Weatherization Grantee Health and Safety (H&S) Plan *Optional Template*

1.0 – General Information

Additional information that does not fit neatly in one of the other sections of this document.

Allowable Department of Energy (DOE) related health and safety (H&S) actions and expenditures are those 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; or
- The actions are necessary as a result of weatherization work.

This plan will provide guidance to the Texas Weatherization Network. Health and Safety issues will be identified by Program Assessors during the initial assessment. Weatherization Crews (either subcontracted or in house) will perform the task(s) identified in the initial assessment and listed in the work order(s). Weatherization agencies and their representatives, including subcontractors, are required to take all reasonable precautions against performing work on homes that will subject the occupants or themselves to health and/or safety risks.

This health and safety plan is taken from a DOE approved template. The text at the top of the template is boilerplate language and may not always apply to activities described in TDHCA's DOE plan. Capitalized terms in the Plan have definitions in Chapters 1, 2, or 6 of Part 1, Title 10 of the Texas Administrative Code.

2.0 – Budgeting

Grantees are encouraged to budget H&S costs as a separate category and, thereby, exclude such costs from the Average Cost Per Unit (ACPU) cost limitation. This separate category also allows these costs to be isolated from energy efficiency costs in program evaluations. H&S costs that 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 Grantee's Department of Energy (DOE)-approved energy audit tool.

Select which option used below.

Separate H&S Budget ☑	Contained in Program Operations ☐

3.0 – H&S Expenditure Limits

Pursuant to 10 CFR 440.16(h), Grantees must establish H&S expenditure limits for their Program and provide justification for those limits by explaining the basis and related historical H&S expenditures. DOE acknowledges that it may be necessary for Grantees to deviate from historical expenditures when certain circumstances arise (e.g. funding source changes).

10 CFR 440.16(h)(2) dictates that these limits must be expressed as a percentage of the ACPU. To calculate this percentage use the following formula:

$$Total\ Average\ H\&S\ Cost\ per\ Unit = \frac{H\&S\ budget\ amount}{Program\ Operations\ budget\ amount}$$

For example, if the ACPU is $5,000 and a Grantee's Program expends an average of $750 per dwelling on energy-related H&S measures, the Total Average H&S Cost per Unit would equal 15 percent. DOE acknowledges that this percentage may vary significantly between Grantees due to different geographical areas and depending upon the availability of other funding sources, resource availability, etc. Low percentages should include a statement of what other funding supports H&S costs, while larger percentages will require greater justification and relevant historical support.

15 percent is not a maximum limit on H&S expenditures. DOE will conduct a secondary level of review on H&S Plans with a Grantee request of more than 15 percent of Program Operations used for H&S purposes, . ***DOE strongly encourages using the table below in developing justification for the requested H&S budget amount.*** *In accordance with 10 CFR 440.18(d)(15), these funds are to be expended by the Program in direct weatherization activities, "of which is necessary before, or because of, installation of weatherization materials." This same section of the regulation excludes the H&S costs from the ACPU limitation if H&S costs are budgeted separately.*

DOE recommends reviewing recent budget requests and compare those to actual H&S 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 annual plan..

H&S expenditure limits and justification explaining the basis for setting the limits.

A thorough review of historical H&S expenditure data along with network provided feedback to aid in the completion of the H&S Measure Matrix is analyzed annually to determine the H&S expenditure limit requested.

Utilizing the spreadsheet embedded below, provide a full list of H&S measures using historical data from your program, including average cost, and frequency rate. If installing more than a single instance of one measure in a unit (e.g. multiple CO alarms), Grantees may aggregate costs so that frequency does not exceed 100%, or enter a justification into the measure column, which explains why that measure has a frequency rate of over 100%. The spreadsheet will auto calculate your expected Total Average H&S Cost per Unit.

Instructions: Double-click icon directly below to open, view and edit Measure Matrix Spreadsheet. Complete the spreadsheet by entering the required information. To save, close the spreadsheet and it will save to this document.

Measure Matrix Final.xlsx

4.0 – Incidental Repair Measures

Any measures that could potentially be identified as H&S but the Grantee chooses to instead identify and treat those measures as incidental repair measures (IRMs), must be implemented consistently throughout the Grantee's weatherization program. The measure must fit the regulatory definition of an IRM and be cost justified along with the associated energy conservation measure and/or package of measures. 10 CFR 440.3 defines Incidental Repairs as, "those repairs necessary for the effective performance or preservation of weatherization materials."

H&S measures identified and treated as IRMs within your Program.

N/A-TDHCA strives to limit IRMs and H&S measure when feasible in an effort to maintain program focus/intent of energy efficiency.

5.0 – Occupant Pre-Existing or Potential Health Conditions and Hazard Identification and Notification Form(s)

Grantees must include policies/procedures for informing clients of the aspects of weatherization that may put a client with pre-existing health conditions at risk during installation of measures. This screening may occur as part of the initial application for weatherization and/or during the energy audit. Procedures must include what steps will be taken and/or available to the client to ensure that weatherization work will not aggravate pre-existing health conditions. Additionally H&S assessments are required to identify hazards in the home. For those hazards identified, appropriate testing is required when applicable. The client/landlord/property manager must be informed in writing of all testing results, including identification of a hazards revealed by the testing that will lead to deferral/referral.

Grantees are required to develop documentation forms that include at a minimum:

- *Occupant Pre-existing or Potential Health Conditions;*
  - *Screen occupant(s) to self-report known or suspected health concerns either as part of initial application for weatherization, during the energy audit, or other parts of the weatherization process as specified;*
  - *Inform client in writing of any known risks; and*
  - *Provide client with Subgrantee point of contact information in writing so client can inform of any issues.*
- *Hazard Identification Notification Form*
  - *The occupant(s) (and Landlord's, if applicable) name and address;*
  - *Date(s) of the energy audit/assessment and when the occupant(s) (and Landlord, if applicable) 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 occupant(s) (and Landlord's, if applicable) signature(s) indicating that they understand and have been informed of their rights and options.*

Procedure for soliciting occupants' health and safety concerns related to components of their homes

A Health & Safety Questionnaire/ Checklist was developed by the Department to aid Subgrantees in soliciting important occupant H&S concerns related to components of their homes. Obtained information must be taken into consideration when determining the units work scope to ensure of occupant safety. The form must is located under Client and Field Assessment Forms on the Department Website:

- Health & Safety Client Questionnaire & Inspection Checklist

Procedure for determining whether occupants suffer from health conditions which may be negatively impacted by the act of weatherizing their dwelling

Subgrantee must discuss information obtained from the questionnaire with clients and identify potential measures being considered for installation to determine if any measures could have an effect on the occupant's health. Precautions taken to avoid client health and/or safety should be well documented in the client file.

Procedure for addressing potential health concerns including pre-existing health conditions when they are identified
Weatherization agencies and their representatives, including subcontractors, are required to take all reasonable precautions against performing work on homes that will subject the occupants or themselves to health and/or safety risks. In cases where an occupant's health is fragile, or an occupant has been identified to have a health condition, and/or the crew work activities would themselves constitute a health and/or safety hazard, the occupant(s) at risk shall be required to leave during the performance of the work activities. In cases where specific weatherization material(s) present an occupant health concern, crews/contractors may substitute a comparable alternative material that meets DOE specifications. If no safe alternative material meeting DOE standards is available, subgrantees should receive case by case guidance from Department training staff. Precautions taken to avoid client health and/or safety should be well documented in the client file.
Documentation Form(s) have been included for review?
Yes ☑ No ☐
Location where forms have been uploaded/submitted
Separate attachment to SF424 ☐ Separate attachment to H&S Plan ☐ Hyperlink within guidance above ☑

6.0 – Health and Safety Categories

For each of the following H&S categories identified by DOE:

- *Explain whether you concur with existing guidance from Weatherization Program Notice (WPN) 17-7 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 require comprehensive explanations as to how it meets the intent of DOE guidance.*
- *Where an action/allowability or testing is "required" or "not allowed" through WPN 17-7, Grantees must concur, or choose to defer all units where the specific category is encountered.*
- *Any activities that are marked as deferral/referrals must contain the H&S reasons specified within the Master File Section V.1.2 Box 5 Deferral/Referral.*
- *Unless an alternate funding source(s) is declared, utilize DOE funds to address the particular category.*
- *Describe the explicit methods to address the specific category.*
- *Describe in detail what testing protocols (if any) used to assess the particular category.*
- *Define and quantify minimum thresholds that determine minor, major, and limited definitions and the criteria used to make a determination on a case-by-case basis.*
- *Define "at-risk" occupant(s) and identify minimum documentation requirements for them.*
- *Client Education activities specific to H&S reasons is required within the Master File Section V.8.4 Training and Technical Assistance of the annual application.*
- *Training activities specific to H&S reasons is required within the Master File Section V.8.4 Training and Technical Assistance of the annual application.*

6.1 – Air Conditioning and Heating Systems

Concurrence, Alternative or Deferral

Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐

Air Conditioning Unallowable with DOE Funds ☐ Heating Unallowable with DOE Funds ☐

Other Funding Source Addresses H&S Issue ☐

Procedure for unsafe or non-functioning <u>primary</u> heating/cooling systems

"Red tagged", inoperable, or nonexistent primary heating and/or cooling system replacement, repair, or installation is allowed due to extreme climate conditions in Texas for Vulnerable Populations.

Texas' climate conditions include climate zones 2A, 2B, 3A, 3B, and 4B which can be described as Hot-Humid, Hot-Dry, and Mixed-Dry. This diversity in climate conditions requires Texas to have the flexibility to address all scenarios related to providing heating and cooling to Vulnerable Populations.

Subgrantee will use the ACCA approved Manual J to determine proper sizing of replacement heating and cooling appliances. All heating and cooling systems will be evaluated as an energy conservation measure before consideration as a health and safety measure.

If the heating/cooling system issue is determined to be beyond the scope of DOE WAP, weatherization agencies will defer the work and refer the client to other resource agencies who may be able to address the problem. Texas' deferral policy and protocols shall always be strictly adhered to when deferring weatherization work. If the client is completely without cooling or heating, the weatherization agencies shall make a referral to an agency with funding that can provide Vulnerable Population clients with a portable air conditioner or temporary means of heat, such as a portable heat pump or blankets.

Texas requires HVAC system installation to follow local and state code and it must be performed by a licensed HVAC professional. Weatherization agencies may subcontract licensed HVAC companies/individuals to perform heating/cooling systems installations and repairs if they follow proper state procurement procedures.

When replacing a primary wood stove in a mobile/manufactured home the new unit must be listed for use with manufactured homes, and must be installed in accordance with their listings. Units that are not manufacturer approved, discovered during an initial assessment, should be replaced with an approved manufactured home appliance, under H&S. All state and local codes must be followed.

Vented space heaters shall be treated as furnaces. Combustion safety testing is required when combustion appliances are present. Weatherization Assessors and Final Inspectors must conduct the combustion appliance safety inspection. This includes all of the following: carbon monoxide testing, draft measurement, spillage evaluation, worst case depressurization of the combustion appliance zone (CAZ), a safe flue pipe, chimney or vent, adequate combustion air, and gas leakage as applicable. Combustion safety test results must be acted upon appropriately according to the Standard Work Specifications and BPI protocols.

Procedure for unsafe or non-functioning secondary heating systems, including unvented secondary space heaters

Maintenance and repair of secondary heating units is allowed.

Minor maintenance activities can be performed for traditional open masonry fireplaces and wood burning stove/pellet stoves. This would be a health and safety issue requiring photo documentation and receipt of services by the professional with a description of what services were performed. Inspection, repair and or cleaning shall be sub-contracted to a qualified solid fuel heating system vendor.

An unsafe, unrepairable open masonry fireplace would be treated similarly to that of an unvented space heater if it is the primary source of heat. The fireplace must be rendered inoperable and replaced with a vented heating unit. The type of existing fuel will dictate the replacement. If the client has a combustion fuel source (e.g. - gas, propane, etc.) then seal up the fireplace, and add a vented gas heater.

Testing will be required to assure adequate supply of electricity is available for existing standalone electric space heaters. This will be accomplished through the use of three wire circuit testers, GFI electrical outlet testers, and line voltage testers. Repair, replacement or installation is not allowed. Removal is recommended.

Unvented space heater 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, however may remain until a replacement heating system is in place.

Testing for air-free carbon monoxide (CO) is to be performed. All units must have an ANSI Z21.11.1 label, and meet IRC and IFGC codes. The client must be informed of the dangers of unvented space heaters – CO, Moisture, and NO2. CO can be dangerous even if CO alarm does not sound.

Assessors must calibrate the CO tester outside the home and test the ambient air in the home; following the BPI-1200 standards:

- Perform an inspection of the heater. Any of the following conditions are grounds for repair or replacement:
  - Carbon monoxide (CO) test indicates ambient CO levels above 35 ppm
  - Bad burners (missing, broken, or otherwise un-repair-able)
  - Cross-fueled (between NG and LPG) and the orifices and/or pressure regulator have not been changed
  - Missing radiants
  - Open flame burners
  - Rubber supply lines
  - Charring or scorching

If the cause cannot be determined, Subgrantee must calibrate equipment and re-test. If still indeterminable, refer to local gas company. Any time replacement is deemed necessary, first consider performing the replacement as an ECM (energy saving measure) before replacing as a Health & Safety measure.

Definition of and documentation required for "at-risk" occupants

The application will be used to determine if a household includes Vulnerable Populations (also known as at-risk occupants).

Vulnerable Populations are defined as Elderly (60 or older), Disabled, or Children 5 and younger.

Testing protocols
Ensuring primary systems are present, operable, and performing correctly. Model system in the current DOE-approved audit to determine if the system can be installed as an energy conservation measure (ECM) prior to replacement as an H&S measure. Determine and document presence of Vulnerable Populations when installing air-conditioning as a Health and Safety (H&S) measure. On combustion equipment, subgrantees are required to perform an appliance safety inspection. The inspections must include the following: carbon monoxide testing, draft measurement, spillage evaluation, worst case depressurization of the combustion appliance zone (CAZ), assurance of a safe flue pipe, chimney or vent, adequate combustion air, and gas leakage as applicable. Combustion safety test results must be acted upon appropriately according to the Standard Work Specifications and BPI protocols. For solid fuel appliances look for visual evidence of soot on the walls, mantel or ceiling or creosote staining near the flue pipe.

6.2 – Asbestos (Confirmed and/or Presumed Asbestos Containing Material)

Concurrence, Alternative or Deferral
Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐
Unallowable Measure with DOE Funding ☐ Other Funding Source Addresses H&S Issue ☐
Asbestos on Heating, Ventilation and Air Conditioning (HVAC) systems, distribution, venting and other small surfaces that will be disturbed through the course of weatherization work policy
Inspect pipes, furnaces, and other coverings for asbestos. Encapsulation is allowed by an AHERA asbestos control professional and should be conducted prior to any blower door testing. Removal may also be allowed by an AHERA asbestos control professional based on the situation as determined by the inspector or Agency Representative
Asbestos in attics, walls, floors roofs and foundations that will be disturbed through the course of weatherization work policy
Asbestos is the name given to a number of naturally occurring fibrous minerals with high tensile strength, the ability to be woven, and resistance to heat and most chemicals. Because of these properties, asbestos fibers have been used in a wide range of manufactured goods, including roofing shingles, ceiling and floor tiles, paper and cement products, textiles, coatings, etc. It is difficult to tell whether a material contains asbestos simply by looking at it, unless it is labeled. If in doubt, treat the material as if it contains asbestos. Do not dust, sweep, or vacuum debris that may contain asbestos. Never saw, sand, scrape, or drill holes in asbestos materials. Removal of siding is allowed to perform energy conservation measures. All precautions must be taken not to damage siding. Asbestos siding should never be cut or drilled. It is recommended, where possible, to insulate through home interior to avoid disturbing or removing the asbestos siding on the exterior of the home.
Vermiculite that will be disturbed through the course of weatherization work policy
When vermiculite is present, unless testing determines otherwise, take precautionary measures as if it contains asbestos, such as not using blower door tests and utilizing personal air monitoring while in attics. Encapsulation by an AHERA certified asbestos control professional shall be allowed. Removal shall not be allowed.
Blower door testing policy when asbestos/vermiculite is present
Subgrantees are not allowed to perform blower door testing if vermiculite is present. Prior to performing blower door testing, subgrantees are required to inspect pipe and other coverings for asbestos. Encapsulation is allowed by an AHERA asbestos control professional, and should be conducted prior to any blower door testing if the materials are friable.

Testing protocols
Testing is only allowed by a certified AHERA tester. Visual inspection of exterior wall surface and subsurface, floors, walls, attics, and ceilings for suspected ACM.
Documentation requirements
In every instance, clients shall be informed both verbally and in writing that suspected asbestos containing materials are present. Clients shall also be informed as to the precautions that will be taken. Client written materials shall include information about the potential health risks associated with asbestos.

6.3 – Biologicals and Unsanitary Conditions
(e.g., odors, mustiness, bacteria, viruses, raw sewage, rotting wood)

Concurrence, Alternative or Deferral/Referral
Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐
Unallowable Measure with DOE Funding ☐ Other Funding Source Addresses H&S Issue ☐
Biological and unsanitary conditions in dwellings policy
Remediation of conditions that may lead to or promote biological concerns and unsanitary conditions is allowed. Addressing bacteria and viruses is not an allowable cost. Deferral may be necessary in cases where a known agent is present in the home that may create a serious risk to occupants or weatherization workers. The use of personal protective equipment shall be strictly enforced. Respirators, protective eyewear, and protective clothing will be worn when there is suspicion or knowledge that biological agents may be present in order to eliminate or minimize crew exposure. In the past, remediation of conditions listed under this health and safety category was not allowed. It is allowable under WPN 17-7, except for the removal of known bacteria and viruses. Texas will assess the cost effectiveness and necessity of remediation of conditions that lead to or promote biological concerns and unsanitary conditions, on a case by case basis. Factors considered in regards to biological/unsanitary conditions remediation include, but are not limited to: allowability, safety of workers, safety of household members, size of area impacted, location of area impacted, cost for remediation, impact this area has on the ability to properly weatherize/improve energy efficiency of building structure for lifetime of measures installed, etc.
Testing protocols
Assessment staff are required to perform a visual/sensory inspection utilizing a Grantee designed H&S Client Questionnaire & Inspection checklist available on the Grantee's website.

6.4 – Building Structure and Roofing (e.g., roofing, wall, foundation)

Concurrence, Alternative or Deferral/Referral
Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐
Unallowable Measure with DOE Funding ☐ Other Funding Source Addresses H&S Issue ☐
Structural issues in dwellings policy
Building rehabilitation is beyond the scope of the WAP. Homes with conditions that require more than incidental repair should be deferred. 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. Dwellings whose structural integrity is in question should be referred to agencies that deliver HUD funds 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/contractors and occupants. Incidental (minor) repairs necessary to effectively perform or preserve weatherization materials/measures are allowed. Refer to WPN 19-5 for further guidance on determining if incidental repairs are allowable.

Define and quantify minor or allowable structure and roofing issues. At what point are these considered beyond the scope of weatherization?
Minor repairs would be repairs that are necessary for weatherization work to proceed, and that can be allowed by WPN 19-5 if justified in the whole house SIR by the site-specific audit. Repairs would be beyond the scope of weatherization when causing the whole house SIR to drop below one. All repairs should be identified during the initial assessment. In the rare instance that necessary repairs are identified during the measure installation phase, a determination will be made if the repair is an Incidental or a Health & Safety cost. Incidental repair will necessitate that the site-specific audit be re-run, while H&S repairs do not.
If priority lists are used and these repairs are designated as IRMs, at what point is a site-specific electronic energy audit required?
N/A – Priority List is not used.

6.5 – Code Compliance

Concurrence, Alternative or Deferral/Referral		
Concurrence with DOE Guidance ☑	Alternative Guidance ☐	Results in Deferral/Referral ☐
Unallowable Measure with DOE Funding ☐	Other Funding Source Addresses H&S Issue ☐	

Code compliance issues in dwellings policy

Correction of pre-existing code compliance issues is not an allowable cost other than where weatherization measures are being conducted. When correction of preexisting code compliance issues is triggered and paid for with WAP funds, Subgrantee must cite specific code requirements with reference to the weatherization measure(s) that triggered the code compliance issue in the client file.

State and local (or jurisdiction having authority) codes **must** be followed while installing weatherization measures. Condemned properties and properties where "red tagged" health and safety conditions exist that cannot be corrected under this guidance should be deferred.

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

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, as well as what permits and licenses are required in each of the areas they work.

6.6 – Combustion Gases

Concurrence, Alternative or Deferral/Referral		
Concurrence with DOE Guidance ☑	Alternative Guidance ☐	Results in Deferral/Referral ☐
Unallowable Measure with DOE Funding ☐	Other Funding Source Addresses H&S Issue ☐	

Combustion gas issues discovered during testing, including those that require an immediate response policy

Proper venting to the outside for combustion appliances, including gas dryers, is required. Correction of venting is allowed when testing indicates a problem.

Based on CGD and CO detector readings, the inspector should take the following actions:

- The CO detector indicates an ambient carbon monoxide level of 70 ppm or greater. The inspector should immediately notify the occupant of the need for themselves and any building occupant to evacuate; the inspector shall immediately evacuate and call 911.
- Where the CO detector indicates an ambient reading between 30 ppm and 70 ppm. The inspector should advise the occupant that high CO levels have been found and recommend that all possible sources of CO should be turned off immediately and windows and doors opened. Where it appears that the source of CO is a permanently installed appliance, advice the occupant to keep the appliance off and have the appliance serviced by a qualified servicing agent.
- Where CO detector indicates ambient CO below 30 ppm the inspection can continue.

Testing protocols

IRC 2015
D.2 Occupant and Inspector Safety. Prior to entering a building, the inspector should have both a combustible gas detector (CGD) and CO detector turned on, calibrated, and operating. Immediately upon entering the building, a sample of the ambient atmosphere should be taken.

A complete mechanical systems assessment is required to be completed on every home. 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, and post-installation safety tests for CO. Combustion safety testing is required when combustion appliances are present. Pre and post combustion appliance safety inspections include all of the following: carbon monoxide testing, draft measurement, spillage evaluation, and worst case depressurization of the combustion appliance zone (CAZ).

As applicable, every combustion appliance will be checked for a safe flue pipe, chimney or vent, adequate combustion air, and gas leakage. DOE will not permit any DOE-funded weatherization work where the dwelling unit is heated with an unvented gas- and/or liquid-fueled space heater as the primary heat source. In such cases the primary space heater must be removed and a vented code compliant heat source must be installed prior to the installation of weatherization measures. DOE will allow unvented gas- or liquid-fueled space heaters to remain as secondary heat sources provided they comply with ANSI Z21.11.2, the IRC, and the IFGC. LIHEAP-WAP may replace non-compliant secondary unvented gas- or liquid-fueled space heaters.

Client shall be provided with combustion safety and hazards information, including the importance of using exhaust ventilation when cooking and keeping burners clean to limit the production of CO.

Best Practice:

- Combustion Appliance Zone (CAZ) Testing
- Isolating the Combustion Appliance Zone (CAZ)

6.7 – Electrical

Concurrence, Alternative or Deferral/Referral

Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐

Unallowable Measure with DOE Funding ☐ Other Funding Source Addresses H&S Issue ☐

Electrical hazards, including knob & tube wiring, in dwellings policy

Minor electrical repairs are allowed where health or safety of the occupant(s) may be at risk. Upgrades and repairs are allowed when necessary to perform specific weatherization measures.

Testing shall include visual inspection, as well as voltage drop and voltage detection testing. Provide client information on overloading circuits and electrical safety and risks.

Aluminum wiring should be thoroughly inspected before any insulation work is done. If aluminum wiring is found to be active and in the areas to be insulated, no insulation should be added.

Prior to insulating around Knob and Tube wiring, cost effectiveness must be evaluated and barriers must be installed to keep insulation at least three inches from the K&T. If K&T is permanently disabled (cannot be energized again) then it may be insulated over.

Best Practice:

- Knob & Tube Wiring

When electrical repairs within the scope of the DOE WAP are required, the repair work must be performed by a licensed electrician.

Define and quantify minor electrical issues. At what point are these considered beyond the scope of weatherization?

Minor upgrades and repairs necessary for installation of weatherization measures and where the health and/or safety of the occupant(s) is at risk may be allowed. Examples of minor repairs include exposed electrical connections, damaged or nonworking switches and receptacles, and damaged or unsafe electrical wire conditions.

In the event electrical hazards cannot be corrected or prevent major measure installation unit deferral is required.

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

N/A – Priority List is not used.

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

Concurrence, Alternative or Deferral/Referral

Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐

Unallowable Measure with DOE Funding ☐ Other Funding Source Addresses H&S Issue ☐

Formaldehyde, VOCs, flammable liquids and other air pollutants in dwellings policy

WAP workers may not remove pollutants. Removal of pollutants must be done by the client or a contracted professional prior to weatherization work being performed. If pollutants pose a risk to workers and removal cannot be performed by a professional or the client refuses to remove the pollutants, the unit must be deferred.

Visual, sensory, combustion appliances inspection/testing, and completion of Client Questionnaire and Inspection Checklist shall be the primary detection method. All reasonable steps shall be taken to limit worker exposure to VOCs, air pollutants and biological contaminants utilizing OSHA PPE guidelines. VOCs are emitted as gas from certain solids or liquids which may have short and long-term health effects. Common sources of VOCs include paints, paint strippers, solvents, aerosol sprays, cleaning supplies, petroleum fuels, sealants, refrigerants, etc. When using products known to emit VOCs, increase ventilation is required. Meet or exceed any label precautions. Identify, and if possible, have client or a contracted professional remove the source. Biological contaminants include bacteria, molds, mildew, viruses, animal dander, cat saliva, house dust, mites, cockroaches, and pollen. There are many sources of these pollutants. Identification of these contaminants often indicate elevated relative humidity level in a home and/or improper ventilation which would need to be addressed. State and local codes and regulations regarding disposal of toxic household wastes must be followed. Texas WAP crews/contractors shall take every precaution necessary to minimize exposure to air pollutants.

When using chemicals and products that may contain any of the pollutants within this category, strict adherence to label instructions and precautions shall be required. Known pollutants must be removed by the client or a contracted professional prior to performance of weatherization work.

Health and Safety Guidance

- EPA Guidance on Common Household Wastes & Materials
- Indoor Air Quality

Testing protocols

Sensory inspection shall be the primary detection method.

6.9 – Fuel Leaks (please indicate specific fuel type if policy differs by type)

Concurrence, Alternative or Deferral/Referral

Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐

Unallowable Measure ☐

Fuel leak remediation protocols
Natural gas and LP gas piping system inspection and leakage testing will be conducted. An inspection of the accessible gas piping and connections, from the natural gas meter or LP gas tank to a point where the supply line connects to the gas valve of all appliances shall be completed. When a minor gas leak is found on the utility side of service, the utility service must be contacted before work may proceed. Where the auditor confirms gas leakage or identifies deficiencies in gas piping materials, connections, components, or supports, the deficiencies shall be marked and noted in project documentation. The homeowner/occupant shall be notified that repairs must be made. The auditor shall recommend that the homeowner/occupant immediately notify the gas company and/or a qualified professional to evaluate and perform all necessary repairs. Notify utilities and temporarily halt work when leaks are discovered that are the responsibility of the utility to address.
At what point are fuel leaks considered beyond the scope of weatherization?
Minor repairs/replacement are allowed and includes but not limited to: • Worn and/or leaking flexible gas lines and any flexible connectors manufactured prior to 1973 • Worn or damaged gas valves • Appliance gas valve/regulator housing and connections Unit deferral shall be required if major repairs are Identified that would be cost prohibitive to the subgrantee's H&S budget or leaks are found on the utility side of service.
Testing protocols
Subgrantees must test exposed gas lines for fuel leaks from utility coupling into and throughout the home. Conduct sensory inspection on bulk fuels to determine if leaks exist.

6.10 – Gas Range/Ovens		
Concurrence, Alternative or Deferral/Referral		
Concurrence with DOE Guidance ☑	Alternative Guidance ☐	Results in Deferral/Referral ☐
Unallowable Measure with DOE Funding ☐	Other Funding Source Addresses H&S Issue ☐	
Unsafe gas range/ovens policy		
Replacement of cook stoves is not allowed with DOE funding. Cook stove replacements must utilize funds from a funding source other than DOE. Repair and cleaning of cook stoves is allowed with DOE funding. **Cook Stoves with high CO**: • Clean or repair. • If it still has high CO levels, then see if another funding source is able to pay for the stove replacement. • If no other source, the house must be deferred until the occupant can address the stove. • Units containing ovens with CO levels of 225 ppm (as measured) or higher which cannot be remedied must be deferred. The money spent trying to unsuccessfully clean/repair the oven would be charged to Program Support. The Department has defined maximum acceptable CO readings of stoves as follows: • Cook stove burners will only require a visual inspection of flame quality and proper operation. • 225 ppm CO as measured maximum acceptable readings for cook stove ovens.		
Testing protocols		
Test gas ovens and burners for CO Inspect cooking burners and ovens for operability and flame quality		

6.11 – Hazardous Materials Disposal [e.g., Lead, Refrigerant, Asbestos, Mercury (including CFLs/fluorescents), etc.] *(please indicate where policy differs by material)*

Concurrence, Alternative or Deferral/Referral

Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐

Unallowable Measure with DOE Funding ☐ Other Funding Source Addresses H&S Issue ☐

Hazardous materials disposal policy (existing material/appliance and hazardous material)

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.

Refrigerants shall be pumped into a recovery tank and disposed at an EPA approved site.

Proper disposal procedures for Asbestos are available at Texas Commission on Environmental Quality (TCEQ):

Special Waste Disposal:

- http://www.tceq.texas.gov/permitting/waste_permits/msw_permits/msw_specialwaste.html

Texas WAP crews/contractors will follow all EPA RRP requirements for disposal of lead as well as state and local code requirements.

Disposal procedures for mercury will follow TCEQ guidance available here:

- https://www.tceq.texas.gov/assets/public/comm_exec/pubs/rg/rg-377.pdf

Documentation requirements

Subgrantees are required to document disposal requirements in contract language with the responsible party and maintain disposal records are available upon request.

6.12 – Injury Prevention of Occupants and Weatherization Workers (e.g., repairing stairs and replacing handrails)

Concurrence, Alternative or Deferral/Referral

Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐

Unallowable Measure with DOE Funding ☐ Other Funding Source Addresses H&S Issue ☐

Injury prevention measure(s) policy

Workers must take all reasonable precautions against performing work on homes that will subject workers or occupants to health and safety risks. Porch or stair repairs that would be required to make a home safe for weatherization workers are not an allowable measure in the program. Such situations are considered to be beyond the scope of Texas WAP. OSHA 10 for crew members and OSHA 30 for supervisors training will be scheduled by the Subgrantee for uncertified staff.

Define and quantify minor or allowable injury prevention measures. At what point are these considered beyond the scope of weatherization?

Minor injury prevention measures can include minor electrical repairs as described in section 6.7. Proper safety protocols should be followed to reduce risk of injury as described in sections 5.0 and 6.20. Other injury prevention measures would be considered beyond the scope of WAP and shall result in unit deferral.

6.13 – Lead Based Paint

Concurrence, Alternative or Deferral/Referral

Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐

Unallowable Measure with DOE Funding ☐ Other Funding Source Addresses H&S Issue ☐

Lead safe work protocols
Weatherization requires all weatherization crews/contractors working in pre-1978 housing to be trained in Lead Safe Weatherization (LSW) and follow EPA's Lead; Renovation, Repair and Painting Program (RRP) rule. Deferral is required when the extent and condition of lead-based paint in the structure would potentially create further health and safety hazards. In all pre-1978 homes, crews/contractors must assess the physical condition of the structure prior to conducting an audit. Texas recommends assuming that lead paint may be present in any structure built prior to 1978 and to follow the proper DOE LSW protocols, OSHA regulations and EPA regulations in all pre-1978 structures. Texas WAP crews/contractors must follow all EPA RRP requirements for disposal as well as state and local code requirements. 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. State policy mandates all workers on site on any weatherization project, whether they be a crew based employee of one of the sub-contractors or a private sector contractor, must complete an eight (8) hour Lead Safe Worker Practices Workshop. Best Practice: • Lead-safe Process and RRP Requirement WX Videos • 12 Steps to Lead Safety • Health & Safety Series: Respirators & Personal Protective Equipment Health and Safety Guidance • Lead; Renovation, Repair, and Painting Program; Lead Hazard Information; • Renovate Right
Testing protocols
Testing to determine presence of lead in paint that will be disturbed by WAP measure installation is allowed with EPA-approved testing methods. Testing methods must be economically feasible and justified Job site set up and cleaning verification is required by a Certified Renovator. Texas WAP crews/contractors will use LSW work practices that decrease the amount of dust generated and follow all EPA RRP requirements. Grantee compliance staff verify crews are using lead safe work practice during the annual Subgrantee monitoring.

Documentation requirements
Documentation in the client file must include Certified Renovator certification; any training provided on-site; description of specific actions taken; lead testing and assessment documentation; and, photos of site and containment set up. Include the location of photos referenced if not in file.

6.14 – Mold and Moisture

(e.g., drainage, gutters, down spouts, extensions, flashing, sump pumps, dehumidifiers, landscape, vapor retarders, moisture barriers)

Concurrence, Alternative or Deferral/Referral

Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐

Unallowable Measure ☐ Other Funding Source Addresses H&S Issue ☐

Moisture related issues in dwellings policy

Limited water damage repairs can be addressed by weatherization workers. 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-like substance and moisture issues cannot be addressed, deferral is required.

Visual assessment is required and diagnostics such as moisture meters are recommended pre-assessment and prior to final inspection. The assessment shall assure existing mold-like conditions are noted, documented and disclosed to the client; and, shall assure existing building envelope conditions do not contribute to mold-like growth when weatherization measures are applied. Mold-like substance assessment means a visual assessment combined with certain allowable diagnostics. It does not mean testing for mold. **DOE funds may not be used to test for mold-like substances.**

Texas WAP crews/contractors shall follow the Mold/Moisture Assessment Checklist when conducting the mold-like substances assessment at the time of the audit. Assessment shall include a general examination of the building to include:

- Examine structure, maintenance activities, occupancy patterns
- Visually look for mold-like substances and water staining
- Look for evidence of standing water
- Look for evidence of condensation
- Check basement or crawl space and attic for proper venting and exhaust

Outdoors:

- Soil grade or drainage toward foundation
- Standing water adjacent to foundation
- Wall and roof damage allowing water intrusion
- Missing or blocked rain gutters
- No downspout extensions
- Firewood stacked adjacent to house
- Excessive shrubbery around foundation

Heating/cooling systems:

- Air intakes: debris (organic) vs. clean air
- Filters: dirty, damp, poor type
- Heat exchangers: dirty & damp coils, condensate pans, drainage, stagnant water
- Ducts: contamination, moisture

Occupied Space:

- Plumbing leaks
- Water stains on walls, ceilings and around windows
- Musty odor
- Surface Condensation (especially during mild weather)
- Mold-like substances on carpeting

- Humidifiers
- Window air conditioners
- Lack of bathroom, kitchen exhaust
- Clothes dryer not vented to outside
- Firewood stored indoors
- Wet clothes drying indoors

The DOE Training Resource:

- Mold and Moisture given by Michael Vogel of MSU Weatherization Training Center is available to all Subgrantees through TDHCA's website.

Best Practice:

- Mold-safe Process

Define and quantify minor or allowable moisture-related measures. At what point are these considered beyond the scope of weatherization?

Defined in Mold-Safe process flow-chart:

- Mold-Safe Process Flowchart

6.15 – Pests

Concurrence, Alternative or Deferral/Referral

Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐

Unallowable Measure with DOE Funding ☐ Other Funding Source Addresses H&S Issue ☐

Pests and pest intrusion prevention policy

Pest removal is allowed only where infestation would prevent weatherization or poses a health and safety concern for workers. Infestation of pests may be cause for deferral where it cannot be reasonably removed.

Determine whether the pest infestation would prevent or hamper the weatherization work. If 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 removal is not a viable and cost-effective option or significant health and safety risks exist, defer the weatherization work and provide client with appropriate referral information.

Best Practice:

- Pests BP

Define and quantify pest infestation thresholds. At what point are these considered Beyond the scope of weatherization

Costs beyond $50 in labor and materials to mitigate pest infestations will be addressed by TDHCA to determine if deferral is necessary.

6.16 – Radon

Concurrence, Alternative or Deferral/Referral

Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐

Unallowable Measure with DOE Funding ☐ Other Funding Source Addresses H&S Issue ☐

Procedure for radon in dwellings

TDHCA will provide Subgrantees with a Radon Informed Consent Form and the EPA's *A Citizen's Guide to Radon*.

State specific resources can be found at:

- EPA Radon Resources

The Texas Department of State Health Services website also contains useful information:

- THHS Radon Resources

Testing protocols

Testing in not authorized in Texas WAP as Texas has no areas of "Highest Potential," according to the United States Environmental Protection Agency standards.

Documentation requirements

Client signed informed consent form.

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

Concurrence, Alternative or Deferral/Referral

Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐

Unallowable Measure with DOE Funding ☐ Other Funding Source Addresses H&S Issue ☐

Installation or replacement policy for the following safety devices:

Smoke Alarms:

Smoke alarms may be installed where alarms are not present or are inoperable.

Ceiling-mounted smoke alarms must be mounted at least 6 inches from any wall. Wall-mounted smoke alarms must be installed at least 6 but less than 18 inches from the ceilings. They should always be installed according to applicable local codes or ordinances.

Smoke Alarms shall be installed per IRC. R314.3 Location. Smoke alarms shall be installed in the following locations:

- In each sleeping room.
- Outside each separate sleeping area in the immediate vicinity of the sleeping room.
- On each additional story of the dwelling, including basements and habitable attics and not including crawl spaces and uninhabitable attics. In Dwelling Units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.
- Smoke alarms shall be installed not less than 3 feet (914 mm) horizontally from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm required by Section R314.3.

Carbon Monoxide Alarms:

Per ASHRAE 62.2, at least one CO alarm must be present in every home. CO alarms must be installed to the IRC or local code regulations.

CO alarms must be installed where alarms are not present or are inoperable.

A CO alarm should also be installed in accordance with SWS. Always install CO alarms according to the manufacturer's instructions.

R315.3 Location. Carbon monoxide alarms in Dwelling Units shall be installed outside, in the immediate vicinity, of each separate sleeping area. Where a fuel-burning appliance is located within a bedroom or its attached bathroom, a carbon monoxide alarm shall be installed within the bedroom.
R315.6.1 General. Household carbon monoxide detection systems shall comply with NFPA 720. Carbon monoxide detectors shall be listed in accordance with UL 2075.
R315.6.4 Combination detectors. Combination carbon monoxide and smoke detectors shall be permitted to be installed in carbon monoxide detection systems in lieu of carbon monoxide detectors, provided that they are listed in accordance with UL 2075 and UL 268.

Fire Extinguishers:

A fire extinguisher may be provided in homes with solid fuel burning equipment. The fire extinguisher must be installed according to the manufacturer's standards and local code in the vicinity of the primary heating source.

Testing protocols

Check existing alarms for operation.

Verify operation of installed alarms.

6.18 – Ventilation and Indoor Air Quality

Concurrence, Alternative or Deferral/Referral

Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐

Version of American Society of Heating Refrigeration and Air-conditioning Engineers (ASHRAE) 62.2 Implemented (optional: identify Addenda used)

Texas WAP has adopted the ASHRAE 62.2 2016 standard.

Procedures for complying with implemented ASHRAE standard

Pre and post ventilation requirements are calculated using the current Grantee approved calculator to ensure of ASHRAE compliance in regards to required ventilation, run-time, etc.

- ASHRAE 62.2-2016 Calculator

Calculator required inputs will be captured on the TDHCA Blower Door and Duct Blower Sheet as support documentation.

- Blower Door and Duct Blower Data Sheet (XLS).

Testing protocols

ASHRAE 62.2 evaluation to determine required ventilation.

Obtain required ASHRAE calculator data to include floor area, number of occupants/bedrooms, dwelling height, BD leakage, and measure fan flow of existing installed to verify performance.

6.19 – Window Repair, Door Repair

Concurrence, Alternative or Deferral/Referral

Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐

Unallowable Measure with DOE Funding ☐ Other Funding Source Addresses H&S Issue ☐

Window repair and door repair H&S policy

Replacement, repair, or installation is not an allowable health and safety cost but may be allowed as an efficiency measure if cost justified.

Crews/contractors must be trained in Lead Safe Weatherization (LSW) and follow EPA's Lead Renovation, Repair and Painting Program (RRP) rules for pre-1978 homes.

6.20 – Worker Safety (e.g., OSHA)

Concurrence, Alternative or Deferral/Referral

Concurrence with DOE Guidance ☑ Alternative Guidance ☐ Results in Deferral/Referral ☐

Unallowable Measure with DOE Funding ☐ Other Funding Source Addresses H&S Issue ☐

Federal, state and local worker safety requirements policy

Workers must follow OSHA standards and 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.

Trained in either OSHA 10 (crew members) or OSHA 30 (supervisors).

As part of the safety for crew, assessors will identify health and safety hazards according the OSHA method "Focus Four" which includes, electrical, fall protection, caught in and between, and struck-by hazards. The client will be informed in writing of any hazards and the associated risks that may have been observed.

Health and Safety Guidance

- OSHA Focus Four

6.21 – Water Heaters

Concurrence, Alternative or Deferral/Referral

Concurrence with DOE Guidance ☐ Alternative Guidance ☑ Results in Deferral/Referral ☐

Unallowable Measure with DOE Funding ☐ Other Funding Source Addresses H&S Issue ☐

Water Heater Remediation Protocols

Replacement or repair of water heaters is allowed on a case by case basis when the current appliance is creating moisture, combustion, and/or electrical related hazards that could impact occupant(s) Health and Safety. The Subgrantee must initially attempt to qualify existing Water Heater as an ECM. If the Water Heater does not rank, the Subgrantee may repair or replace the existing unit as a Health and Safety Measure with the caveat that there is a documented threat to the health and/or safety of the occupant(s). Further details are discussed in the Water Heater Replacement Best Practice on the TDHCA Website:

- BP-Water Heater

Testing protocols

Visual/sensory inspection, appropriate combustion appliance testing for gas units, and water temperature testing.

H&S Measure Matrix			
Double Click To Open For Editing			
Cells This Shade Auto-Calculate			
Measure	Average Cost	Frequency Installed/Completed	Auto-Calculated Average Cost
ASHRAE Compliance	$550.00	95.0%	$522.50
Smoke Alarms	$90.00	50.0%	$45.00
CO Alarms	$52.00	60.0%	$31.20
Replace UVSH Serving as Primary Heat Source	$1,760.00	12.0%	$211.20
Furnace Repair/Replacement	$2,500.00	2.0%	$50.00
Vulnerable HH Cooling Repair/Replacement	$3,000.00	2.0%	$60.00
Clean/Tune Cookstove	$75.00	4.0%	$3.00
CAZ Isolation/Combustion Makeup Air	$100.00	33.0%	$33.00
Revent Improperly Vented Gas Appliances	$245.00	3.0%	$7.35
LSW	$175.00	10.0%	$17.50
	$0.00	0.0%	$0.00
	$0.00	0.0%	$0.00
	$0.00	0.0%	$0.00
	$0.00	0.0%	$0.00
	$0.00	0.0%	$0.00
	$0.00	0.0%	$0.00
	$0.00	0.0%	$0.00
	$0.00	0.0%	$0.00
	$0.00	0.0%	$0.00
	$0.00	0.0%	$0.00
Total Average H&S Cost Per Unit			$980.75
Enter Estimated Production (Annual File: IV.2 WAP Production Schedule)			1269
Enter Estimated Program Operations Budget (Annual File - Budget)			$6,932,017.00
H&S Budget (Total Average H&S Cost Per Units * Estimated Production)			$1,244,571.75
Suggested H&S Budget Request			17.954%

Note- H&S Matrix was completed with subgrantee input and determined that pricing variables to remedy identifed H&S issues can slightly skew the estimated H&S percentage calculation (Example-Furnace repair/replacement can range from a $150.00 repair to a full system replacement at $2500.00).