarders, moisture barriers, etc.)

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**What guidance do you provide Subgrantees for dealing with moisture related issues (e.g., drainage, gutters, downspouts, moisture barriers, dehumidifiers, vapor retarder on bare earth floors) in homes slated for weatherization?**

Limited water damage repairs can be addressed by weatherization workers and correction of moisture and mold creating conditions are allowed when necessary in order to weatherize the home and to ensure the long term stability and durability of the measures. Where severe mold and moisture issues cannot be addressed, deferral is required.

Visual assessment is required and diagnostics such as moisture meters are recommended pre and prior to final inspection. However, mold testing is not an allowable cost.

Per Colorado Technical Standards, all units must be inspected for problems associated with excess moisture. Identification of potential moisture problems shall be documented in the client file. If possible, and within the scope of the DOE WAP, repair minor moisture problems that will diminish the effectiveness of weatherization measures.

**How do you define “minor” or allowable moisture-related measures, and at what point is work considered beyond the scope of weatherization?**

Moisture sources in the house that can generate moisture into the attic will be identified and removed or reduced.
Gutters and downspouts may be installed to correct moisture related issues that would prevent effective installation of weatherization measures. If downspouts are installed they must drain a minimum of 6' away from the house.

Sump pumps may be installed on a case by case basis with approval by the CEO via a waiver request that outlines need and cost estimate for pump install or repair.

Where severe mold and moisture issues cannot be addressed, deferral is required.

Mold testing, abatement, remediation, or the removal of mold may not be done with CEO WAP funds.

Only limited water damage repairs that can be addressed by weatherization workers and correction of moisture and mold creating conditions are allowed when necessary in order to weatherize the home and to ensure the long term stability and durability of the measures.

Agencies must visually inspect for mold during the initial energy audit. The use of moisture meters as a diagnostic tool is recommended pre and prior to final inspection. The results must be documented in the client file by completing the CEO WAP Mold Inspection and Release Form.

Clients and landlords must be notified, in writing, when a mold problem is found.

If there is suspected mold growth in the HVAC system, do not operate the system. Limit HVAC work to checking for visual indicators of carbon monoxide (carbon) and spillage.

Exposed earth in crawl spaces will be covered with a continuous, durable, sealed Class 1 vapor retarder a minimum of 6 mils in thickness. All Field Guide installation requirements for crawl space type must be followed, e.g. material selection, attachment, sealing.

Homes with moisture sources in the home will be identified and removed or reduced. Local ventilation may be installed where appropriate (e.g., baths, kitchens) and vented to outside. Existing mechanical ventilation must be vented outside the building if there are any signs of moisture problems associated with the ventilation.

CEO WAP utilizes the language from DOE WPN 17-7. Since the DOE allows for grantee discretion here, CEO WAP has chosen to allow its subgrantees discretion within the actual definitions of the words themselves. However, limited, minor, and problem mean within a WAP worker’s standard skillset and within the scope of WAP, while severe means outside of a WAP worker’s standard skillset and outside the scope of WAP, which leads to unit deferral. Also, CEO WAP ensures any IRMs are treated as such to limit H&S expenditures (i.e. total expenditures for units closed in that month) which are tracked and reviewed against the cap on a monthly basis. If an individual subgrantee goes above its own 15% cap, there is a discussion as to why and to determine if additional justification or documentation is necessary for approval.

**Client Education**

Inform the client of observed issues. Make appropriate referrals as necessary. Auditor must have a Health and Safety inspection form (appendix 02-A7) filled out and signed by the client. Agency must leave a signed copy of form with client and a copy kept in client file.

**Training**
Colorado has conducted and continues to conduct statewide weatherization assistance program health and safety training to ensure that all agencies and crews are aware of the guidance in WPN 17-7. Additional training will be include:

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

### 7.17 – Pests

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What guidance do you provide Subgrantees for dealing with pests and pest intrusion prevention in homes slated for weatherization?

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 health and safety concern for workers. Screening of windows and points of access is allowed to prevent intrusion.

Initial assessment of presence and degree of infestation and risk to workers.

Determine whether the pest infestation would prevent or hamper the weatherization work. If yes, and removal is a viable and cost-effective option, take the necessary steps to remove the pest infestation problem so that the weatherization work can proceed. If yes, and removal is not a viable and cost-effective option or significant health and safety risks exist, defer the weatherization work and provide clients with appropriate referral information. If no, proceed as usual.

Screening of windows and points of access is allowable to prevent intrusion and must be assessed on a case-by-case basis.

The Agency may spend up to $500 for Pest mitigation. Any amount over that must be sent to the CEO for approval in the form of a Waiver Request.

- Inform the client of observed pest condition and associated risks. Document in client file.

Define Pest Infestation Thresholds, Beyond Which Weatherization Is Deferred

The Agency may spend up to $500 for Pest mitigation. Any amount over that must be sent to the CEO for approval in the form of a Waiver Request.

Testing Protocols

Initial assessment of presence and degree of infestation and risk to workers.

Determine whether the pest infestation would prevent or hamper the weatherization work. If yes, and removal is a viable and cost-effective option, take the necessary steps to remove the pest infestation problem so that the weatherization work can proceed. If yes, and removal is not a viable and cost-effective option or significant
health and safety risks exist, defer the weatherization work and provide clients with appropriate referral information. If no, proceed as usual.

### Client Education
Inform the client of observed issues. Make appropriate referrals as necessary. Auditor must have a Health and Safety inspection form (appendix 02-A7) filled out and signed by the client. Agency must leave a signed copy of the form with client and a copy kept in client file.

### Training
Training will address how to assess presence and degree of infestation, associated risks, and need for deferral.

### 7.18 – Radon

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#### What guidance do you provide Subgrantees around radon?
Whenever site conditions permit, exposed dirt must be covered with a vapor retarder except for manufactured homes. In homes where radon may be present, precautions should be taken to reduce the likeliness of making radon issues worse. Agencies are required to cover all exposed dirt in subspace areas with 6 mil plastic, whenever feasible. Agencies are required to air seal where possible and as much as feasible to prevent the infiltration of possible Radon into the living space from the subspace.

#### Testing Protocols
Testing for Radon is not allowed by Colorado weatherization.

#### Client Education
Agencies are required to provide client education on Radon and supply the EPA Citizen’s Guide To Radon pamphlet to the client. In addition, agencies are required to have clients sign a “Radon Informed Consent Form”.

#### Training and Certification Requirements
Training will be provided to auditors, assessors and inspectors that includes:
- Knowledge of radon, what it is and how it occurs
- What factors may make radon worse
- Precautionary measures that may be helpful.
- Workers will be trained in proper vapor retarder installation.

#### Documentation Requirements
Agencies are required to provide client education on Radon and supply the EPA Citizen’s Guide To Radon pamphlet to the client. In addition, agencies are required to have clients sign a “Radon Informed Consent Form”.
## 7.19 – Safety Devices: Smoke and Carbon Monoxide Alarms, Fire Extinguishers

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### What is your policy for installation or replacement of the following:

**Smoke Alarms:** Smoke alarms should be considered and added whenever possible. There should be at least one operational smoke alarm per floor. There will be no replacements of existing, operable smoke alarms based simply upon the age of the alarms. The crew must educate the client about the operation and safety purpose of the smoke alarm. Smoke alarms may be installed as a Health and Safety measure. Smoke alarms must be installed within 12” of the ceiling.

CEO WAP also provides subgrantees with the following details per NFPA 72, “Install smoke alarms inside each bedroom, outside each sleeping area and on every level of the home, including the basement. On levels without bedrooms, install alarms in the living room (or den of the family room) or near the stairway to the upper level, or in both locations. Smoke alarms installed in the basement should be installed on the ceiling at the bottom of the stairs leading to the next level. Smoke alarms should be installed at least 10 feet (3 meters) from a cooking appliance to minimize false alarms when cooking. Mount smoke alarms high on walls or ceilings (remember, smoke rises). Wall-mounted alarms should be installed not more than 12 inches away from the ceiling (to the top of the alarm). If you have ceilings that are pitched, install the alarm within 3 feet of the peak but not within the apex of the peak (four inches down from the peak). Don’t install smoke alarms near windows, doors, or ducts where drafts might interfere with their operation.”

**Carbon Monoxide Alarms:** Pursuant to ASHRAE 62.2-2016, the installation of at least one CO alarm in every home is required independent upon the existence of any combustion appliances. Even all-electric homes get at least one CO alarm. CO alarms will be assessed and installed if none exist. CO alarm or warning equipment will be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms in accordance with ASHRAE 62.2 and authority having local jurisdiction.

**Fire Extinguishers:** Where solid fuel burning equipment is present, fire extinguishers may be provided as an allowable H&S measure.

### Testing Protocols

The Energy Auditor will perform a visual assessment of CO and smoke alarms and make appropriate recommendations based on assessment and policy requirements. Crew members must demonstrate to the client how the CO alarms work and what actions to take if the CO alarm sounds. The CO alarm must be installed per manufacturers recommendation and be compliant with local codes.

### Client Education

Provide the client with verbal and written information on use of smoke/CO alarms and fire extinguishers.

### Training

Training will be conducted to review code and SWS installation requirements for CO and Smoke alarms.
7.20 – Occupant Health and Safety Concerns and Conditions

### Concurrence, Alternative, or Deferral

| Concurrence with Guidance ✓ | Alternative Guidance □ | Results in Deferral □ |

### Funding

| DOE ✓ | LIHEAP □ | State □ | Utility □ | Other □ |

#### What guidance do you provide Subgrantees for soliciting the occupants’ health and safety concerns related to components of their homes?

Occupant pre-existing or potential health conditions shall be documented in the client file. If warranted, at-risk occupants may be temporarily relocated while the work is being completed. Crews will advise the client as to any actions required for any at-risk occupants before work shall begin. Any failure or inability to take the appropriate actions shall result in deferral of the weatherization work. Proper referral and deferral protocols shall be followed and documented.

The definition of at-risk occupants is clients with pre-existing health conditions or sensitivities to basic construction materials.

#### What guidance do you provide Subgrantees for determining whether occupants suffer from health conditions that may be negatively affected by the act of weatherizing their home?

Clients must be informed of materials being used in their homes. When the client’s health may be at risk and/or the work activities could constitute a health or safety hazard, the occupant at risk will be required to take appropriate action, based on severity of risk.

Actions to be taken by the subgrantee and client, if applicable, are as follows:

- Temporary relocation of at-risk occupants may be allowed on a case-by-case basis.
- The parameters used for temporary relocation are if WAP services cause inhospitable damage to the dwelling.
- Occupants are required to reveal known or suspected health concerns as part of the initial application for weatherization (See Attachment 1 for Client Chemical Sensitivity Form). The form is to be reviewed with the client during the audit. The auditor’s signature is required.
- The auditor is to provide to the client information regarding any known risks of materials being used in the home. Subgrantee contact information is to be provided in order for the client to be able to inform the subgrantee of any issues.
- Subgrantee is required to take appropriate actions to protect the client from pre-existing sensitivity conditions if the unit is not deferred.
- Failure or the inability to take appropriate actions must result in the deferral of the unit.

#### What guidance do you provide Subgrantees for dealing with potential health concerns when they are identified?

Clients must be informed of materials being used in their homes. When the client’s health may be at risk and/or the work activities could constitute a health or safety hazard, the occupant at risk will be required to take appropriate action, based on severity of risk.

Actions to be taken by the subgrantee and client, if applicable, are as follows:

- Temporary relocation of at-risk occupants may be allowed on a case-by-case basis.
● Occupants are required to reveal known or suspected health concerns as part of the initial application for weatherization (See Attachment 1 for Client Chemical Sensitivity Form). The form is to be reviewed with the client during the audit. The auditor’s signature is required.

● The auditor is to provide to the client information regarding any known risks of materials being used in the home. Subgrantee contact information is to be provided in order for the client to be able to inform the subgrantee of any issues.

● Subgrantee is required to take appropriate actions to protect the client from pre-existing sensitivity conditions if the unit is not deferred.

● Failure or the inability to take appropriate actions must result in the deferral of the unit.

CEO WAP’s approach is not only limited to clients that may have chemical sensitivities. If they have other health issues such as asthma or are sensitive to cellulose, dust, or airborne particles from measures, subgrantees accommodate and use other like-available products, such as fiberglass over cellulose. CEO WAP applications screen for at-risk occupants, intake staff also screen for at-risk occupants, auditors further screen for at-risk occupants, and then application information and any other information discovered through intake and auditing is put into the client file and disseminated to field crews.

Client Education

The auditor is to provide to the client information regarding any known risks of materials being used in the home. Subgrantee contact information is to be provided in order for the client to be able to inform the subgrantee of any issues.

Occupants are required to reveal known or suspected health concerns as part of the initial application for weatherization (See Attachment 1 for Client Chemical Sensitivity Form). The form is to be reviewed with the client during the audit. The auditor’s signature is required.

| Documentation Form(s) have been developed and comply with guidance? | Yes ☒ No ☐ |
|---------------------------------------------------------------|
| Client Chemical Sensitivity Form and/or H&S Inspection and Notification Form. |

7.21 – Ventilation and Indoor Air Quality

Concurrence, Alternative, or Deferral

| Concurrence with Guidance ☒ | Alternative Guidance ☐ | Results in Deferral ☐ |

Funding

| DOE ☒ | LIHEAP ☐ | State ☐ | Utility ☐ | Other ☐ |

Identify the Most Recent Version of ASHRAE 62.2 Implemented (optional: identify Addenda used)

Colorado has implemented ASHRAE 62.2.2016.

Testing and Final Verification Protocols

All DOE units must have an ASHRAE 62.2.2016 assessment performed and the proof of assessment must be included in the client file. If assessment requires additional ventilation, ASHRAE requirements must be met.

Client refusal of mechanical ventilation, when evaluated and called for pursuant to the ASHRAE Standard 62.2.2016, MUST result in deferral of the unit.
The RED Calculator must be included in the client file when ASHRAE is evaluated. Fan flow rates must be tested post-weatherization to determine if the required ventilation is achieved.

### Client Education

The client education form attached must be completed and provided to the client with a copy in the client file when ASHRAE 62.2.2016 is implemented.

### Training

Colorado will provide ASHRAE 62.2 training, including proper sizing, evaluation of existing and new systems.

## 7.22 – Window and Door Replacement, Window Guards

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### What guidance do you provide to Subgrantees regarding window and door replacement and window guards?

Door and window replacement, repair, and/or installation are not eligible WAP health and safety expenses. They must be qualified as energy efficiency measures for replacement or meet the definition for incidental repair when repaired.

### Testing Protocols

Follow Colorado SWS Field Guide.

- Broken or missing windows may be replaced if cost effective or repaired if IRM guidelines are met.
- Seals around entry doors may be improved, using lock sets, hinges, sweeps, thresholds, etc.
- Replace only those doors that are broken beyond repair or sealed up as cost effective energy efficiency measures.
- Storm window decisions should be blower door driven or address specific comfort problems. Document reason for installing storm windows on audit form. Include cost justification documentation.
- Any other measures must be cost effective.
- Must follow LSW requirements for pre-1978 homes.

### Client Education

Provide information on lead risks.

### Training

Colorado has conducted and continues to conduct statewide weatherization assistance program health and safety training to ensure that all agencies and crews are aware of the guidance in WPN 17-7. Training will ensure agencies and crews are aware of guidance and that replacement, repair, or installation is not an allowable H&S cost.
### 7.23 – Worker Safety (OSHA, etc.)

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#### How do you verify safe work practices? What is your policy for in-progress monitoring?
Currently, local WAP agencies conduct crew level monthly health and safety training. This practice will continue as a best practice. The process for determining whether crews are utilizing good safe work practices relies on visual assessment when monitoring crews on the job site. Lack of injury and incident reports is also a valuable indicator that crews are following safe work practices. Ask to see SDS when monitoring at the job site if hazardous materials are being used. Check for posting/accessibility of SDS in WAP facilities when monitoring.

#### Training and Certification Requirements
OSHA 10-hour training for all crew level WAP employees is mandatory which includes crew leaders.
OSHA 30-hour, CPR, and first aid training is required for all crew leaders, but is not required for auditors and inspectors.
All OSHA training shall be updated as required and kept current.
Use and importance of PPE.
All local WAP subgrantee crews conduct regular health and safety training.