



DEPARTMENT OF
**PUBLIC HEALTH &
HUMAN SERVICES**

Montana Department of Public Health and Human Services

Weatherization Assistance PROGRAM MANUAL



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INTRODUCTION

The weatherization policy and procedure manual is updated annually in conjunction with the Low-Income Weatherization Assistance Program Administrative Rules of Montana (ARM). Policy Bulletins are provided when policies change during the program year.

The policies and procedures included in the Weatherization Policy Manual are rules for administering the program. It is impossible to foresee and give examples for all situations; therefore, the staff is encouraged to use reason and apply good judgment in making decisions when addressing the specific needs and requests of a household or an unusual situation. Decision-making by staff based on the best information available, program knowledge, experience, and expertise in a particular situation is referred to as the Prudent Person Principle. Prudence may also include discussing specific policy interpretation with the subgrantee's monitor.

Chapter 1 ELIGIBILITY

1000 Eligibility

All households found to be LIHEAP eligible, whose homes have not been previously weatherized, are income-eligible for Weatherization services.

A household that is otherwise LIHEAP eligible but does not meet the LIHEAP income eligibility may be eligible for "Weatherization Only" services. To be eligible, an otherwise "LIHEAP qualified" household whose income is **no** more than 200% of the Federal Poverty Level (FPL). would be eligible for "Weatherization Only" services if their home has not been previously weatherized.

Note: To be "income" eligible for LIHEAP the household income for households of one through eight must be at or below 60% of the state median income. For households of nine or more income must be at or below 150% of the FPL

All households must complete an application for services.

Eligibility determination between heating seasons:

Applications are available all year for weatherization services.

When determining eligibility for weatherization during the LIHEAP non-heating season (May 1-September 30) agencies must follow the eligibility guidelines for the Low-Income Home Energy Assistance Program (LIHEAP).

1. Tribal weatherization households must be determined eligible for the Tribal Low-Income Home Energy Assistance Program or in accordance with the DOE-approved state plan as if the applicant had applied during the Tribal heating season. Tribal Indian Households are defined in the Memorandum of Understanding (MOU) between the State of Montana and the Tribe residing within the boundaries of the reservation. Indian households on the reservation may be eligible for weatherization through the Department.
2. Agencies must determine the priority for weatherization-only applicants that apply during the non-heating season unless a primary heating or water system emergency exists.

1100 Priority for Weatherization Services

Households must be Low-Income Home Energy Assistance Program (LIHEAP) or “Weatherization Only” eligible to receive weatherization services. Households must be on the priority list supplied by the Department, or the agency must determine the weatherization priority. In determining which eligible households will receive weatherization services and in what order, households in each of the governor’s substate planning districts will be ranked according to priority according to the following:

1. The highest priority is given to households with the highest energy burden.
 - a. When calculating the energy burden of households containing any of the following the energy usage shall be multiplied by 1.25:
 - i. an elderly household member (age 60 or older).
 - ii. a disabled household member; or
 - iii. a household member who is a child under age 18.
2. Households with the same energy burden are prioritized by the highest usage.

Agencies that provide weatherization services for Tribal clients must use the information provided by the Tribal Low-Income Energy Assistance Program to determine the priority for weatherization services.

Agencies must prioritize the weatherization of dwellings based upon the following:

Households can apply for summer weatherization-only services during the non-LIHEAP heating season (May 1 – September 30). These households will not be reflected on the Department generated priority list, but the agency must determine the weatherization priority based on the following factors:

1. The highest priority is given to households with the highest energy burden.

- a. When calculating the energy burden of households containing any of the following the energy usage shall be multiplied by 1.25:
 - i. an elderly household member (age 60 or older)
 - ii. a disabled household member; or
 - iii. a household member who is a child under age 18.
2. Households with the same energy burden are prioritized by the highest usage.
3. If the household is applying with a primary space heat or primary water heat emergency, they may not be on the current priority list.

Determine the household's energy usage priority by using the household's energy burden. If there is a household member who is age sixty (60) or older, disabled (determined under the federal Social Security Administration (SSA) Title II or Title XVI criteria) or a child under age eighteen (18), the energy usage is multiplied by 1.25. This gives a priority number preference to households that contain an elderly, disabled member, or a child under age eighteen (18).

Household's energy burden will determine where to place them on the priority list. Assign the corresponding priority number to the household.

Example: A household with a member who has a disability has an annual energy consumption of \$2,500 with an annual income of \$12,000.

Annual Energy Consumption x 1.25 because of the household member with a disability= \$3,125

$$\$2,500 \times 1.25 = \$3,125$$

Annual Energy Consumption ÷ Annual Income = Energy Burden

$$\$3,125 \div \$12,000 = .26$$

26% is the household's energy burden. The household would receive the priority number just after the household with a 27% energy burden.

The agency then must compare the calculated priority number to the Department generated priority list to determine when the household will be weatherized.

4. Determine if the household was previously weatherized.

- a) A dwelling is not eligible for weatherization services funded with DOE funds if the dwelling has been weatherized within fifteen years following the date of the previous weatherization completion.
 - b) Bonneville Power Administration (BPA) weatherization program does not have a re-weatherization date.
 - c) A dwelling is not eligible for weatherization services funded with LIHEAP and NorthWestern Energy (NWE) funds if the dwelling has been weatherized within ten years following the date of the previous weatherization completion.
5. A household on the priority list will remain eligible for weatherization services until the new priority list is generated by the Department. The agency priority list is generated for eligible LIHEAP households' multiple times per program year. Households must be weatherized in order of priority. Agencies can move up a household's weatherization priority based upon an emergency, travel considerations (e.g., agency's next weatherization project is out of town; another dwelling with a lower priority number in the same area would also be weatherized by the agency during the program year; both dwellings can be weatherized by the agency to save on travel costs), or due to co-funding a weatherization project with utility funding.
 6. Priority for weatherization on Tribal reservations will be based upon such factors as the number of household members, the number of household members who are elderly, disabled, the number of household members below the age of eighteen (18), fuel type, emergency situations, and type of dwelling.

1200 Eligible Dwellings

Agencies will perform weatherization services on single family dwellings where the occupants (owners or renters) have been determined eligible for the Low-Income Home Energy Assistance Program (LIHEAP) or weatherization programs. Eligible dwellings will be prioritized for weatherization as found in WAP 1100.

Multi-family Dwellings:

Agencies may weatherize multi-family dwelling units from the weatherization priority list if not less than 66% (50% for duplexes and four-unit buildings and certain eligible types of large multifamily buildings) of the dwellings in the building are eligible dwelling units. Each dwelling unit should be entered as a separate audit in the Computerized Energy Audit (CEA).

Note: Agencies must receive permission from the Department to weatherize buildings larger than four (4) units. Departmental approval is required for agency owned dwellings.

Note: Montana DEQ Asbestos Control Program sampling requirements apply to dwellings with more than 4 units, even if only a single unit is being weatherized.

A single dwelling unit within a multi-family building:

A single-family unit within a multi-family building can only be weatherized in consultation with the Department of Energy's Project Officer in instances where the following conditions are met:

- The unit is self-contained, without sharing an attic or basement with adjacent units, and has its own individual heating and cooling systems, and water.
- The unit has been audited with a current, approved energy audit tool and protocol that is able to adequately address a single unit within a larger structure, and
- The scope of work is specific to allowable measures within the eligible unit(s).

Agency Owned Dwellings:

All agency owned dwelling units to be weatherized require department oversight and pre-approval to ensure that no conflict of interest is present. The Department will review eligibility and approve weatherization measures prior to work being done.

1. The Department will review the LIHEAP application of tenants in agency owned dwellings to verify weatherization eligibility.
2. Once weatherization eligibility is confirmed, the department will review and approve the proposed weatherization measures. Documentation of approval will be provided via the pre-approval process already established in CDS Energy Audit. The pre-approval reason is "Agency Owned Dwelling".

Note: The tenants will not be subject to rent increases unless those increases are demonstrably related to matters other than the weatherization work performed.

Shelters or Group Homes:

Agencies may weatherize shelters or group homes. The number of dwellings that exist in a shelter or group home is based upon either 800 square feet of the shelter/group home as a dwelling unit or each floor of the shelter/group home.

Note: When shelter or group home residents are residing in the shelter or group home for reasons associated with being low-income and the mission or purpose of the

shelter or group home is to serve low-income people, there is no requirement for application for weatherization. If the agency documents that the shelter or group home meets these criteria, the shelter or group home can be weatherized.

For shelters or group homes that do not meet the above criteria, agencies must determine eligibility for weatherizing the shelter or group home based upon the occupants at the time of application. Each occupant must complete an application for assistance, including the manager if the manager lives in the dwelling. Eligibility is based upon the application and verification provided by each occupant.

1210 Non-stationary Campers and Trailers:

Non-stationary campers and recreational vehicles (RV) are not eligible for weatherization with any current funding source because of the mobility of the dwelling.

To be eligible for Weatherization, the Camper or RV must be permanently located (e.g., wheels/axles removed, skirted, or resting on a permanent foundation), preapproval is required.

If approved, the weatherization of a Camper or RV will be funded with LIHEAP WX funding only.

Note: LIHEAP CRF funding of furnace and water heater emergency repairs and or replacement are allowed on LIHEAP eligible Campers or RV's.

1220 Owner/Occupant Refusal of Measures (Skipping Measures):

Measure Skipping of cost-justified major measures is not permitted at any time on jobs funded in whole or part by DOE, NorthWestern Energy, or BPA.

“Major Measure” is defined as a high priority measure, which if skipped, would result in partial weatherization of a unit. Major Measures are as follows:

- Infiltration including attic air sealing.
- duct and boot sealing/insulation of ductwork outside the thermal boundary.
- attic insulation.
- wall insulation including above grade, below grade foundation walls and preparations for an air-tight cavity; and
- floor or belly insulation including preparations for an air-tight cavity.

Alteration of the cost-justified work order must be addressed in the following ways:

Funding limitations: If all funds available to be spent on the job will not cover the entire work scope, then measures may be removed from the work order starting with the lowest Saving Investment Ratio (SIR) measure and working up the list from there. The overall SIR of the work order must remain cost-effective, or the job must be deferred. Necessary Health and Safety (H&S) measures may NOT be removed from the work order; however, Energy Conservation Measures (ECM's) that are not listed as a **major measure** can be removed from the scope of work due to budget constraints.

Note: Jobs funded entirely with LIHEAP Weatherization may exclude ECM's due to budget constraints starting with the lowest SIR ranking, regardless of the measure being defined as a major measure or not.

Client Refusal: Prior to work beginning, client education regarding the scope of work in the home should be carefully undertaken. If a client objects to the identified scope of ECM's, agencies may elect to run costs for alternative approaches that utilize approved materials and meet the client's requirements through the audit to determine if the SIR supports the alternative approach. If no cost-effective alternative to the objectionable measure can be identified, the auditor should explain the "house as a system" approach to weatherization and ask again to proceed with the full scope of work. If a client still declines an ECM that is not a major measure, auditors are required to clearly document the circumstances of the denial in the client file and CDS EA and work may proceed. If a client refuses Health and Safety related items, or an ECM defined as a major measure; the job must be deferred due to client refusal. The agency must get a signature from the owner/occupant refusing the work and defer the project (an EAP-020 can be used to document client refusal). The dwelling would then be considered deferred for weatherization. A copy of the completed refusal form must be kept in the weatherization case file.

Inadequate Training: A lack of training for Subgrantees is not an allowable reason to skip measures. The standard procedure should be to postpone job(s) requiring priority measures that cannot be installed due to lack of trained staff until adequate training is acquired.

After a Job has Begun: Due to scheduling, measures are sometimes installed with a lower priority first. If during the installation process, the client declines a measure with a higher SIR, or a Health and Safety related measure, work must stop at the time of client refusal. No further work on the home is allowed and IHSB monitoring staff must be notified. The job will be inspected by a Quality Control Inspector (QCI) and closed out as a completed unit. This should be clearly explained in client file documentation and in CDS EA. Agencies are encouraged to include a statement for client signature, prior to

work beginning on the home, that states that the client is aware of the “house as a system” approach to weatherization and that partial weatherization/cherry picking of major measure ECM’s and Health and Safety measures is not allowed.

Note: It is recommended to have the owner/occupant sign a refusal form when any measure, regardless of the priority of the measure, is refused and retain the refusal form in the weatherization case file.

1230 Dwelling for Sale:

No owner-occupied residence shall be weatherized if it is being offered for sale.

No renter occupied residence shall be weatherized if it is being offered for sale unless it can be demonstrated that the residence will continue to be occupied by eligible tenants.

1240 Owner/Occupant Move:

If the owner/occupant moves from the dwelling or passes away after weatherization work has begun, weatherization of the dwelling may be completed. The agency also has the option to defer the dwelling.

1300 Combustion Appliances in Rental Units

The landlord is responsible for replacing or repairing the furnace as per the Montana Residential Landlord and Tenant Act. After providing and/or documenting that backup or temporary heat has been provided, the LIHEAP recipient (tenant/renter) needs to give the landlord written notice informing the landlord of the furnace problem and give the landlord “reasonable” time to fix the problem. Emergency situations, according to Section 70-24-406, Montana Code Annotated must be addressed by the landlord within 3 working days. Montana Legal Services has developed a form the LIHEAP recipient can use to notify the landlord of the emergency.

Montana Legal Services has also developed a Landlord-Tenant Law Information sheet. The LIHEAP recipient should send the Information Sheet to the landlord along with the letter notifying the landlord of the emergency.

In addition, the agency should encourage the LIHEAP recipient to contact Montana Legal Services at 1-800-666-6899 for assistance.

Under what is commonly called “The Montana Residential Landlord and Tenant Act of 1977”, Montana law provides: (1) ‘A landlord:

(e) shall maintain in good and safe working order and condition all electrical, plumbing, sanitary, heating, ventilating, air-conditioning, and other facilities, and appliances, including elevators, supplied, or required to be supplied by the landlord.

(g) shall always supply running water and reasonable amounts of hot water and reasonable heat between October 1 and May 1, except if the building that includes the dwelling unit is not required by law to be equipped for that purpose or the dwelling unit is so constructed that heat or hot water is generated by an installation within the exclusive control of the tenant. (70-24-303, MCA (2014)).

Unless a landlord can demonstrate that they are low-income or have some mitigating circumstances, the responsibility for the maintenance, repair, or replacement of the home heating system in the rental unit is the responsibility of the landlord. Mitigating circumstances may include, but are not limited to:

- The landlord is absentee, and the agency cannot contact the landlord and the maintenance, repair or replacement of the appliance is necessary to alleviate a health and safety related issue.
- The landlord refuses to maintain, repair, or replace the appliance and the occupants of the dwelling have a health and safety issue with the appliance.
- The landlord cannot maintain, repair, or replace the appliance in a timely manner to alleviate the health and safety issue.

All mitigating circumstances regarding the landlord not maintaining, repairing, or replacing an appliance in a health and safety related circumstance must be documented in the client's case file. IHSB strongly encourages agencies to pursue written documentation of mitigating circumstances from landlords whenever practical. Detailed case notes will suffice if written documentation cannot be obtained. The agency can contact the Department for guidance regarding determination of a mitigating circumstance.

1400 Access Agreements

No weatherization work will begin on a dwelling until the occupant and/or owner of the dwelling completes the DPHHS-EAP-013 "Montana Weatherization Assistance Program(s) Access Agreement". Copies of the signed DPHHS-EAP-013 must be provided to the occupant and/or owner of the dwelling and the original signed copy must be maintained in the agency's weatherization file.

Chapter 2 CDS ENERGY AUDIT

2000 Computerized Energy Audit Requirements

The Montana Computerized Energy Audit (CEA) is an Internet-based application used by state and tribal weatherization agencies to initially determine the cost-effectiveness for weatherization measures that may be performed on a dwelling. The CEA also records the actual costs for weatherization measures performed on a dwelling and final cost-effectiveness calculations as part of the completion process.

After the initial inspection of a dwelling has been completed by the agency's certified weatherization inspector/auditor, information regarding the existing conditions in the dwelling is entered into the CEA. The CEA uses existing condition information gathered during the initial inspection and proposed weatherization-related changes to analyze the dwelling as a whole system. The CEA calculates interactions between the envelope of the dwelling, the heating and air exchange systems and the lifestyles of the occupants. The CEA uses information regarding the primary and secondary heat types, the efficiencies of the heat systems, annual energy costs, the number of occupants, the number of occupants who smoke, buffer factors, wind exposure and health and safety hazards.

One of the primary objectives of an auditor performing an energy audit should be to strive to ensure the input values in the audit reflect the most accurate and realistic information available. The certified inspector/auditor enters the proposed weatherization-related changes to the existing conditions that the agency may perform on the dwelling into the initial CEA. (Please see part C. Changes to the Computerized Energy Audit.) The estimated or actual costs (Installation and Materials) associated with performing the proposed changes/services are also entered into the CEA for the respective measures and the CEA determines the cost-effectiveness Savings-To Investment Ratio (SIR) for attic insulation, floor insulation, wall insulation, crawlspace/rim joist/basement insulation, windows, doors, and infiltration measures. Each measure must meet an Individual SIR (Currently 1.0) and the Overall SIR (Currently 1.0) to be performed by the agency. Blower door guided air sealing is an exception that may have an individual SIR of less than 1.0. Please reference section 9500 Infiltration for more information.

Note: Agency crew/contractor travel costs, transportation costs or agency/contractor overhead costs are not to be entered into the CEA for any measure. These costs are considered overhead costs that are associated with the individual weatherization project to be expensed to the respective federal funding source. Overhead costs for federal contracts as well as computerized energy audit costs

for federal and utility contracts are expensed to the respective contract program operations line item and are considered expenses for the average cost per dwelling.

Amounts expensed in the CEA for performing inspections/repairs on the heat system, health and safety measures, attic air sealing and the audit costs are not subject to the Individual or Overall SIR calculations but are subject to contractual limitations and/or averages, i.e., Health and Safety Department of Energy (DOE), and NorthWestern Energy (NWE) expenditures are limited to a 17.5% state average.

After the initial CEA is completed, the audit will prioritize, in descending order, the proposed measures by cost-effectiveness. The most cost-effective measures must be completed first during the weatherization of a dwelling.

The CEA does not prioritize work on attic air sealing or health and safety measures. The agencies should prioritize work on heating systems and water heaters higher than work on air infiltration, insulation, ventilation and moisture control, windows, and doors.

Note: If the proposed costs for the weatherization of a dwelling exceeds \$9,000, the agency must request and receive written permission from the Department **before** proceeding with the project. Prior written permission from the Department can be waived in cases of emergency or urgency determined by the agency. The Department still must be contacted for approval after the fact.

The completed CEA must be electronically available for review. The agency must, at a minimum, keep a copy of the final Summary Page in the client's case file. The agency also has the option to print out the entire CEA to be placed in the case file.

Work orders need to contain R-values, U-Values, equipment efficiency values, etc. that need to be achieved based on the energy audit conducted on the home. Comments need to be entered in CDS Energy Audit to explain how R-values, U-Values and equipment efficiency values were determined. Equipment efficiency values must be determined based on data plate input and output values.

2100 Changes to the Computerized Energy Audit

Furnace Replacements:

When a furnace replacement can be cost-justified, in the DOE approved Energy Audit the replacement **must** be treated as an ECM. Furnaces that are cost-justified in Energy Audit must be charged to Program Operations.

NorthWestern Energy will fund the replacement of a NorthWestern Energy customer's primary electric space and/or water heating appliance only if the electric appliance is condemned by a Heating, Ventilation, and Air Conditioning (HVAC) specialist. The HVAC specialist must inspect and condemn the electric appliance prior to the appliance dismantling or replacement.

To qualify for NWE funding, primary electric space and/or water heating appliances must use electricity supplied by NWE.

The furnace replacement may be considered for H&S replacement only after it is determined that the measure is not cost-effective as determined by the energy audit. Furnaces that are not cost-justified in Energy Audit should be charged to the Health and Safety line within the DOE, NWE, LIHEAP, and BPA contracts. The Agency must provide documentation of an imminent threat to the occupant's Health and Safety.

If an unvented combustion space heater is the primary heat source the unit must be replaced prior to weatherization. No home shall be left without a safe primary heating system.

Heating System Seasonal Efficiency:

The Department sets certain parameters in the Computerized Energy Audit (CEA) based upon averaged information for heating system units existing in dwellings. As part of the weatherization of a dwelling, the heating system is inspected, tested and, if necessary, repaired or replaced.

If heating systems are going to be replaced during weatherization work, the seasonal efficiency of **replacement units** (not the seasonal efficiency of unit being replaced) **must** be reflected in the energy audit.

By requiring agencies to use seasonal efficiencies of heating systems that will be utilized to address on-going rather than past heating needs, we are ensuring that decisions regarding which measures to perform are determined based on accurate energy usage characteristics.

Fuel Cost Parameters:

The Department sets certain parameters in the Computerized Energy Audit (CEA) based upon averaged fuel cost data for the state. Parameters for fuel costs for natural gas, electricity, propane, fuel oil, coal and wood are updated by the Department once per year at the start of a contractual period.

In some instances, non-regulated fuel type prices can change during a contract period within an agency’s service area. If the agency can document a fuel type price change by averaging prices gathered from fuel vendors within the service area, the fuel price per unit for that specific fuel type can be changed by the agency on the individual CEA. The change in the fuel price used in the CEA must be documented in the comments section of the CEA and in the weatherization case file.

Note: The costs for NorthWestern Energy (NWE) fuel types cannot be changed on the Computerized Energy Audit (CEA)

Units of fuel types are described as follows:

Fuel Type	Units
Natural Gas	Dekatherm
Electricity	Kilowatt Hour
Propane/Butane	Gallon
Fuel Oil	Gallon
Coal	Ton
Wood/Hardwood	Cord

Heating Degree Days (HDD) and Cooling Degree Days (CDD)

Upon initial creation of an Energy Audit from a LIHEAP Case, the CDS Energy Audit System populates both HDD and CDD values that match the city from the Thirty-Year Degree Day Averages Reference page. If no city matches the city on the energy audit, the average HDD and CDD of all cities in the CAA area is used. The agency may make changes in an individual energy audit to either or both HDD and CDD fields with documented information.

The Climate Stations Reference Page is a new page created to display Climate Stations information. The information on this page is downloaded from the National Centers for Environmental Information (NCEI) website (<https://www.ncdc.noaa.gov/>). Currently, NCEI updates this information in June of years ending in 1, like June 2011 and June 2021.

The HDD and CDD values by city listed in the Thirty-Year Degree Day Averages Reference page come from the Climate Stations Reference page.

For all audits, upload into CEA Manage Documents after the data has been entered into CEA, before any pre-approvals and/or weatherization work has begun.

1. Completed Standard Audit (EAP-035)
2. All Diagnostic Test Results,
3. Job Work Order,
4. Completed Furnace worksheet (EAP-008)
5. All photos taken at the audit.

2200 Buy-down of Individual Measures

If the total material and labor costs to perform a weatherization measure brings the individual Savings-to-Investment Ratio (SIR) below 1.0, the owner/landlord can “buy-down” or cost share to bring the SIR up to a 1.0 or greater. While DOE encourages owner/landlord financial participation in weatherization activities, partial buydown of ECM’s is not allowed.

For example, the total cost to insulate an attic is \$1,000. The CEA will only support \$800 to arrive at a 1.0 SIR. The owner of the dwelling is willing to pay \$200 as a “buy-down” or cost share. With the owner’s contribution, the attic can be insulated with funding other than DOE. The \$800 will be subject to the SIR calculation and the \$200 will be recorded on the CEA as a contribution.

2300 Co-Fund of Individual Measures

For all funding sources, except DOE, if the total material and labor costs to perform a weatherization measure brings the individual Savings-to-Investment Ratio (SIR) below 1.0, the Agency may accept an owner/landlord Co-fund or leverage the measure with LIHEAP, NWE, or BPA co-funding to bring the SIR up to a 1.0 or greater. Per WPN 22-9, DOE allows leveraged co-funding (not owner contribution) to install measures that do not have an SIR of 1.0 or greater. The co-funded measure(s) must remain the last measure(s) in the package of measures that an SIR being installed to ensure the co-funded measure(s) do not leapfrog over other measures that are cost-effective on their own merit. If the measure(s) is not the last on the list, monitor approval is needed on a case-by-case basis.

For example, for LIHEAP, NWE, and BPA the total cost to insulate an attic is \$1,000. The CEA will only support \$800 to arrive at a 1.0 SIR. Using a \$200 LIHEAP, NWE, or BPA co-funding or an owner contribution of \$200, the attic can be insulated. The \$800 will be subject to the SIR calculation and the \$200 will be recorded on the CEA as a LIHEAP, NWE, or BPA co-funding or as a Homeowner contribution.

For DOE, the co-fund of \$200 can be leveraged with NWE, LIHEAP, or BPA co-fund funds. DOE does not allow Landlord Contributions on Single Family Dwellings. DOE does allow Landlord Contributions in Multifamily Dwellings.

2310 Braiding of Individual Measures

Per WPN 22-9, Braiding is defined as using multiple separate funding sources, NWE, LIHEAP, BPA, and DOE on one weatherization project to address the different needs within the home, while ensuring each funding source is isolated and tracked independently. Agencies are responsible for tracking the use of various funding sources.

Agencies can braid DOE with specific types of funding sources:

- Sustainable Energy Resources for Consumer (SERC)
- Enhancement & Innovation (E&I)
- Weatherization Readiness Funds (WRF)

The Department of Energy requires that **measures** performed with DOE funds cannot be co-funded with another funding source. Co-funding is allowed on a **job** funded with DOE but not within a measure. If there is a measure that is to receive a homeowner/landlord contribution this measure cannot be funded with DOE. The Agencies may continue to co-fund measures with funding sources other than DOE.

In the example below, one can see that charges on the DOE line are covered fully whereas the other measures are braided with LIHEAP and BPA. This job was braided with 3 funding sources, but blending did not occur within a measure if DOE funds were used.

Table 1- Braiding Example

Save Summary Calculate	Grand Total	Attic	Walls	Floor	Crawlspace/ Rim Joists	Windows	Doors	Infiltration Reduction	Misc. Measures	Audit	QCI	Space Heat Tune- Up	Water Heater Tune- Up
Total Cost	4643.51	0.00	0.00	748.00	0.00	1532.85	0.00	58.76	69.26	760.00	0.00	475.00	14.60
Remainder	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00	0.00	0.00
Landlord	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Homeowner	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
HRDC Expensed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
LIEAP CRF	0.00												
<input type="radio"/> BPA - 18028310070	1567.85					1032.85		35.00				200.00	
<input type="radio"/> DOE - 17028300290	1630.22			748.00					69.26	760.00			14.60
<input type="radio"/> LWX - 17028160090	1445.44					500.00		23.76				275.00	

2400 Self- Help Towards Weatherization Measures

If the owner/landlord wishes to contribute self-help the agency must execute a written, signed contract with the owner/landlord outlining:

- the specifications of the work to be performed.
- the supplies and materials to be provided.
- the deadline for completion.
- liability rests with the owner/landlord; if work is not performed by the deadline all supplies/materials must be returned to the agency.

Note: The agency must request and receive written permission from the Department before proceeding. If written permission is granted by the Department, the agency must inspect the self-help work to insure proper installation as well as completion of the measure/work.

Chapter 3 AIR LEAKAGE TESTING REQUIREMENTS

3000 Air Leakage Testing Requirements

The blower door is a diagnostic tool used by an agency to measure air leakage (Infiltration) in cubic feet per minute (CFM) and/or natural air changes (NAC) and to identify areas within the dwelling that need air sealing. By using a blower door, the agency can measure air tightness (CFM/NAC) in a dwelling to determine the ventilation rate and energy loss due to infiltration/exfiltration. (The blower door either pressurizes or depressurizes the dwelling to test the CFM/NAC infiltration rate. The blower door must also be used as a diagnostic tool for zonal comparisons and duct system analysis and repair.

The agency is required to document the dates and results of the pre, production, and post-weatherization blower door test results and the Zone Pressure Diagnostic results, as well as the signature of the person performing the tests in the weatherization case file.

Weatherization contracts require that a pre- and post-blower test be performed on each dwelling weatherized. The pre-blower door test is performed during the initial inspection of the dwelling and the post-blower test is performed during the agency's final inspection of the dwelling. Production blower door testing is conducted during air-sealing, as well as during pressure pan and zonal testing. (See BPI Standard 1200 for technical guidance).

If the auditor elects to do a pressurization test as opposed to the more common depressurization test, the final blower door test must also be a pressurization test.

DOE WPN 19-4 states blower door guided air sealing may have an SIR less than 1.0, if the cumulative SIR of the package of measures is equal to or greater than 1.0, not including H&S measures. Air sealing goals will be based on the Auditor's assessment of the opportunities for cost effective air sealing in the home. The goal is to reduce the CFM leakage/NAC infiltration rate in the dwelling as much as is cost effective and allow mechanical ventilation to ensure adequate indoor air quality in the home.

The pre-blower door and Zone Pressure Diagnostic test results must be recorded in the initial Computerized Energy Audit (CEA). The post-blower door test results must be estimated and input into the CEA based upon the dwelling type, the condition of the dwelling and agency's experience in reducing the CFM/NAC rate with all the proposed weatherization measures to be performed on the dwelling. During the final inspection of the dwelling or at the completion of the proposed weatherization measures/services, the actual post-blower door and Zone Pressure Diagnostic tests will be performed, and the actual results must be entered into the weatherization case file and CEA.

When the pre-blower door test results from the initial inspection of the dwelling and estimated post-blower door test results are entered into the Infiltration section of the initial CEA, the agency also must enter the estimated material and labor costs for performing air sealing measures. This information allows the agency to have the CEA determine the cumulative cost-effectiveness of all proposed measures excluding H&S measures.

After the agency performs the post-blower door and Zone Pressure Diagnostic tests, the agency must input the actual test results in the Infiltration section of the CEA along with the actual material and labor costs (excluding attic air sealing material and labor). When this information is input, the Savings-to-Investment Ratio (SIR) for Infiltration may be less than 1.0 if the cumulative SIR of all proposed measures (excluding H&S) is 1.0 or greater.

When a dwelling has duct work from a forced air heating system that runs outside of the building's Pressure Boundary, this home will be subject to duct testing at the audit and following any duct sealing measures. This test is to be completed using Pressure Pans in conjunction with the Blower Door test while the home is depressurized to -50 Pascals (pa). Any register that has a Pressure Pan reading with a pressure difference with reference to the house of 1 pa or greater will be assessed for duct sealing measures.

3100 Performing Air Leakage Tests:

The blower door and Zone Pressure Diagnostic tests must be performed on a dwelling at the audit and following the installation of weatherization measures.

Note: The agency must explain the purpose and procedures for the pre and post blower door tests to the client. If the client refuses the blower-door testing the agency must defer the weatherization of the dwelling.

Note: If vermiculite is present the agency must defer the dwelling per section 6100. If suspected friable or non-friable ACM is present reference sections 6200, 6300, 6400, and 6500. The agency is allowed to use Weatherization Readiness funds (WRF) to abate the vermiculite, friable, and non-friable asbestos or other barriers stopping weatherization work. The homeowner or renter must agree to receive weatherization assistance once the weatherization barriers are removed.

When the dwelling is deferred for weatherization due to potentially hazardous conditions, the agency must provide the occupants/owner with a copy of the DPHHS-EAP-023 'Notice of Dangerous Conditions' form.

Under extenuating circumstances, a post-blower door may be omitted with Departmental approval. The reason for the non-completion of the post-blower door test must be documented in the case file and on the Computerized Energy Audit (CEA).

3200 Pass Rate for Attic Air Sealing of Single-Family Dwellings:

For an open (un-floored), unconditioned attic, a pressure difference of 45 Pascals (pa) with reference to the house must be reached while the home is depressurized to -50 pa. If a pressure difference of 45 has not been attained, attic air sealing is to continue. For floored, unconditioned attics, the pass rate will be a pressure difference of 40 pa with reference to the house while the home is depressurized to -50 pa. If the attic is partially floored, a weighted average of floored/un-floored attic area can be used to determine the pass rate.

If it is not possible to reach the pass rate for a home. In these cases, the agency must provide photos and a detailed description of what circumstances prohibited the contractor from reaching the passing zone pressure.

3300 Duct System Testing

Pressure pan testing is required on all homes with ductwork present outside of the pressure barrier of the building; this includes virtually all mobile homes. This test is to be completed while the home is depressurized to -50 pa. The target for each register is a pressure difference of 1 pa or less with reference to the house. This test will aid the auditor in the need for duct sealing measures as well as provide a means to locate the largest leaks in the system. Crews will run a pressure pan test during production to verify performance of their work and ensure that duct sealing targets have been reached. Results of production related pressure pan tests must be retained in the client file. If it is determined by the auditor through the initial duct test that duct sealing measures are not needed, then no duct test will be required at the final inspection/test-out.

Note: The registers closest to the air handler are under the highest pressure.

Chapter 4 LEAD SAFETY FOR RENOVATION, REPAIR AND PAINTING (LSRRP)

4000 Lead Safe Practices:

All Agencies and contractors performing renovation, repair, and painting projects that disturb lead-based paint in dwellings built prior to 31 December 1977 must be certified and demonstrate that they use certified renovators who are trained by EPA-approved training providers. All weatherization work will be performed in accordance with the EPA's Lead Safety for Renovation, Repair and Painting Manual. Please note that work in HUD owned or assisted facilities, including households that receive Section 8 vouchers, may require adherence to the potentially more restrictive, HUD Lead Safe Housing Rule (LSHR).

The EPA and HUD rules affects paid contracting renovators, maintenance workers in multi-family housing and painters who are contracted by the agency to work in dwellings built prior to 31 December 1977, including mobile home housing. The requirements apply to renovation, repair, or painting activities. The rule does not apply to minor maintenance or repair activities where less than six square feet of lead-based paint is disturbed in a room, or where less than 20 square feet of lead-based paint is disturbed on the exterior. Please note that window replacement and demolition is not considered a minor repair regardless of square footage of disturbed area and see the HUD Lead Safe Housing Rule (Appendix 2 in the LSRRP Manual) for more restrictive de-minimis area limits when working in HUD associated facilities.

Agencies will determine the age of the dwelling to be weatherized at the time of the initial inspection. The age of the dwelling will be recorded in the weatherization case file and in the computerized energy audit. Any dwelling built prior to 31 December 1977 is suspect for lead-based paint unless it has been certified as lead free. LSRRP practices must be followed to minimize occupant and worker exposure to lead dust and debris. Lead poisoning can affect a person of any age.

4100 Mobile Homes & Lead:

Agencies and contractors performing renovation, repair, and painting projects in mobile homes built prior to 31 December 1977 must determine if the surfaces identified for weatherization activities have been previously painted. If it is determined that surfaces have not been painted, the mobile home can be determined exempt from LSRRP practices. If it cannot be determined if the surfaces have been painted, LSRRP practices must be followed, and appropriate documentation must be maintained in the client file.

4200 Notification of the Possible Presence of Lead Based Paint:

Agencies and or certified firms operating in LSRRP target housing must provide building owners and occupants with the lead hazard information pamphlet, "The Lead Safe Certified Guide to Renovate Right" at least seven (7) days, but no more than 60 days, prior to weatherization work beginning on a dwelling. Additional notice requirements may be triggered in child occupied and multi-family facilities (refer to EPA, LSRRP manual for details).

Note: Agencies must maintain a signed copy (or copies when working in landlord owned homes) of the "Confirmation of Receipt of Lead Pamphlet" form in the weatherization file or certification of mailing of the pamphlet from the post office at least seven (7) days prior to beginning weatherization.

4300 Lead Testing Procedures:

Paint testing or an assumption of the presence of lead must be made prior to the renovation of all surfaces to be affected by the weatherization work. The agency can test paint using the EPA recognized test kits or they can elect to presume that the paint is lead based and LSRRP practices must be followed.

3M Lead Check, D-Lead, and the State of Massachusetts are the only test kits that EPA has approved, and the only current method authorized for use in determining the presence of lead in painted surfaces. Only certified renovators can perform the lead test. Please refer to Appendix A in the LSRRP Student Manual for lead testing requirements in HUD owned or assisted facilities.

4400 Lead Safety for Renovation, Repair and Painting (LSRRP):

When an agency determines that weatherization work will be performed on a dwelling built prior to 31 December 1977 and not determined to be lead free, all work will be performed according to the Lead Safety for Renovation, Repair and Painting Manual. Appendix A in this policy manual contains a quick guide to Lead-Safe Standards and Appendix 2 in the LSRRP Student Manual identifies key differences between the EPA LSRRP and HUD LSHR.

If you will be disturbing **more** than 6 sq. ft. of interior surface or **more** than 20 sq. ft. of exterior surface, **or when replacing a window**, full signage, containment, cleanup practices, cleaning verifications and recordkeeping, as described in the LSRRP rule, are required. When disturbing less than 6 sq. ft. of interior, or less than 20 sq. ft. of exterior

surfaces, workers should take steps to limit dust production and migration, but the full suite of LSRRP signage, containment, cleanup practices, cleaning verifications and recordkeeping, are not required. Please note that HUD LSHR has more stringent de-minimis area regulations that are outlined above.

All LSRRP required paperwork must be completed and contained in the client file with photographs of the containment work and cleaning verification (CV) card.

Note: In addition to containment photos in the client file, the CDS Energy Audit must contain a sampling of photographic documentation of where the agency performs any LSRRP work, including window and/or door replacement or repair (If applicable).

4500 Reporting and Documentation:

When EPA-recognized test kits are used, the Certified Firm must provide a report to the client (in case of rental, both the client and the landlord) within 30 days after completion of the renovation. The following must be included in the report:

- The date of testing.
- Identification of and contact information for the Certified Firm and Certified Renovator performing the testing.
- Test kit manufacturer's name and kit identification.
- Locations of surfaces tested, descriptions of the surfaces tested, and the results of the testing.
- Copies of the report and documentation of receipt by the client and landlord must be maintained in the client file.

Any LSRRP work performed on dwellings (including mobile homes) built prior to 31 December 1977 and not certified as lead free must be **photographed and documented** in the weatherization file. The photographs must show the measures undertaken during the work performed on the dwelling, **including set-up, safety barriers, and clean up**. The photographs must include the visual inspection procedure and cleaning verification (CV) procedure, with the results of the clearance test performed by the certified renovator.

4600 LSRRP Record Keeping

Records must be retained for eight (8) years past the end of the DPHHS Master Contract.

During the renovation, the agency must ensure the following records are kept at the job site:

- Copies of Firm Certification.
- Certified Renovator Certification.
- Lead Based paint testing results.
- Proof of owner/occupant pre-renovation education.
- Non-certified worker training documentation.

Upon completion of the renovation project these records must all be maintained in the client file with the photographs of the LSRRP work and clearance tests.

Appropriate Blood Lead Level (BLL) baseline tests for workers performing LSRRP work must be maintained in the agency's files for the term of employee retention plus ten years.

Chapter 5 HEALTH AND SAFETY

5000 Health and Safety Related Deferrals

The weatherization of a dwelling can be deferred (postponed until a later date) by the agency if providing weatherization services would pose a threat to the health and safety of the occupants, agency staff or contractors. The weatherization will be postponed until the conditions that pose a threat to health and safety have been resolved.

Under LIHEAP and NorthWestern Energy contracts, where no Savings to Investment Ratio (SIR) measures are identified in CDS Energy Audit, it is agency discretion as to whether the audit will be counted as a 0.0 SIR completion, or a 0.0 SIR deferral. A 0.0 SIR completion will trigger re-weatherization prohibition timelines, where a deferral will enable the agency to return to weatherize the home later. Completions with 0.0 SIR are not allowable under DOE, BPA or MDU contracts. Deferrals that are only a Health and Safety Furnace Replacement, no other measures, are **NOT** allowed. A furnace replacement must first be tested in the Heating Fuels/Space Heat measure as an ECM. As an audit, no Measure Skipping of cost-justified measures is permitted. If a furnace is tested, an audit is created, and all SIR driven Energy Conservation Measures (ECM's) must be tested.

Under DOE, BPA and MDU contracts, health and safety related expenditures are **NOT** allowed, unless SIR driven ECMs are also part of the scope of Weatherization work. This requirement prevents Health and Safety related expenditures under these contracts from being allowable when an audit is deferred for Health and Safety reasons or deferred because there are no SIR measures present.

DOE Health and Safety funds must be tied to an Energy Conservation Measure. If DOE Health and Safety funds are used, then DOE funds must be used towards an Energy Conservation Measure.

Health and safety related expenditures are allowable under LIHEAP and NorthWestern Energy contracts on deferred audits and zero SIR completions.

In deferred audits and 0.0 SIR completions under LIHEAP and NorthWestern Energy contracts, costs are allowable under Health & Safety, the Heating System, and Miscellaneous Measures sections. The agency may expense the contract for: The installation of a water heater wrap; up to ten (10) feet of pipe insulation for the hot water distribution pipe; low-flow showerheads and faucet aerators; compact fluorescent lamps (CFL); light emitting diodes (LED's), gas appliance inspections and

tune-ups; carbon monoxide (CO) alarm and one (1) energy education visit. All Weatherization funding sources will reimburse the agency 100% of the costs of the above. Providing these services on deferred audits does not subject the dwelling to the federal re-weatherization dates.

Health and safety circumstances that justify the deferral of weatherization services include, but are not limited to:

- The occupant has a known health condition that prohibits the installation of insulation or other weatherization materials.
- The building structure or the mechanical systems within the dwelling, including electrical and plumbing, are in such a state of failure or imminent failure and the conditions cannot be cost-effectively resolved. (Building integrity creates an inability to weatherize practically or effectively.)
- The dwelling has sewage or other sanitary problems that would further endanger occupants, agency staff or contractors if weatherization work was performed.
- The dwelling has been condemned or electrical, plumbing, or other equipment has been condemned with a Hazard Tag by local or state building officials or utilities.
- There are moisture problems in the dwelling that are so severe they cannot be cost-effectively resolved under existing health and safety measures or incidental energy-related repairs. Minor repairs are allowed up to \$500, if the costs are going to exceed \$500 pre-approval is required.
 - Health and Safety funds can be used for door and window **repair** to resolve a bulk water intrusion issue that is the cause of visible biological growth (mold). Comments in the H&S section are required.
 - Health and Safety funds cannot be used for door and window replacement.
- Dangerous conditions exist due to high carbon monoxide levels in combustion appliances within the dwelling which cannot be resolved under existing health and safety measures.
 - It is recommended that the agency address the high carbon monoxide levels or provide the client with information on how to address the issue. If the agency identifies high carbon monoxide levels during the “end of the day CAZ depressurization and spillage test”, the agency must address and resolve the high carbon monoxide issues.
- The occupant/owner is uncooperative, abusive, or threatening to agency staff and/or contractors who must visit the dwelling to perform weatherization-related measures or services.

- The extent and condition of lead-based paint, mold or asbestos located in the dwelling would potentially create further health and safety risks.
- In the judgment of the Department or weatherization agency, any condition exists which may endanger the health and or safety of the occupant, agency staff or contractor.
- Partial weatherization of a dwelling is not allowable. All Major Measures, identified in the audit as being cost effective, and all Health and Safety related items must be done. Client must agree to meeting ASHRAE 62.2.2016 requirements. LIHEAP funding may exclude ECM's, reference section 1200.
- WPN 22-7 states, "Unsafe secondary units, including space heaters, must be repaired, or removed and disposed of, or deferral is required. Secondary unvented space heaters are considered unsafe if they:
 - are not listed and labeled as meeting ANSI Z21.11.2,
 - have an input rating of more than 40,000 BTU/hour,
 - are in a bedroom and have an input rating of more than 10,000 BTU/hour,
 - are in a bathroom and have an input rating of more than 6,000 BTU/hour,
 - are operating in an unsafe manner (e.g., high carbon monoxide (CO) readings, too close to combustible materials, lack sufficient combustion air volume), or
 - are not permitted by the Authority Having Jurisdiction (AHJ).
- If the completed dwelling unit will be heated with an unvented combustion space heater as the primary heat source, deferral is required.
- If an occupant will not allow the removal of an unsafe combustion appliance from the home, deferral is required.
- Fireplace or woodstove venting that is left operational must meet current local or national standards or the home must be deferred.

The reasons for the deferral of a weatherization project must be documented in the weatherization case file as well as within CDS Energy Audit. The agency must provide the occupant/owner with a copy of a completed DPHHS-EAP-020 Agency Health and Safety Walk Away or Deferral Notice. This form lists the health and safety conditions that must be addressed by the occupant or owner prior to weatherization work beginning or continuing. The form requests that the agency be notified when these conditions have been corrected. A copy of this completed form is given to the occupant, a copy to the owner and a copy is retained in the weatherization case file.

Once the agency has been notified that the reasons for deferral have been resolved the agency must verify the household is still eligible (i.e., on the current priority list or LIHEAP or Weatherization Only eligible) before proceeding with weatherization work.

5100 Health and Safety Related Repairs

The health and safety of weatherization clients, weatherization agency staff and contractors are a prime concern of the Department. It is important that weatherization agency staff and contractors be aware of the potential hazards of the weatherization process and minimizes risks to clients, workers, and contractors.

Note: To review workplace safety standards and regulations visit OSHA website. For product hazards review agency's Safety Data Sheets (SDS).

Each dwelling inspected or weatherized by an agency must be assessed to determine the existence of potential health and safety hazards to occupants, agency staff or contractors. When a health and safety hazard, situation or condition is determined by the agency that cannot be corrected with weatherization contract funds, the agency must defer the weatherization of the dwelling and provide the occupant and owner with a copy of the DPHHS-EAP-020 AGENCY HEALTH AND SAFETY Walk Away or Deferral Notice. (See WPN 22-7 and the DOE Weatherization State Plan Health and Safety Section for additional health and safety related details).

Health and safety funds may be expended for:

- minor electrical system repairs,
- minor plumbing repair,
- minor pest removal (When it prevents weatherization),
- injury prevention (stairs/handrailing),
- minor moisture (Barrier/Gutters) related repair,
- stand-alone electric space heaters,
- minor biologicals and unsanitary (sewage) issues,
- minor building structure and roofing repair
 - Window and door **repairs** are allowed with H&S funds to resolve a bulk water intrusion issue that is the cause of a biological growth (mold). Per WPN 19-5 Incidental Repair Measure Guidance and WPN 22-7 Weatherization H&S)
 - H&S funds cannot be used for window or door **replacement**.
 - Window and door replacement can be an IRM to the wall or floor measure if the replacement is necessary for the performance and preservation of the measure being installed as part of the work scope.
- minor fuel leaks

- When a gas leak is found on the utility side of service, the utility service must be contacted, work must be temporarily halted, and the leak must be repaired before work may proceed.
- Fuel leaks that are the responsibility of the occupant must be repaired before installing weatherization measures in the home.
- The replacement or repair of leaking bulk fuel tanks and/or lines if the connected system will remain after weatherization for client owned fuel tanks. Monitor approval is required.

Stand Alone (Portable) Space Heaters:

Federal regulation requires permanently installed heating systems in all jurisdictions. After weatherization, all homes must have a permanently installed primary heat source that provides heat for the entirety of the conditioned dwelling space. If there is not a primary heating source installed in the home, then the home should have a heat source added to the unheated area of the home. This new heat source must be tested as an ECM in energy audit to determine if it pays back. If not, then it can be charged to Health and Safety.

Unvented fuel fired space heaters that meet American National Standards Institute (ANSI) Z1.11.2 may be left as secondary heat sources in **house-modular (Single family)** homes. Additionally, any unvented fuel-fired space heaters that are not labeled as meeting ANSI Z1.11.2 are considered unsafe.

All unvented fuel-fired space heaters in **manufactured housing (mobile and double-wide homes)** may not be left in place, even as secondary heat sources. If the client will not permit the removal of unvented fuel-fired space heaters the home must be deferred.

Minor health and safety repairs mentioned above are allowed up to a total of \$500 in aggregate. Pre-approval is required if costs will exceed \$500.

LIHEAP weatherization funds can be used to replace, repair, or install egress windows or doors under Health and Safety Minor Repair when weatherization activities directly cause egress compliance to apply, and the door or window doesn't pay back as an energy conservation measure in CDS Energy Audit. This is restricted to situations where a code-compliant egress window or door is not currently installed, is inoperable,

or is removed. The wall framing must be able to support the replacement or installation of a door or window, i.e., an existing header is present in the wall.

The cost associated with installing a code required egress window or door, when the repair or replacement does not meet an SIR of 1.0 or greater, can be entered under the "Building Structure and Roofing Repair" line item in the Health and Safety table in the Energy Audit. Pre-approval is required if the combined minor repair costs are going to exceed a total of \$500.

Per the Montana Residential Landlord and Tenant Act, landlords are required to maintain the dwelling to comply with all building and housing codes related to a tenant's health and safety. ***The agency will need to request landlord contributions for egress related costs. Any mitigating circumstances that prevent the landlord from paying for or contributing to the costs of the repair or replacement must be clearly documented. Documentation of landlord communications must be maintained in the client file.***

5200 Limitation of Expenditures

DOE weatherization contract limits the amount of funds available for health and safety related expenditures. This limitation is an averaged amount per dwelling which is set at seventeen and a half percent (17.5%) of funds and this amount is designated as a line item in the respective contracts.

NWE weatherization contract health and safety cost, less the cost of the replacement of condemned space and/ or water heater appliances, may not exceed seventeen and a half percent (17.5%) of total weatherized and/or fuel switching cost during the contract period.

The Bonneville Power Administration (BPA) weatherization contracts limit the amount of funds available for health and safety measures in a line item. The contract specifies that repair costs, including costs to repair or replace electric heaters or furnaces if they are broken, not working or fail to properly heat the dwelling, cannot exceed an average of 30% of total dwelling costs.

Other weatherization contracts do not limit the amount of funds that can be spent on health and safety conditions. DOE caps Health and Safety state-wide at 17.5%.

- The accumulated total of health and safety related minor repairs is allowed up to \$500.

- Pre-approval is required for costs exceeding \$500.
- Additional pre-approval is required when the total health and safety minor repairs exceed \$500 over the approved amount.

5210 Other sources of funding

In some instances, the weatherization agency may determine that a health and safety hazard, situation or condition in a dwelling being weatherized meets the criteria for Emergency Assistance under the Low-Income Energy Assistance Program (LIHEAP) Contingency Revolving Fund (CRF).

The following is the LIHEAP Emergency Assistance criteria:

“Emergency Assistance under the Low-Income Home Energy Assistance Program (LIHEAP) may be provided to an eligible household in the following circumstances only when such circumstances present an imminent threat to the health and safety of the household.

Note: The household is responsible, at its own expense, for documenting existing circumstances which present a serious, immediate threat to the household. The local contractor may in its discretion, assist the household in identifying and documenting such circumstances, if the local contractor has the expertise and resources to do so.

5220 Conditions of Emergency:

1. The household's primary supply of energy is interrupted because of weather conditions and another supply, or a different type of energy is necessary.
2. Weather or other forces outside the control of the household damages the household's dwelling and causes the dwelling to suffer a severe loss of heat.
3. Hazardous or potentially hazardous conditions exist in the household's primary home water heating and/or space heating system, and safety modifications are required (a no heat situation is considered potentially hazardous, excluding terminations for nonpayment).
4. Any other home energy related conditions caused by severe weather conditions, fuel shortages and/or acts of God.
5. Documented Medical Need from a medical provider.

Note: The identification, removal and/or abatement of asbestos is not an allowable use of Emergency Assistance funds.

A household eligible for the Low-Income Home Energy Assistance Program (LIHEAP) which has an emergency as defined above is eligible for Emergency Assistance.

A household must apply and be approved for LIHEAP before it is eligible for Emergency Assistance, or the agency will not be able to request and receive reimbursement for the expenditure.

Note: Subgrantees may also use LIHEAP CRF to fund furnace or water heater repairs and replacements provided the situation meets one of the conditions of emergency listed above.

5230 Amount of Assistance:

CRF Emergency Assistance payments may be made on behalf of the eligible household for actual costs necessary to alleviate the emergency. CRF expenditures exceeding \$5,000 require entry into CDS by IHSB staff.

Requests for Emergency Assistance payments for actual costs can be made after services are rendered, provided all the following conditions are met.

- The recipient contacts the agency within a week of the emergency assistance.
- The recipient submits a completed application within a week of reporting the emergency assistance, or has a legitimate reason, i.e., icy roads, flood, medical condition, etc.
- The Sub-grantee determines eligibility.
- The Sub-grantee documents that the services were necessary to alleviate a life-threatening situation.
- The Sub-grantee obtains Departmental approval.

No Emergency Assistance payments will be made for costs which are the liability of a third party, unless the household assigns to the Department, in writing, its rights to such third-party payments. (The household assigns the rights to third party payments when the application for assistance is signed.) In emergency circumstance call your Department of Public Health and Human Services (DPHHS) Field Monitor for guidance.

Emergency Assistance benefits are available from October through September.

5240 Timelines:

In life threatening situations, the Agency must provide some form of assistance to resolve the emergency within eighteen (18) hours from the request for Emergency Assistance if the household is financially and otherwise eligible to receive such assistance. In all other emergency situations, the Agency must provide some form of assistance to resolve the emergency within forty-eight (48) hours if the household is financially or otherwise eligible to receive such assistance. The Agency must document the request for Emergency Assistance and the resolution using the Low-Income Home Energy Assistance Program (LIHEAP) Emergency Assistance Request Form (DPHHS EAP-250) or its equivalent. (See copy in LIHEAP 600-7.) A copy of the EAP-250 or its equivalent must be in the client's file.

The above time limits do not apply in a geographic area affected by a disaster or emergency if the Secretary of the U.S. Department of Health and Human Services determines that the disaster or emergency makes compliance with the time limits impracticable. This exception to the time limits applies when the Secretary of the U.S. Department of Health and Human Services designates a natural disaster or if a major disaster or emergency is designated by the President under the Disaster Relief Act of 1974."

The weatherization agency must work closely with the LIHEAP program in the identification of health and safety hazards, situations and conditions that meet the LIHEAP Emergency Assistance criteria. Expenditures under the LIHEAP CRF are not considered federal weatherization funds and are not subject to weatherization contract averages and percentage limitations. LIHEAP CRF expenditures completed at the time of weatherization must be entered into CDS Energy Audit in one of three Health and Safety LIHEAP CRF line items, and in the Cost by Funding Source table LIHEAP CRF line.

5300 Mold:

For dwelling units where mold conditions that are beyond the scope of weatherization have been identified, the agency must provide the occupant with a signed copy of the DPHHS-EAP-032 "Montana Mold Assessment and Release Form". A copy of the signed form must be maintained in the weatherization file. Weatherization Readiness funds is available for mold abatement.

5400 Medical Marijuana Act:

Agencies cannot refuse to weatherize a dwelling for an occupant who is otherwise eligible based on their use of marijuana.

There is nothing illegal in performing weatherization activities in a dwelling where occupants are smoking or growing cannabis, there is no legal obligation to determine whether occupants are properly registered, and there is no legal obligation to report the smoking or growing of cannabis.

If agency staff and/or contractors have an allergy to smoke or a health condition such that the person's health or well-being would be impaired by being exposed to smoke directly or indirectly, that person is not required to work in a dwelling where cannabis is used. However, weatherization services must be provided. Non-health related reasons are not grounds for a person to be excused from working in a dwelling where cannabis is used if there is no one else available to do the work. Agency staff and/or contractors may ask the occupant not to smoke in the work area.

Note: Agency staff or contractor disclosure of information about a person whose dwelling they have weatherized is governed by ARM 37.71.101.

5450 Lower Explosion Level (LEL)

The auditor, per BPI 1200, Chapter 7, shall monitor indoor ambient combustion gas levels in at least one location per floor of occupied space upon entering the dwelling. If any measured concentrations of ambient combustible fuel gas exceed 10% of the Lower Explosive Level (LEL), the auditor/inspector shall immediately communicate the dangerous condition to the homeowner/occupants and evacuate the dwelling. From outside of the dwelling, the auditor/inspector shall notify the appropriate personnel (e.g., HVAC technician, utility company, emergency services). If ambient combustible gas levels are detected, at any level below 10% LEL and the gas leak cannot be confirmed with a gas leak solution, the auditor/inspector shall notify and advise the homeowner/occupant to notify the gas company or a qualified professional.

5500 ASHRAE Standard 62.2.2016

Purpose: This standard defines the roles of and minimum requirements for ventilation systems, and the dwelling envelope intended to provide acceptable indoor air quality (IAQ) in residential dwelling units.

Scope: This standard applies to spaces intended for occupancy within single family dwelling units and multi-family dwelling units, including manufactured and modular dwelling units.

- The goal is to prevent major problems that result from poor indoor air quality.
- The standard considers chemical, physical, and biological contaminants that can affect air quality. Local sources of contamination such as excessive moisture, smoke, CO, and chemical Volatile Organic Compounds (VOCs) should be eliminated as much as possible. Spot ventilation of cooking and bathing is addressed with local ventilation with minimum flow rates. Overall air quality is addressed with continuous flow rates.

Subgrantees must use the ASHRAE 62.2.2016 ventilation standards for all homes that are weatherized.

Training: MSU Weatherization Training Center (WTC) provides the ASHRAE 62.2.2016 specific training & technical assistance.

If the final mechanical ventilation rate for the existing dwelling unit is 15 CFM or less, then installation of an ASHRAE fan is not required.

Final Inspection Form: Subgrantees must use a Grantee approved final inspection form and the ASHRAE 62.2.2016 Field Input Form (or equivalent) to document ASHRAE 62.2.2016 compliance.

“Dwelling Unit as a System” considerations:

1. Weatherization ECMs’ should be done in order of importance as determined in the EA funding table.
2. Tighter dwellings can conflict with open combustion gas appliances. Consider additional combustion air and improved venting. When atmospheric combustion equipment is present, always perform a Worst-Case Combustion Appliance Zone (WC CAZ) and smoke/spillage test at the initial audit, at the end of each day in which envelope or duct sealing takes place and during final inspections. If appliance back drafts, fails the smoke/spillage test, and the back drafting cannot be remedied per BPI-1200 Table D.1.A, referenced in Appendix D of this Manual, the appliance must be shut down until it can be serviced by a qualified professional.
 - a. Auditors, HVAC techs, and contractors conducting end of day CAZ testing must monitor ambient CO levels during testing see BPI-1200, Chapter 7. If ambient CO levels are equal to or greater than 70ppm, terminate the audit/inspection, and notify the homeowner/occupants

- and evacuate the building. Once outside the building, notify the appropriate emergency services.
- b. Worst Case CAZ testing is not required when there are no open combustion appliances present.
 - c. Sub-grantees will perform pre-weatherization and post-weatherization WC CAZ depressurization testing and visual inspections to ensure open-combustion fireplaces are operating safely. Please see Manual section 8400 for a full description of solid fuel appliance testing protocols.
3. ASHRAE 62.2.2016 allows for aggressive air sealing of the home. Acceptable Indoor Air Quality (IAQ) is maintained through the provision of a Minimum Ventilation Rate (MVR), as specified in ASHRAE 62.2.2016. The energy savings associated with a tighter home exceed the cost of running an ASHRAE fan.
 4. Air flow between rooms should be checked to provide adequate mixing of fresh air. Rooms with exhaust fans or HVAC supply/returns should have a pressure differential across a closed door of 3 pascals or less.
 5. Tighter houses can be an H&S concern if the client does not use and maintain mechanical ventilation systems.
 6. Compartmentalization: measurement of airtightness changed to 0.3 CFM 50 per square foot of envelope area.
 - a. This is not a mandatory threshold.
 7. De Minimis: For existing buildings, if the final ventilation requirement (considering deficits and infiltration) is less than or equal to 15 CFM than installation of a fan is **NOT** required.
 8. Multifamily units can get an infiltration credit for **horizontally attached** dwelling units.
 - a. Duplexes, triplexes, and row houses, etc.
 - b. Credit is reduced based on common wall area (including the garage)
 - c. **Stacked dwelling** units do not get an infiltration credit.

5550 ASHRAE Client Education & Participation

Client education & benefits:

- Like all weatherization measures, client refusal is NOT an option. Provide Client Education and obtain client permission for the ASHRAE 62.2.2016 standards prior to commencing other weatherization measures.
- Use the State provided ASHRAE client education brochure to guide the conversation with the client.
 - The program combines additional air sealing with smart, healthy ventilation.

- Ask about clients concerns with focus on Indoor Air Quality (IAQ), Health and Safety and moisture. Provide information and solutions to address concerns.
- If air sealing is performed, the savings from reduced infiltration will be greater than the cost of running the fan as prescribed.
- With potential improvement in IAQ, there may be a reduction in respiratory related health issues.
- Client homes should see a decrease of condensation or moisture collection. (Windows, ceilings, etc.)
- Alert occupants to potential hazards contributing to poor IAQ after tightening up a home without installing mechanical ventilation such as: moisture, odors, chemicals, smoking, pets, etc. If these are observed, document and consider increasing the flow rate of the continuous fan. (Appendix B includes a disclaimer on ASHRAE 62.2)
- Instruct clients on correct operation of the fans and importance of periodic maintenance.
- Provide information on relative humidity. When humidity is above 60%, have clients check fans, increase speed and usage.
- Encourage the occupants to use the kitchen range hood every time they cook.
- Place a Label on the wall switch stating, "Ventilation Fan, leave on at all times.", or leave the fan manual.
- Show the client how the controls work and how to periodically clean the fan.

5600 ASHRAE Health & Safety:

- CO detectors must be installed in all dwellings, including dwellings with only electric appliances, please reference section 10100.
- If the home contains an existing CO alarm, assess for replacement. Replace functional CO alarms if it is beyond the manufacture's stated lifetime. Replace CO alarm battery if it is designed to be replaceable.
- Educate client on the importance of not removing the CO alarm, what it means if the alarm is triggered and what steps to take if the alarm goes off.

5650 ASHRAE Protocol

The use of the blower door during air sealing is required by the SWS 3.01. It allows for tighter homes with increased energy savings and improved Indoor Air Quality (IAQ).

Fan installation: in most cases, fan installation or replacement will take place before attic insulation and other weatherization shell measures.

The following procedures are to be followed on every weatherized home:

Auditor will use Residential Energy Dynamics calculator (RED Calc) ASHRAE 62.2-2016 Tool to determine the ventilation needs of the dwelling unit. Found at the following link:

<http://www.residentialenergydynamics.com/REDCalcFree/Tools/ASHRAE6222016>

1. The Auditor will interview the occupants for indications of poor air quality and moisture problems, and then must inspect the home for these issues. **Clients cannot refuse this measure and still receive other Weatherization improvements.**
2. Zonal Pressure Diagnostic procedures must be used to determine the potential for attic air sealing. Large bypasses from the basement/crawlspace to the attic will also be sealed.
 - a. Priority will be on sealing the attic to the pass rate in section 3200.
 - b. Common walls between attached garages must also be air sealed from the living space.
 - c. Openings in the basement/crawlspace ceiling will only be sealed if it has been defined as the pressure boundary.
 - d. Air sealing in basements/crawlspaces will be focused on the rim joist & foundation walls.
 - e. Above grade framed walls will be sealed last, typically by dense packing.
3. The Auditor will run a calculation to determine the required ASHRAE 62.2.2016 mechanical ventilation rate and develop an installation strategy for each dwelling. The whole building fan flow rate can be determined with the Dwelling-Unit Leakage Rate Solver tool at the bottom of RED Calc. The final, whole-building fan setting will be determined by the Inspector at the Final Inspection (based on observed conditions) and will be recorded on the Final Inspection Form.
4. Fan installation design shall prioritize the most cost-effective option that meets the ASHRAE 62.2.2016 requirements.
5. Replacement of existing bath fans with larger or adjustable 2 speed fans will often be the preferred approach and may be all that is required.
6. Crew leaders and installers are required to utilize blower door testing during Air Sealing (per SWS 3.01, BPI 1200 Chapter 10, the Montana Field Guides and WTC training).
 - a. General air sealing may stop when the air sealing economic stop (SIR equal to or greater than 1.0) is achieved.
7. If open combustion appliances exist in the home, the WC CAZ and the smoke/spillage test must be performed at the initial audit, at the end of each day in which envelope or duct sealing takes place, and during final inspections (per [BPI](#)

[1200, Chapter 7](#)). If spillage/back drafting occurs appropriate actions per BPI 1200 Annex D must be undertaken. **No dwelling shall be left with combustion appliances that fail the spillage test.**

- a. All individuals conducting CAZ testing must always monitor ambient CO levels. Review BPI 1200 Chapter 7.3.3 for ambient CO action levels. If ambient CO levels are equal to or greater than 70 ppm, terminate the audit/inspection, notify the homeowner/occupant, and evacuate the building. Once outside the building, notify the appropriate emergency services.
8. Post weatherization, the dwelling unit will receive blower door testing and fan flow testing of the ventilation systems. These numbers will be used to re-calculate and confirm that the dwelling unit meets the ASHRAE 62.2.2016 requirements. This information is to be recorded in CDS Energy Audit (EA) and on the Final Inspection form.
 - a. The cost of implementing the ASHRAE 62.2.2016 will be entered in the Health & Safety's Whole House Ventilation Section of CDS EA.
 - b. Comments in the Health and Safety section of the audit are imperative; please explain what was done regarding ASHRAE.
9. When the ASHRAE 62.2.2016 may not be feasible or poses significant challenges, the Agency can request an ASHRAE Waiver. Documentation of why must be placed in CDS EA and in the client file. Examples of when a request for an ASHRAE Waiver is needed includes:
 - a. Substandard electrical,
 - b. When outside air is worse than indoor air. Documentation is required.
 - c. Occasionally, structural, or spatial conditions may preclude fan installation.
10. If the ASHRAE 62.2.2016 CANNOT be completed, documentation of state approval is required. Documentation that indoor air quality is acceptable shall be placed both in Energy Audit and in the client file.

5700 ASHRAE Ventilation Systems

Local Mechanical Exhaust: Local mechanical exhaust is required in kitchens and bathrooms, per Section 5.1 of ASHRAE 62.2-2016 Standards. If existing kitchen or bath ventilation is insufficient, per Section 5, the Whole House Ventilation rate can be adjusted to compensate, per ASHRAE 62.2-2016 Standards Normative Appendix A. Natural gas and propane ovens/ranges must have local ventilation installed when practical. When local kitchen ventilation is not practical, a whole-building ventilation fan may be used.

1. In dwelling units with an enclosed kitchen either a demand controlled, or continuous mechanical system may be installed. An enclosed kitchen means the permanent openings to other spaces do not exceed a total of 60 square feet.
2. In dwelling units with a non-enclosed kitchen only a demand controlled mechanical exhaust system may be installed.
3. For enclosed and non-enclosed kitchens use 100 CFM if the fan is a range hood (including appliance-range hood combinations).
4. For all other kitchen exhaust fans, including downdraft use 300 CFM.
5. If existing local exhaust in the kitchen and bathrooms do not meet these ventilation requirements, whole-building exhaust system can compensate with higher flow rates.
6. Airflow deficit for bathrooms shall be 50 cfm and for kitchens 100 cfm. If there is no exhaust fan or the fan cannot be measured nor rated, the fan's airflow shall be assumed to be zero.
7. Half bathrooms and laundry areas do not require exhaust fans.
 - a. Half baths are bathrooms which do not contain a bathtub, shower, a spa, laundry appliances or a similar source of moisture.
8. Clothes dryers shall be exhausted directly to the outdoors.

Note: Two (2) ventilation systems are optimal and may be required.

Whole Dwelling Unit Ventilation: A mechanical exhaust system shall be designed to be operated continuously. The system may be part of a balanced mechanical system or provide for exhaust only.

1. **Periods of Operation:** The system shall be designed to operate during all hours.
2. **Controls and Operation:**
 - a. A readily accessible manual ON-OFF control, including but not limited to a fan switch or a dedicated circuit breaker, shall be provided.
 - b. Controls need to include a text-based label or an icon indicating the system's function.
 - c. For multi-family dwelling units, the manual ON-OFF control shall not be required to be readily accessible.
3. **Ventilation Rates:** Use the Residential Energy Dynamics calculator (RED Calc) to determine the appropriate ventilation rate.
 - a. Based on the CFM of ventilation air needed per hour, determine the appropriate fan run time; this may require intermittent fan settings.

4. **Airflow Measurement:** The airflow required for local exhaust is defined as the quantity of exhausted air by the ventilation system installed. This will be measured by using a flow hood, flow grid or other airflow measuring device anywhere along the system.
 - a. The exhaust fan flow hood test must be performed inside, at the exhaust fan. It is not to be performed outside at the exhaust termination point.
5. **Sound:**
 - a. Continuous Whole House exhaust fans shall be rated at a maximum of 1.0 sone.
 - b. Demand-controlled kitchen exhaust fans need to be rated for sound at a maximum of 3 sones or less, at one or more airflow settings greater than or equal to 100 CFM.
 - c. Demand-control bath exhaust fans shall be rated at a maximum of 3 sone.

5750 ASHRAE System Sizing and Design

Field Data Collection and ASHRAE Ventilation Rate Calculations:

1. The Auditor will collect the following information:
 - a. Square footage of conditioned space (interior dimensions)
 - ☒ Includes all above-grade and below-grade finished areas as defined in ANSI Standard Z765.
 1. Finished area: An enclosed area in a house that is suitable for year-round use that is consistent with the rest of the house. (Z765-2013)
 2. Grade: The ground level at the perimeter of the exterior finished surface of a dwelling
 3. Unfinished basements are not counted as 'floor area.'
 - b. Number of Bedrooms plus one or the number of occupants, whichever is greater. The capacity of the fan installed must be large enough to meet the number of bedrooms but may be set to the auditor's determination of the ventilation needs based on number of occupants living in the dwelling.
 - c. Pre and Post weatherization Blower Door Readings.
 - d. Dwelling unit height described as the vertical distance between the lowest and highest above-grade points within the dwelling pressure boundary.
 - e. Kitchen and Bath fan flow rates, make & model.
 - f. The existence of operable Kitchen and Bath windows.

- g. Opportunities for improving exhaust ducting will be considered.
2. The Auditor will use RED Calc to compute the required Whole Dwelling Unit Ventilation Rates.

System Design:

1. Auditors should familiarize themselves with the performance and condition of existing fans and the possibilities for running additional ductwork and wiring in the house.
2. Auditor should run a variety of scenarios with the sizing calculator to obtain a preferred system design. The Auditor should consider the following:
 - a. Prioritize increased air sealing and adjust the continuous fan flow rate to compensate. The Whole-Building Leakage Rate Solver in RED Calc can help size the fan based on building air leakage rate. This strategy is more effective at saving energy than leaving a leaky dwelling with a smaller fan.
 - b. Upgrading ducts or replacing existing fans is more cost effective than new installations.
 - c. Consider the ease of installation, fan location, vent terminus and wiring connections.
 - d. Effectiveness of Ventilation:
 - i. Continuous fans are more effective if located high in a central location.
 - ii. Target pollution sources with local ventilation.
 - e. Client input:
 - i. Noise and comfort concerns may dictate location.
 - ii. Use the quietest fans possible (see WTC training materials for some ratings applicable in a variety of fan scenarios)

5800 ASHRAE Equipment

Fans:

- Use HVI rated fans. Fan and Range hood performance data can be found at: [Home Ventilation Institute certified products](#).
- A list of recommended fans, range hoods and controls will be provided by a Montana Weatherization Training Center.
- Agencies will document preferred fan models. They are encouraged to obtain bulk pricing from their suppliers.
- Use a fan with an ECM motor that produces no more than 1.0 sones at maximum speed and has an efficacy of 2.8 cfm/watt or more.
- Mobile homes are often difficult to retrofit. Consider side wall fans or an inline fan mounted under the belly.

Controls:

- A readily accessible manual ON-OFF control, including but not limited to a fan switch or a dedicated circuit breaker, shall be provided.
- Controls need to include a text-based labels or an icon indicating the system's function.
- For multi-family dwelling units, the manual ON-OFF control shall not be required to be readily accessible.
- An "Off" switch, located under the fan cover or under the wall switch plate is sufficient for access. If an override switch is present on a wall switch plate it must be labeled to ensure that the building is being appropriately ventilated.
- Choose simple, easily understood switches for clients; avoid programmable switches in most cases.

Wiring:

- Per Montana Electrical Code, all wiring shall be done by a Licensed Electrician
 - Exception: fan with pigtail, for example a crawlspace or attic inline fan, can be plugged into an existing receptacle.
- Identify substandard electrical systems in dwellings; minor electrical repairs are allowable, but if major electrical work is required, please work with your field monitor. Minor repairs are allowed up to \$500, if the costs are going to exceed \$500 pre-approval is required.
- Do not connect new ventilation devices to existing knob-and-tube wiring.

Ducting:

- Material:
 - Smooth wall vent pipe (PVC or metal) shall be used.
 - Smooth wall, flexible Aluminum duct should be minimized.
 - Flexible vinyl duct is not allowed.
 - Insulate to a minimum of R-8 in all unconditioned areas.
 - Seal all joints with durable metal tape. Use zip ties to connect flex duct to rigid.
 - Mechanically secure the exterior of the vent hood to the siding or roofing and seal with exterior caulk.
- Layout:
 - Keep duct runs to the minimum length possible. Use long sweeps instead of sharp corners.
 - Use vent hoods with back draft dampers. Avoid placing vent hoods on the windward side of dwelling units. Locate either in gable end walls or on the roof.

- Don't dump exhaust air into the attic or soffit.
- Where possible, slope all ductwork to the outside of the building. Avoid droops in the ductwork to prevent moisture collection and ponding.
- Makeup air dampers:
 - Gravity or barometric dampers are not allowable components of passive makeup air systems for combustion appliances.

5850 ASHRAE Legal Authority

DOE: Requiring implementation of the ASHRAE 62.2.2016.

Regulation: <https://nascsp.org/wp-content/uploads/2018/02/wpn2017-720hs208.9.17-1.pdf>

Montana Statutes:

1. A person who plugs in an electrical appliance where an approved electrical outlet is already installed may not be considered as an installer.
2. Requiring the use of Licensed Electricians.

Other Relevant Codes

International Residential Code (IRC) 2018

1. 3 ACH50 air tightness: N1102.4, Table N1102.4.1.1
2. Mechanical Ventilation: M1501
 - a. Clothes Dryer Exhaust: M1502
 - b. Range Hoods: M1503
 - c. Mechanical Ventilation: M1507
3. Duct Systems (including ventilation) M1601
4. Fuel Gas & Combustion Air for gas appliances: G2407
5. Venting of gas appliances: G2427, G2428
6. Electrical: E34-43

International Energy Conservation Code (IECC) 2012

1. Insulation Levels: R402
2. Air Leakage: R402.4
3. Ducts: 403.2

International Mechanical Code:

1. Natural Ventilation: Section 402

2. Mechanical Ventilation: Section 403
3. Clothes Dryer Exhaust: Section 504
4. Kitchen Exhaust Equipment: Section 505
5. Energy Recovery Ventilation Systems: Section 514

Additional Resources:

- [Learn more about RED Calc](#)
- [Short RED Calc Tutorial](#)
- [Extended RED Calc Tutorial](#)

Installation advice:

- [Step by step with photos](#)

Standard Work Specification (SWS) Details; includes Exhaust, Supply, Whole Dwelling Unit Ventilation and additional resources

5890 Radon Single Family Dwellings

As Per WPN 22-7 - Required Actions (when applicable):

- [Cover exposed dirt floors within the pressure/thermal boundary with a sealed soil gas retarder.](#)
- [Cover sump well/pits with airtight covers](#)
- [Implement ventilation as required by ASHRAE 62.2-2016](#)

Allowable Actions:

Other precautions may include, but are not limited to, sealing any observed floor and/or foundation penetrations, isolating the basement from the conditioned space, and ensuring crawl space venting is installed and operable.

Allowable Testing: Testing may be allowed in locations with high radon potential. Testing is limited to the \$500 minor repair limit.

Required Occupant Education:

- [Provide all occupants EPA's A Citizen's Guide to Radon and inform them of radon related risks.](#)
- [Occupants must sign an informed consent form prior to receiving weatherization services. This form must be kept in the client file.](#)

For additional information please refer to SWS 2.04. GUIDANCE

6000 Asbestos:

No blower door testing will be performed until the auditor has inspected the dwelling for suspected asbestos containing material (ACM). Whenever friable suspected ACM, or non-friable suspected ACM that will be disturbed during the normal course of weatherization activities is discovered within the exterior sheathing of the structure, no blower door testing or any other weatherization measures are performed. For program purposes, non-friable suspected ACM that would be disturbed during weatherization activities (i.e., made friable) will be treated the same as friable ACM.

Prior to blower door testing, the Auditor will access and document suspected ACM across all three Asbestos Hazard Emergency Response Act (AHERA) Types in buildings: Surfacing Materials, Thermal System Insulation and Miscellaneous. Friability of suspect materials will be assessed based on the AHERA definition: Any material containing more than 1% asbestos that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

The Montana Department of Environmental Quality Asbestos Control Program (MT DEQ ACP) is the authority having jurisdiction for asbestos related activities in Montana. Projects require permitting through the MT DEQ ACP when renovation activities are undertaken in structures with 5 or more dwelling units. Because the Montana WAP operates almost exclusively in residential single family and multi-family units with 4 or less dwellings, it would be unusual that our activities would trigger a "permit required" situation. The Montana WAP has utilized the rules adopted by the MT DEQ ACP to inform our policies relating to asbestos and auditors are trained to identify when an asbestos remediation permit would be required through the MT DEQ ACP.

Asbestos is a fibrous mineral and a known carcinogen that can cause lung cancer and other lung related diseases.

It has been mined for use in over 3,000 different products, including vermiculite. Dust containing asbestos can become airborne within a dwelling if friable material is disturbed during blower door testing, or other weatherization related activities.

Auditors in the Montana weatherization program are trained to identify and assess the condition of suspected ACM in weatherized homes. The following list is representative of the types of materials that could contain asbestos and is not an exhaustive list:

- Attic insulation (vermiculite/karstolite)
- Wall insulation (vermiculite, insulation blocks)
- Thermal system insulation (wrap or paper on stem pipes, boilers, furnace ducts)

- Vinyl flooring (including 9"x9" or 12"x12" floor tiles, vinyl sheet flooring and the mastics and other adhesives used to secure flooring)
- Cement sheet, millboard and paper used as insulation around furnaces and wood or coal burning appliances.
- Door gaskets in furnaces and wood or coal burning appliances (seals may contain asbestos)
- Soundproofing or decorative surface materials sprayed or troweled on to ceilings, including popcorn ceilings.
- Patching, joint compound and textured paints on walls and ceilings
- Roofing, shingles, and siding
- Artificial ashes and embers (used in gas fireplaces)
- Transite (cement and asbestos) combustion vent or flue
- Original plasters

Note: Weatherization funding and the Low-Income Home Energy Assistance Program (LIHEAP) Emergency Assistance Contingency Revolving Fund (CRF) cannot be used for asbestos removal costs, which could include baseline testing, cleaning, and post-remediation testing. Referrals may be made to other funding sources such as USDA Rural Development, the NorthWestern Energy Readiness Weatherization grant, LIHEAP Readiness Weatherization Funds, and others.

Note: Montana DEQ ACP sampling requirements apply to dwellings with 5 or more units, even if only a single unit is being weatherized.

6100 Vermiculite Insulation:

Initial inspections of dwellings to be weatherized are performed prior to blower door testing by the sub-grantee's certified energy auditor who is trained in the recognition of ACM. Whenever an attic or wall area is inspected, the certified energy auditor must wear protective clothing and equipment in compliance with OSHA standards and take precautions to prevent contamination of the living area.

When it is discovered that vermiculite is present, the material will be presumed to be ACM and no blower door testing will be performed. The home will be deferred for weatherization and the subgrantee must provide the occupants/owner a copy of a completed Notice of Dangerous Conditions – Walkaway or Deferral form (EAP-020). Testing of Vermiculite with program funds is not allowed.

Testing, remediation, and air-clearance testing associated with vermiculite are not allowable program expenses. If a home is to be weatherized after vermiculite remediation (using other funding), documentation that a professional certified under the MT DEQ ACP performed the remediation and passing results of an air clearance test must be maintained in the client file. Remediation activities and air clearance testing must comply with the Administrative Rules of Montana (ARM), section 17.74 (see 17.74.357 for details on passing air clearance test results). Agencies are encouraged to carefully review the narrative contained in air clearance reports to note any special considerations identified by the certified testers (dropped ceilings, visual inspection results, etc.) and plan their activities accordingly.

Clients must be informed of the presence of vermiculite. In homes where weatherization activities are deferred due to the presence of vermiculite, a Notice of Dangerous Conditions – Walkaway or Deferral form (EAP-020) should be used. The EAP-020 form must state what actions the occupant/owner must undertake before weatherization activities may commence. All air clearance test results and any qualifying narrative contained in the report, must be maintained in the client file.

6200 Non-Vermiculite Asbestos Containing Materials in Exterior Siding, Walls, Ceilings, etc.:

Prior to blower door testing, when inspecting a home for suspected ACM in flooring, ceiling, or wall paneling, etc., the certified energy auditor must wear appropriate protective clothing and equipment in compliance with OSHA standards and take precautions to prevent contamination of the living area. If it is determined there is suspected ACM, it must be documented and maintained in the client file.

If the suspected ACM is found to be non-friable and will not be disturbed during the normal course of weatherization activities, occupants/landlords must be informed of the presence of suspected ACM's and what precautions will be taken to ensure occupant and worker safety, in writing via the Notice of Dangerous Conditions form (EAP-023). Blower door testing and weatherization of the home may proceed. If the ACM is siding in a non-friable state, a positive pressurization blower door test must be performed, and insulation measures must be completed from the interior.

When it is discovered that potential ACM in poor condition is present (can be crumbled, pulverized, or reduced to powder by hand pressure), or if there is suspected ACM in an area that would need to be disturbed during the normal course of weatherization activities (i.e., made friable), no blower door testing or other weatherization activities will be performed. The auditor has the discretion to:

- 1- Defer the job until the material has been encapsulated/repared or removed by an asbestos control contractor certified under the MT DEQ ACP. Deferrals must be documented on a Notice of Dangerous Conditions – Walkaway or Deferral Notice (EAP-020) form and certifications of the individuals engaged for encapsulation/repair or removal must be maintained in the client file. Air clearance testing will generally be required after removal of friable ACM. If the friable material is removed from the exterior of the home, or if in the assessment of the trained auditor and/or certified asbestos abatement contractor, there is no potential for contamination of the home, an air clearance test waiver may be requested from IHSB. Air clearance testing will generally not be required after encapsulation/repair, unless concerns with contamination of the home are present. Encapsulation/repair of ACM in siding, walls, ceilings, etc. is an allowable program cost, but removal and air clearance testing are not. All remediation activities and air clearance testing must comply with ARM section 17.74 (see 17.74.357 for details on passing air clearance test results). Agencies are encouraged to carefully review the clearance report narrative and note any special considerations identified by the certified testers (dropped ceilings, visual inspection results, etc.) and plan their activities accordingly. Copies of air clearance tests must be provided to occupants/owners and maintained in client files any time a clearance test is undertaken.

- 2- If an auditor is uncertain if a friable or potentially friable floor, ceiling or wall material contains asbestos, an individual certified under the MT DEQ ACP may test the material for the presence of asbestos using AHERA compliant sampling and testing protocols. Testing of suspect ACM is an allowable program cost. If after testing by a certified individual, the material is found not to be ACM, blower door testing and weatherization activities may proceed. A notice of dangerous conditions form (EAP-023) must be issued and maintained in the client file when suspected ACM is found in a home and certifications of the individuals doing testing should be maintained. Results of any test must be communicated to the occupant/landlord and maintained in the client file.

If the full scope of weatherization work cannot be safely completed due to the presence of friable material, or material that would need to be disturbed during normal weatherization activities (i.e., made friable), the home will be deferred for weatherization and the agency must provide the occupants/owner a copy of a completed Notice of Dangerous Conditions form (EAP-020). Partial weatherization is not allowed.

The existence of asbestos siding that is in good condition does not prevent installing dense-pack insulation from the interior. If the ACM siding is in poor condition (can be crumbled, pulverized, or reduced to powder by hand pressure), no blower door testing, or other weatherization activities will be conducted. The home would be deferred for weatherization (EAP-020 issued and retained in the client file) until the material is repaired or removed by an abatement contractor certified under the MT DEQ ACP. Due to the potential for damage and likelihood of creating friable ACM in the siding removal process, Montana has elected to dense pack from the interior side of the wall only. General abatement of asbestos siding or replacement with new siding is not an allowable Health and Safety cost.

Clients must be informed of the presence of suspected ACM's and what precautions will be taken to ensure occupant and worker safety, in writing via the Notice of Dangerous Conditions form (EAP-023). In homes where weatherization activities are deferred due to the presence of asbestos, a Notice of Dangerous Conditions – Walkaway or Deferral Notice (EAP-020) must be issued and maintained in the client's file. All test results need to be communicated to owners/occupants and copies maintained in the client file.

Certification of auditors under the MT DEQ ACP and continuing education requirements are allowable DOE T&TA expenditures, when identified in the subgrantees approved T&TA Work Plan and Budget. Certification under the MT DEQ ACP allows auditors to sample suspected ACM. However, vermiculite is considered an ACM and testing is not an allowable program expense. In the case of an auditor that has had asbestos awareness training, but does not hold a current MT DEQ ACP certification, contractors that are certified under the MT DEQ ACP must be utilized.

6300 Non-Vermiculite Asbestos Containing Materials in Thermal System Insulation:

Initial inspections of dwellings to be weatherized are performed by the sub-grantee's certified energy auditor who is trained in the recognition of asbestos containing materials (ACM). Whenever a home is inspected for ACM in Thermal System Insulation (TSI), the certified energy auditor must wear protective clothing and equipment (respiratory protection) and take precautions to prevent contamination of the living area. TSI is commonly understood to include ACM applied to pipes, fittings, boilers, tanks, ducts, or other interior structural components that prevent heat loss/gain or water condensation.

Prior to performing a blower door test, auditors will assess homes for the presence and condition of any TSI. This assessment should be clearly documented and maintained in the client file. If the suspected ACM is found to be non-friable and will not be disturbed

during the normal course of weatherization activities, occupants/landlords must be informed of the presence of suspected ACM's and what precautions will be taken to ensure occupant and worker safety, in writing via the Notice of Dangerous Conditions Form (EAP-023). Blower door testing and weatherization of the home may proceed.

When it is discovered that suspected ACM TSI in poor condition is present, or if suspected ACM TSI is in an area that would need to be disturbed during the normal course of weatherization activities (i.e., made friable), no blower door testing or other weatherization activities will be performed. The auditor has the discretion to:

- 1- Use program funds to engage a contractor that is certified under the MT DEQ ACP, to encapsulate the material. Clients must be informed of the presence of suspected ACM's and what precautions will be taken to ensure occupant and worker safety, in writing via the Notice of Dangerous Conditions form (EAP-023). MT DEQ ACP certifications for the asbestos control professional(s) that performed the encapsulation work must be maintained in the client file. No air clearance testing is required after encapsulation unless concerns with contamination of the home are present (see below). Encapsulation of TSI is an allowable program cost.
- 2- Defer the job until the material has been removed by an asbestos control contractor that is certified under the MT DEQ ACP. Deferrals must be documented on a Notice of Dangerous Conditions – Walkaway or Deferral Notice (EAP-020) form and certifications of the individuals engaged for removal must be maintained in the client file. Air clearance testing will generally be required after removal of friable TSI. If, in the assessment of the trained auditor and/or certified asbestos abatement contractor, there is no potential for contamination of the home, an air clearance test waiver may be requested from IHSB on a case-by-case basis. Removal of TSI and air clearance testing are not allowable program costs.
- 3- If an auditor is uncertain if TSI in poor condition (can be crumbled, pulverized, or reduced to powder by hand pressure), or TSI that could be disturbed during the normal course of weatherization activities is an ACM, an individual certified under the MT DEQ's ACP may test the material for the presence of Asbestos using AHERA compliant sampling and testing protocols. A Notice of Dangerous Conditions Form (EAP-023) and all test results will be communicated to the occupant/owner and maintained in the client file when suspected ACM is found in a home. Certifications of the individuals doing testing must be maintained. If the material is found not to be ACM, blower door testing and weatherization activities may proceed. Testing TSI by an individual certified under the MT DEQ ACP is an allowable expense.

Air clearance testing is not mandated after encapsulation of ACM TSI. However, if in the auditor or certified asbestos professional's assessment, concerns about potential contamination from the friable material exist, an air clearance test may be required prior to weatherization activities commencing. Justification for any auditor concerns that would trigger an air clearance test after encapsulation of TSI must be clearly documented and maintained in the client file. Encapsulation by professionals certified under the MT DEQ ACP is an allowable Health and Safety expense.

Removal of the suspect TSI and air clearance testing are not allowable program expenses. Air clearance testing will generally be required after removal of ACM TSI. If, in the assessment of the trained auditor and/or certified asbestos abatement contractor, there is no potential for contamination of the home, an air clearance test waiver may be requested from IHSB on a case-by-case basis.

6400 Sample Gathering Requirements

Samples for testing must be taken only by individuals certified under the MT DEQ ACP. A fit tested air purifying respirator equipped with N, P, or R 100 filters, a disposable protective suit and Nitrile gloves are required. The respirator must meet the minimum assigned protection factor (APF) for asbestos. Procedures for sampling, testing methodologies, safety protocols, and the final determination of whether a material is an ACM, must comply with rules laid out in the MT DEQ ACP (ARM 17.74) and by OSHA (29 CFR part 1926, subpart Z). Testing Vermiculite is not an allowable program expense.

6500 No-Heat Emergencies and Asbestos Containing Materials

In some instances, an agency may defer weatherization activities due to the presence of asbestos in the dwelling. After the deferral, the household may have an unsafe condition or no-heat call relating to a furnace or domestic water heater (DWH). Agencies may address health and safety related emergencies with weatherization and/or LIHEAP CRF only if repairs or modifications can be made in a way that does not disturb, or otherwise impact the suspected ACM. Clients must be informed of the presence of suspected ACM's and what precautions will be taken to ensure occupant and worker safety, in writing via the Notice of Dangerous Conditions form (EAP-023), with copies maintained in the client file.

If an emergency in a home's primary space or water heating systems cannot be addressed because of the potential to disturb suspected ACM or otherwise expose occupants, agency staff or contractors to asbestos related risks, the emergency work will need to be deferred and a Notice of Dangerous Conditions – Walkaway or Deferral

(EAP-020) form issued, with a copy maintained in the client file. The EAP-020 form should clearly state what actions the occupant/owner must undertake before emergency repairs may commence. Prior to returning to the home to address the unsafe condition, the suspected ACM must be removed by an individual certified under the MT DEQ ACP and passing air clearance test results provided. All air clearance test results, certifications of individuals involved in the removal and clearance testing and any qualifying narrative contained in the report, must be maintained in the client file. Depending on the type of asbestos present, budget and other variables, agencies may elect to install alternative heating systems that meet the heat load of the home, but do not require disturbance of the suspected ACM.

Note: Costs for removal of suspected ACM and clearance testing cannot be charged to any weatherization program grant, or to the Contingency Revolving Fund (CRF). Referrals may be made to other funding sources.

Note: Friability will be assessed based on the AHERA definition. See Glossary

Montana WAP Asbestos Policy Summary Table:

This table is intended as an at-a-glance summary of asbestos policies in the Montana Weatherization Assistance Program. Please see the full Weatherization Policy Manual sections for additional details.

Asbestos Containing Material (ACM) Type and Manual Section	ACM Condition:	Testing of Suspected ACM Allowed: Y/N	Action:	Asbestos Related Costs Allowable Under All Contracts: Y/N
Vermiculite, Manual Section 6100	Friable - All	N	Defer until removed. Passing air clearance test required prior to Weatherization. (See Notes 2 & 3 Below)	N
Exterior Siding, Manual Section 6200	Not Friable or disturbed	Y, with monitor approval	Proceed with positive-pressure blower door testing, blow wall insulation from interior only.	Testing of suspected ACM as needed=Y (See Note 1 Below)

Exterior Siding, Manual Section 6200	Friable	Y, with monitor approval	Defer until removed (See Note 2 Below)	Testing of suspected ACM or repair=Y, Removal=N (See Note 1 Below)
Interior surfacing, walls, ceilings, flooring, etc. Manual Section 6200	Not friable or disturbed	Y, with monitor approval	Proceed with Weatherization.	Testing of suspected ACM as needed=Y (See Note 1 Below)
Interior surfacing, walls, ceilings, flooring, etc. Manual Section 6200	Friable	Y, with monitor approval	Defer until removed. Passing Air Clearance test generally required prior to Weatherization. (See Notes 2 & 3 Below)	Testing of suspected ACM or repair=Y, Removal and air clearance testing=N (See Note 1 Below)
Thermal System Insulation, Manual Section 6300 (Pipes, fittings, boilers, tanks, ducts, or other interior structural components of the furnace)	Not friable or disturbed	Y, with monitor approval	Proceed with Weatherization	Testing of suspected ACM=Y (See Note 1 Below)
Thermal; System Insulation, Manual Section 6300 (Pipes, fittings, boilers, tanks, ducts, or other interior structural components of the furnace.)	Friable	Y, with monitor approval	No Blower door testing until encapsulation, then proceed with Weatherization. Or defer until removed, with passing air clearance test generally required prior to Weatherization (See Notes 2 & 3 Below)	Testing of suspect ACM and encapsulation=Y, Removal and air clearance testing=N (See Note 1 Below)

Note 1- Testing of suspected ACM must be done by an individual certified under the Montana Department of Environmental Quality Asbestos Control Program (MT DEQ ACP) using AHERA compliant sampling and testing protocols. The Montana Weatherization Assistance Program does not allow for testing of vermiculite. All certifications of individuals involved with asbestos work (in-house staff and contractors alike) must be maintained in client files. Certification of auditors under the MT DEQ ACP and continuing education requirements are allowable DOE Training and Technical Assistance (T&TA) expenditures, when identified in the subgrantees approved T&TA Work Plan and Budget.

Note 2- Clients must be informed of the presence of suspected ACM's and what precautions will be taken to ensure occupant and worker safety, in writing via the Notice of Dangerous Conditions form (EAP-023). In homes where weatherization activities are deferred due to the presence of asbestos, a Notice of Dangerous Conditions – Walkaway or Deferral Notice (EAP-020) should be issued. All Notice copies and test

results (if any) need to be communicated to owners/occupants and copies maintained in the client file.

Note 3- Removal of ACM and air clearance testing are not allowable program costs. Encapsulation and testing of suspected ACM (other than vermiculite) are allowable across all contracts.

AND RESTRICTIONS

7000 Fuel Switching

Fuel switching is a weatherization measure to replace a dwelling's primary space and/or water heating source with a lower cost fuel primary space and/or domestic water heating source. The purpose of the fuel switch is to provide the low-income occupants with a safe and economical space and/or domestic water heating source and to decrease the energy burden on the household's income.

Agencies are required to use the Fuel Switch Computerized Energy Audit (FSCEA) to determine if a fuel switch can be cost-effectively completed for either the primary space heat source or the domestic water heating source. The agency inputs data regarding the existing primary heat source and/or domestic water heating source and the proposed primary heat source and/or domestic water heating source and the FSCEA determines if the fuel switch meets the Savings-to-Investment Ratio (SIR) (Currently 1.0) to cost-effectively switch from the high-cost fuel for space and/or water heating to the lower costing fuel.

The FSCEA takes into consideration the existing fuel type for space and/or domestic water heating appliances, the annual energy consumption costs for space and/or water heating, the fuel price of the existing primary space and/or domestic water heating fuel type, material costs, labor costs, the seasonal efficiency of the proposed replacement primary space heater and/or domestic water heating appliance, the Annual Fuel Utilization Efficiency (AFUE) rating if the replacement system is central, the proposed fuel type, the proposed fuel price, the approximate life of the appliance(s) to be replaced, and the number of kilowatts removed if the existing appliance is electric.

7100 Restrictions

Fuel switches **are not to be expensed** or counted as completions under the DOE, or BPA Weatherization Assistance Programs.

7200 Buy-down

If the total material and labor cost to fuel switch a dwelling's high-cost primary fuel space and/or water heating source with a lower costing fuel primary space and/or domestic water heating source brings the Savings-to-Investment Ratio (SIR) below 1.0, the owner/landlord can "buy-down" or cost share to bring the SIR up to a 1.0 or greater cost effectiveness (not allowable with DOE).

For example, the total material and labor costs to fuel switch a domestic water heater from electricity to natural gas is \$1,000. The FSCEA will only support \$800 to arrive at a 1.0 SIR.

The owner of the dwelling is willing to pay \$200 as a "buy-down" or cost share. With the owner's contribution, the domestic water heater can be fuel switched.

Chapter 8 HEATING APPLIANCES

8000 Heating Systems

Heating systems are appliances used to heat a dwelling. As part of the weatherization of a dwelling the heating system is inspected, tested and if necessary, repaired or replaced. All combustion Appliances and their venting must be visually inspected and tested for proper operation and safety. **Per WPN 22-7, combustion analysis CO testing is required for all combustion appliances, regardless of their venting type.** The agency must complete the DPHHS-EAP-008 'Heating Worksheet' regarding the testing and operation of the unit. WC CAZ and smoke/spillage testing is required during the initial audit, at the end of each day that significant air sealing takes place and at the final inspection where open combustion systems are present per [BPI 1200 Chapter 7](#), referenced in Appendix D of this Manual.

The auditor will test heating systems in accordance with BPI 1200 Chapter 7. The results of the testing will inform the auditor whether a 'Clean and Tune' or other service will be needed by an HVAC technician. When a 'Clean and Tune' or other service is recommended for a heating system, the issues must be noted in Energy Audit. The chart below lists the applicable tests for different heating systems required at the audit and final inspection.

Category	Gas leak	CAZ depressurization	Spillage	Ambient CO	Undiluted CO	Combustion air	Visual inspection
Category I	✓	✓	✓	✓	✓	✓	✓
Category III	✓	✗	✗	✓	✓	✓	✓
Category IV	✓	✗	✗	✓	✓	✓	✓
Direct Vent Mobile Home	✓	✗	✗	✓	✓	✓	✓
Un-vented space heater	✓	✗	✗	✓	✗	✓	✓
Oven	✓	✗	✗	✓	✓	✗	✓
Range	✓	✗	✗	✓	Optional	✗	✓

Note: If a direct vent appliance is not equipped with a combustion air inlet to the unit, the appliance must be tested in accordance with a Category I appliance.

The efficient operation of heating systems is a critical aspect of general heat waste. Detailed combustion system safety and efficiency standards are found in the SWS tool on the NREL web site and BPI 1200.

Testing/Inspection: Required

- Verify the primary heating system is present, operable, and performing correctly.
- Conduct a combustion a visual inspection of the furnace, its related venting, and conduct a Combustion Diagnostic test.
- All Category 1 appliances require a depressurization and spillage test. This is required pre-, post-weatherization and at the End of The Day when work has been done that could affect the draft (e.g., infiltration sealing, duct sealing, adding exhaust ventilation).
- Undiluted flue gas testing is required, at the audit and at the final inspection, for all furnace types, regardless of the venting type.
- Verify proper flue clearance from combustible materials.
- For solid fuel appliance, woodstove, pellet stove, fireplace, and coal burning stoves:

- Visually inspect the entirety of the appliance, including the venting system, verifying NFPA 211 compliant installations. The appliance must be inspected pre- and post-weatherization.
- Conduct pre- and post-weatherization Worst Case Combustion Appliance Zone (WC CAZ). If WC CAZ depressurization is at or more negative than -7 a Notice of Dangerous Condition (EAP-023) form must be issued. Additionally, client education on the danger signs of back drafting equipment and how to reduce or eliminate the likelihood of safety concerns must be provided.
- Verify the Hearth Pad meets guidelines set in section 8500, and the appliance to the wall or other combustible materials is code compliant.

At the conclusion of each workday in which envelope or duct sealing measures have been performed, WC CAZ depressurization and smoke/spillage testing will be performed on all open combustion appliances. This will ensure work completed in the home has not adversely affected the operation of the heating system. End of day WC CAZ testing results must be recorded and maintained in the client file. Test results will be recorded on “The End of Day WC CAZ Test Documentation Form” (or equivalent).

Note: Auditors, HVAC techs and contractors conducting end of the day CAZ testing must monitor Carbon Monoxide (CO) levels in ambient air.

Per DOE’s WPN 22-7 Maintenance, repair, and replacement of **primary** indoor heating units are required where occupant health and safety are a concern. If unsafe conditions exist with a combustion appliance that requires repairs to safely perform weatherization and cannot be remedied by repair or tuning, replacement is an allowable H&S measure. Furnaces must first be tested in the Space Heat section of Energy Audit as an ECM. Documentation justifying the replacement with a cost comparison between the replacement and repair cost must be in the client’s file.

No home shall be left without a safe primary heating system after weatherization. If unable to meet this requirement the dwelling must be deferred.

If an appliance is replaced during weatherization and the appliance is vented into a masonry chimney, the chimney must be lined in compliance with the International Fuel Gas Code or local AHJ if more stringent.

Maintenance and repair of secondary heating units is required where occupant health and safety are a concern. Replacement or installation is not allowed for secondary units, including solid fuel heating appliances using DOE funds. WPN 22-7 states,

“Unsafe secondary units, including space heaters, must be repaired, or removed and disposed of, or deferral is required. Secondary unvented space heaters are considered unsafe if they:

- are not listed and labeled as meeting ANSI Z21.11.2,
- have an input rating of more than 40,000 BTU/hour,
- are in a bedroom and have an input rating of more than 10,000 BTU/hour,
- are in a bathroom and have an input rating of more than 6,000 BTU/hour,
- are operating in an unsafe manner (e.g., high carbon monoxide (CO) readings, too close to combustibles, lack sufficient combustion air volume), or
- are not permitted by the Authority Having Jurisdiction (AHJ).

In households where a secondary heat source is wood and the dwelling contains a non-EPA approved woodstove, the agency may elect to replace the appliance using LIHEAP Weatherization funding; written permission from the Department is required prior to replacement.

The agency can elect to leave a properly operating secondary, non-EPA, and non-mobile home approved wood stove by providing the client a DPHHS-EAP-023 'Notice of Dangerous Conditions' form, with a copy placed in the client file. If a fireplace or woodstove is left operational, the vent must meet NFPA 211 national or local codes, or the home cannot be weatherized.

A home can have two primary heat sources when a heat source only heats a portion of the home. If a heat source presents a dangerous situation, it can be replaced if it is the only heat source in the area. Prior monitor approval is required.

The CDS Energy Audit must contain the correct Seasonal Efficiency. If during the audit of the dwelling it is determined that the heating system cannot be repaired and must be replaced, the seasonal efficiency of the new heating system must be entered into the energy audit before the dwelling can be submitted as a completion.

8050 Heat Pump

Heat pumps are electric heating appliances that offer significant efficiency gains over electric resistance heat. The cost and winter performance of air source heat pumps make them a viable option for weatherization projects.

There are several different types of air source heat pumps: split systems, packaged systems, and mini-split systems. The mini-split systems are categorized as ducted, ductless, single-zone, or multi-zone. There are multiple distribution/delivery options for mini-split systems: ceiling cassettes, wall-mounted heads (most common), floor-mounted heads, and ducted delivery.

The efficiency and temperature operation range for air source heat pumps has increased considerably and they are now a good option in northern climates. There are several ways that manufacturers rate the efficiency of heat pump systems. For our climate the ratings to be concerned with are the Coefficient of Performance (COP) and Heating Seasonal Performance Factor (HSPF). The COP relates directly to efficiency as it is calculated in the Energy Audit system. Montana's Energy Audit needs to be revised to include SEER data. The manufacturer will often publish a 'cold weather' or 'low temperature' COP – this is the value that must be entered in the 'efficiency' field in the Energy Audit. Because of our cold climate and relatively high design heat loads in many weatherized homes, careful heat pump design, including Manual J, S and D calculations, must be undertaken. It is likely that in most cases a backup heat source will be required to meet peak design loads.

Air source heat pumps are much more efficient than standard electric resistance heat and are less expensive to operate, which will further reduce the energy burden of weatherization clients.

Performance Requirements (adopted from Northeast Energy Efficiency Partnerships):

- Compressor must be variable capacity (two stage is not sufficient)
- Indoor and outdoor units must be part of an Air-Condition, Heating, and Refrigeration Institute (AHRI) matched system.
- Energy Star certified.
- COP @ 5 degrees Fahrenheit ≥ 1.75 (at maximum capacity operation)
- Ductless systems: HSPF ≥ 10 for single-zone systems or HSPF ≥ 9 for multi-zone systems
- Ducted systems: HSPF ≥ 10

Installation Criteria:

- When possible, units with a ‘demand-defrost control’ shall be selected. This will minimize defrost cycles and reduce the amount of heat needed by the supplemental heating elements.
- In general, with ducted systems, Heat Pumps need 400 cfm of air flow for each ton of the heat pumps capacity. The contractor must ensure adequate air flow through the distribution system. Undersized ducts, clogged/dirty filters, kinked ductwork, and dirty A-coils will deteriorate the performance of the heat pump. Care shall be taken in the system design to alleviate these factors.
- System design will employ Air Conditioning Contractors of America (ACCA) manual S for system selection, ACCA manual J for system sizing, and ACCA manual D for duct system design per SWS 5.01.

Note: When replacing an electric resistance heating system with an air source heat pump, monitor approval is required.

Funding Options

Except for NorthWestern Energy, Heat Pumps are an allowable measure across all funding sources. See the table below to see restrictions.

Heat Pump Funding Sources

Funding Sources	Percent Covered
DOE	100%
NWE	0%
BPA	50% or \$3,800 whichever is greater
LIHEAP	100%
CRF	100% provided emergency criteria is met and primary heating fuel is electricity

8100 Relocation of Existing Heating Systems

The relocating of heating systems refers to the moving of a heating system from floor to floor of a dwelling or a dramatic change to an existing heating systems placement within the dwelling; not slight changes in location due to sizing and venting requirements/restrictions.

Per WPN 22-7, the whole heating system, not only the appliance, would need to be deemed too dangerous for the client to operate in its present condition and condemned by a Furnace Technician or Independent Furnace Contractor.

To relocate the heating system, the act of relocating would need to be the most cost-effective solution, to bring the system out of "Red tagged" status. Relocation would usually be a rare situation and pre-approval from the Department is required prior to relocating.

8200 Copper Piping

The replacement of any natural gas fueled furnace or water heater copper piping is an allowable health and safety measure with written permission from the Department. Continual flaking of copper sulfide caused by the amount of hydrogen sulfide within the natural gas has the potential to thin the pipe and eventually cause pinholes and leaks. Continual flaking of the copper sulfide could possibly block burners or be deposited into gas valves causing the valve to foul. This rule applies to only natural gas fueled copper piping. Any replacement costs associated with this measure must be charged to the LIHEAP Weatherization fund.

Note: Replacement is allowed from the natural gas source to the appliance(s) only. No other replacement lines will be considered; whole house line replacement is not an allowable cost.

8300 Duct Sealing

Duct leakage can lead to many problems in a dwelling, the most common being wasted energy. Other problems can include thermal discomfort, substandard indoor air quality, and combustion venting failure. Ductwork leakage can take place 1) within the confines of the conditioned envelope of the building or 2) to and from the outdoors.

Air leakage to or from the outdoors wastes more energy than leakage within the confines of the thermal envelope. Mobile home ducts and site-built homes with ductwork in crawl spaces or attics are susceptible to leakage to and from the outdoors.

Although duct leakage within the conditioned envelope usually does not have a significant energy impact, it might impose a hazard to occupant health by causing poor indoor air quality due to back drafting combustion appliances. These potential problems are addressed on site by an energy audit and by performing a worst-case draft test.

Duct work is not required to be insulated in conditioned spaces; however, it should be sealed if it contributes to dangerous levels of CAZ depressurization. Very little efficiency can be gained by insulating duct work in a conditioned space (less than 2%).

However, a substantial amount of energy can be saved by sealing duct work in an unconditioned space (up to 15%). Duct insulation on all ducts located in unconditioned basement, crawl spaces, and attics will be a minimum of R-8. All ducts exposed to the exterior will be a minimum of R-12. Instructions for properly installing duct insulation and sealing ducts can be found in the SWS 5.01.

Duct system testing is required for all dwellings with duct work outside the Pressure Boundary; this includes virtually all mobile homes. Most commonly this test will be performed with pressure pans during the blower door test at the initial audit, during production duct sealing (if identified as part of the work scope) and at the final inspection.

Note: Boiler system delivery lines may be wrapped regardless of whether they are in a conditioned space; the heat loss through unwrapped lines is significant enough to justify wrapping boiler system delivery lines even in a conditioned space.

8400 Solid Fueled Space Heaters (Wood Stoves, Coal Stoves, Pellet Stoves, and Open-Hearth Fireplaces):

Note: Wood, coal and pellet fired furnace and boiler systems should be treated as vented heating systems and are not covered in this section.

Solid fuel heating appliances must receive pre- and post-Weatherization inspection to verify compliance with NFPA 211. Repair of flues and proper installation (i.e., clearance to combustibles) is required for primary **and secondary** solid fuel heating appliances. Repair or removal is an allowable expense for primary and secondary solid fuel heating appliances. Replacement is allowed for unsafe primary solid fuel heating appliances across all contracts.

Only LIHEAP Weatherization can be used to replace unsafe **secondary** wood stoves and Monitor pre-approval is required. The agency can elect to leave properly operating secondary, non-EPA, and non-mobile home approved wood stoves in operation with issuance of a Notice of Dangerous Conditions form (EAP-023).

All atmospheric combustion appliances require pre-, end-of-day, and post-weatherization WC CAZ testing. Solid fuel atmospheric equipment has a de-pressurization guideline of -7 Pascals in the Montana WAP. Additionally, a CO alarm must be installed in the solid fuel CAZ. Per WPN 22-7, the provision of Fire Extinguishers is allowed only when a solid fuel heating appliance is in use in the home.

If the solid fuel WC CAZ is at or more negative than -7 Pascals, a Dangerous Conditions Form (EAP-023) must be issued, and the occupants must receive education on the danger signs of back drafting equipment and how to reduce or eliminate the likelihood of safety concerns. Tools available to address WC CAZ readings at or below -7 Pascals include but are not limited to:

- Additional client education
- CO alarm placement
- Modifications to ensure code compliant installations.
- Forced air system balancing to reduce CAZ impacts.
- Combustion air brought into the CAZ.
- Connection of dedicated combustion air
- Replacement of **primary** solid fuel units (unsafe secondary wood stoves with LIHEAP Weatherization and monitor pre-approval only) that in the assessment of the auditor, present CO concerns.
- Sealed combustion/mobile home approved solid fuel equipment is not subject to WC CAZ testing requirements.

Note: Open-hearth fireplaces present unique de-pressurization and CO concerns and justify additional precautions compared to other atmospheric combustion solid fuel appliances. As open-hearth fires die down and when glowing coals remain, draft is reduced and CO production increases. CO can more readily enter the living space under these conditions, so CO alarm placement and consideration of the fireplace CAZ are critical safety procedures in homes being Weatherized.

8500 Wood Stove Hearth Pads:

Manufacturer recommended requirements for the appliance are to be followed regarding Non-Combustible flooring. At minimum, Non-Combustible flooring must extend under the entire stove, continuing for 12" past the sides and 18" in front of any loading doors. This applies to new wood stove appliances and any secondary heat source appliances that the agency elects to address via repair or replacement.

Note: A Hazardous/Potentially Hazardous condition form (EAP-023) must be provided to clients whose primary or secondary appliances are not addressed and the appliance does not meet minimum Non-Combustible flooring requirements.

8600 Domestic Water Heaters

Domestic water heaters (DWH) are appliances used to heat water for use by occupants of the dwelling. As part of the weatherization of a dwelling the DWH is inspected, tested and if necessary, insulated, repaired, or replaced. (For a more detailed description of the materials and requirements for insulating a DWH, see the Standard Work Specifications (SWS) tool on the NREL web site.)

The combustion diagnostic test must be conducted on all DWH per BPI 1200, Chapter 7. The agency must complete the DWH section of the DPHHS-EAP-8 'Heating Worksheet' and complete all required tests. The results of the testing will inform the auditor whether a 'Clean and Tune' or other service are needed by an HVAC technician. When a 'Clean and Tune' or other services are recommended for a water heater, the issues must be noted in Energy Audit. At the conclusion of each workday in which significant envelope or duct sealing measures have been performed, depressurization and WC CAZ spillage testing will be performed on natural draft water heaters. This will ensure work completed in the home has not adversely affected the operation of the water heater.

End of day WC CAZ testing results must be recorded and maintained in the client file. Test results must be recorded on "The End of Day WC CAZ Test Documentation Form" (or equivalent).

Notes:

Auditors and HVAC techs and technicians conducting end of the day CAZ testing must monitor carbon monoxide (CO) levels in ambient air. See [BPI 1200 Chapter 7](#) (Referenced in Appendix D Table 1 of this Manual) for ambient CO action levels. If ambient CO levels are equal to or greater than 70ppm, terminate the audit/inspection, notify the homeowner/occupant, and evacuate the building. Once outside the building, notify the appropriate emergency services.

Electric DWH appliances must be inspected for wiring or other electrical hazards.

The flue on a category I, natural draft water heater must vent up and out. The minimum pitch for a flue is rise of ¼ inch per lateral foot.

If the Natural Gas hot water tank cannot be vented in compliance with code due to location or unforeseen circumstance; power venting or a Health and Safety switch to an electric tank may be authorized. Contact your Field Monitor for approval prior to proceeding.

8650 Earthquake Straps on Water Heaters

All Mobile Home water heaters in the state of Montana shall be anchored or strapped to resist displacement due to earthquake motion using metal supports.

In single family and multi-family housing, Earthquake straps must be installed if the appliance is replaced, serviced, or relocated per IRC M1307.2.

8700 Domestic Water Heater Repairs

Costs for the testing, tuning and repair of the Domestic Water Heater (DWH) are entered into the Computerized Energy Audit (CEA) in the Heating System - Water Heater section – documentation is required of issues requiring repair or replacement. In certain instances, repairs made to the DWH may meet the criteria for use of the Low-Income Home Energy Assistance Program (LIHEAP) Emergency Assistance Contingency Revolving Fund (CRF) where there is a hazardous or potentially hazardous condition existing in the dwelling's primary water heating system and safety modifications are required. When repair conditions exist in the DWH that meet the Emergency Assistance requirements the agency can charge the repair expenses to the LIHEAP CRF. LIHEAP CRF DWH repair costs must be entered in CEA Heating System - Water Heater Tune-up CRF.

All repairs made to a DWH must be completed to applicable code. Any repairs not made to code are the responsibility of the agency.

8800 Domestic Water Heater Replacements

In some instances, adequate repairs cannot be made to a DWH or the DWH has been condemned ('red tagged') by the agency, utility service person, or a fuel vendor and the unit must be replaced. (See WPN 22-7 Weatherization Health and Safety Guidance)

Costs for the replacement of the DWH are entered into the Computerized Energy Audit (CEA) in the Health and Safety (H&S) Water Heater Replacement section. The DWH being replaced may meet the criteria for use of the LIHEAP CRF where there is a hazardous or potentially hazardous condition existing in the dwelling's primary water heating system and safety modifications are required. When a replacement condition exists for the DWH that meets the Emergency Assistance requirements the agency can charge the replacement expenses to the LIHEAP CRF. LIHEAP CRF DWH replacement costs must be entered in CEA H&S - Water Heat Replacement LIHEAP CRF.

Costs for a natural gas DWH replacement cannot be charged to the NorthWestern Energy (NWE) contract funds unless a service person condemns the unit. The NWE Natural Gas Space/Water Heat Replacement Worksheet must be filled out and uploaded into CEA and a copy must be in the client's file. The reason for the condemnation must be entered into the CEA when expensing NWE contract funds in the CEA.

All replacement DWH's must be installed to applicable code, including applicable plumbing codes that may require the replacement to be performed by a licensed plumber. Any DWH replacement not made to code is the responsibility of the agency. When weatherization measures trigger code-compliance the specific code requirement with reference to the weatherization measure(s) that triggered the code compliance issue must be documented in the client's file.

Note: The replacement of an electric domestic water heater (DWH) is an allowable expenditure under the NorthWestern Energy (NWE) Free Weatherization Program if the appliance has been condemned by an HVAC specialist. This must be documented in the client file.

The use of tank-less water heater appliances as replacements under any of the weatherization and/or LIHEAP CRF programs is allowable only with prior written permission from the Department.

8900 Mobile Home Domestic Water Heaters

All mobile home DWH must be installed to provide for the complete separation of the combustion system from the interior atmosphere of the manufactured home. (i.e., to draw their combustion air from outside), and be vented to outside the dwelling.

All mobile home water heaters installed by or left in place after weatherization in manufactured homes must meet these standards. If an occupant will not allow the removal of an unsafe combustion appliance from the home, deferral is required.

Repair or replace combustion gas venting to ensure proper combustion gas venting to outside the dwelling for all mobile home water heaters.

Install adequate combustion air for all combustion mobile home water heaters left after weatherization.

Documentation justifying the replacement with a cost comparison between replacement and repair must be maintained in the client file.

DWH appliances located in manufactured (mobile) homes must be certified for use in a mobile home.

Inside and outside access DWH appliances that are not certified for use in a mobile home must be replaced by the agency as the unit does not meet code and poses a health and safety risk to the occupants. When weatherization measures trigger code-compliance the specific code requirement with reference to the weatherization measure(s) that triggered the code compliance issue must be documented in the client's file.

Subgrantees can replace, repair, or install primary water heater heaters when existing primary water heater is unsafe, inoperable, or nonexistent.

Temperature and Pressure relief drainpipes attached to the T&P valves on inside and outside access DWH must extend through the flooring of the mobile home and through the belly board area to allow for water discharge. This location requirement minimizes water damage to the floor area as well as the insulation under the floor and the belly board area.

Testing/Inspection: Required

- Verify that a water heater is present, operable, and performing correctly.
- Conduct combustion appliance testing and visual inspection of all combustion water heaters and related venting.
- Depressurization and spillage testing is required for all water heaters pre- and post-weatherization and before leaving the home on any day when work has been done that could affect draft (e.g., air or duct sealing, adding exhaust ventilation).
- CO testing is required for all combustion water heaters, regardless of venting type.
- Verify proper clearances for all combustion venting types.

Occupant Education: Required

- Appropriate use and maintenance of water heater.
- Provide all paperwork and manuals for any installed equipment.

- Where combustion equipment is present, provide combustion safety and hazards information including how to recognize depressurization, dangers of CO poisoning, and fire risks associated with combustion appliance use.

Note: To meet the above requirements set forth in WPN 22-7 a mobile home natural draft water heater located in an exterior access compartment must be replaced with a Mobile Home Approved Sealed Combustion Tank Water Heater.

8920 Outside Access Water Heater Closets in Mobile Homes:

All natural draft water heaters must be replaced with a mobile home approved sealed combustion and water heater.

The exterior access door and associated pressure boundary walls of closets, if possible, shall be insulated and air sealed. If the door and associated wall can be insulated, the water heater can also be wrapped with a minimum R-10 insulation.

The floor must be repaired, replaced and air sealed as needed.

The sealed combustion tank water heater combustion air shall be brought in from underneath the belly or through the skirting by installing an appropriately sized metal chute with a rodent barrier. The exhaust flue must be sealed with a metal flue collar and sealant at the ceiling.

Outside Access Water Heater Doors – If the agency elects to address an outside access water heater door, the costs may be entered in the CDS Energy Audit under Heating System-Water Heat.

Note: If insulation and/or air sealing work is to be completed on the water heater closet and the tank must be removed to allow for access, the agency must ensure that the water heater is mobile home approved sealed combustion tank. The agency must replace the tank if it is not mobile home approved.

If it is not possible to insulate the closet door and associated wall area:

The installation of water heater wrap on electric, natural gas and propane water heaters is recommended unless it will void the warranty. A water heater wrap must not obstruct the following:

- The temperature and pressure relief valve.
- Drain valve.

- Electrical line.
- Burner assembly
- Draft diverter and/or flue
- Thermostats
- High limit switch

Insulation must be kept at least two inches away from where the electrical line attaches to the water heater. The tank should be wrapped with an insulation jacket. Large holes in the closet walls that allow air leakage into the interior must be sealed. All plumbing within the closet that is susceptible to freezing must be insulated. An adequate amount of combustion air must be provided to combustion water heaters.

Note: If the closet cannot be insulated and a water heater jacket cannot be installed due to clearance inside the closet, an insulation blanket can be attached to the closet door. The agency must meet clearance standards and all pipes, both hot and cold, must be insulated.

8930 Tankless Water Heaters:

Tankless (demand, instantaneous, or flash) water heaters eliminate standby losses as hot water is not stored but heated as needed. These units can be more efficient than standard tank water heaters. However, the installation of tankless water heaters can cost up to three times more than natural draft storage heaters. Tankless water heaters using natural gas or propane are more appropriate for weatherization than electric units. Electric whole-house tankless water heaters can draw over 100 amps of current and may require expensive electrical system upgrades.

As tankless water heaters are sealed combustion, they can be one option available to address mechanical system draft issues in homes being Weatherized. **However, tankless systems are to be used only under extenuating circumstances and with monitor pre-approval.** Power assisted or sealed combustion tank-style heaters should be considered before requesting pre-approval to use a tankless water heater.

Because tankless systems have a short duration, high intensity burn, they generally require more careful consideration of design factors than tank-based water heaters. In addition to requirements laid out in the SWS, additional design considerations include but are not limited to:

- Because tankless water heaters have no storage and must heat water on demand, burners for gas-fired units are much larger (up to four times larger) than those of conventional tank water heaters. These large burners often require an increase in diameter in the gas line(s) that serve(s) the unit, and the

BTU capacity of the existing gas supply system needs to be considered in the design and cost estimating process.

- Tankless systems are generally more sensitive to scaling than tank-style systems. If clients are in a hard-water area, or do not have mobility and/or access to perform regular maintenance on the system, tankless systems may not offer reliable, long-term operation.
- Inlet water temperature, fixture flow rates and minimum/maximum flow rates required to meet occupant loads need to be considered. Manufacturers will sometimes only list maximum flow rates, but minimum flow can be an important design consideration as well.
- Some tankless water heaters have a thermostat to control the outlet water temperature. On units without thermostatic control, the outlet water temperature varies inversely with flow. The lower the water flow, the higher the outlet temperature. To ensure client safety, only tankless heaters with thermostatic control or an anti-scald mixing valve should be installed in homes being weatherized.

Clients must be educated on tankless water heater maintenance. The ability or likelihood of the client to perform the required maintenance should be a consideration in the installation of a tankless water heater.

Before a tankless water heater is installed the agency is required to obtain pre-approval.

Note: NorthWestern Energy funds cannot be used to install tankless water heaters.

Chapter 9 SAVINGS TO INVESTMENT PRODUCING MEASURES

9000 Insulation Degradation

Insulation degradation can occur due to many factors; moisture, rodents and poor installation are the main culprits, particularly in mobile homes. The Department of Energy uses the Building Performance Institute (BPI) as a technical and training conduit for energy auditors and energy conservation techniques (WPN 19-4). The computation of R-values when auditing eligible dwellings shall follow BPI degradation standards listed below:

1. Measure the insulation thickness.
2. Determine the condition of the installation using the following criteria:
 - a. Good - No gaps or other imperfections.
 - b. Fair - Gaps over 2.5% of the insulated area.
 - c. Poor—Gaps over 5% of the insulated area.
3. Look up the effective R-value of the installed insulation using the condition and measured inches.

Measured Batt Thickness (inches)	"Good"	"Fair"	"Poor"
	Effective R-value (2.5 per inch)	Effective R-value (1.8 per inch)	Effective R-value (0.7 per inch)
0	0	0	0
1	3	2	1
2	5	4	1.5
3	8	5	2
4	10	7	3
5	13	9	3.5
6	15	11	4
7	18	13	5
8	20	14	5.5
9	23	16	6
10	25	18	7
11	28	20	8
12	30	22	8.5

**Derived from ASHRAE document "Heat Transmission Coefficients for Walls, Roofs, Ceilings, and Floors" 1996*

9010 Attics

Attic insulation is considered a “Major Measure”.

Adequate insulation in a dwelling reduces heat loss and lowers client energy bills. As part of the weatherization of a dwelling the insulation in the attic must be inspected for existing R-value and when possible, additional insulation added to raise the R-level to industry standards.

A receipt for the insulation installed must be given to the occupant and posted in the attic. For loose fill, the receipt must show the coverage area, initial installed thickness, minimum settled thickness, R-value, and the number of bags used. To figure out the R-value of the insulation, use the data that the manufacturer gives you. The receipt must be dated and signed by the installer.

No insulation will be installed on top of non-Insulation Contact (non-IC) rated fixtures.

Per SWS 3.0103, and International Residential Code (IRC), N1102.2.4 the attic access stairs and hatch must be insulated to match R-value of attic, and the attic access hatch must be sealed using gaskets, weatherstripping, or an equivalent method.

Detailed installation practices for attic spaces can be found in the SWS and Montana Weatherization Field Guides.

Note: Air sealing of the attic is entered in the ‘Miscellaneous’ section of the CEA. Attic air sealing, a non-SIR measure, will continue until the Zone Pressure Diagnostic (ZPD) test results show a reading of 45 pascals or greater.

Special precautions will be taken if knob and tube wiring is present.

- Knob and tube wiring will be inspected and certified to be safe.
- A dam that does not cover the top of the live knob and tube wiring will be created to separate insulation from the wire path when insulation is installed.
- A warning sign will be installed at all entries to the attic about the presence of live knob and tube wiring:



9100 Walls

Wall insulation is considered a “Major Measure”.

Adequate insulation in a dwelling reduces heat loss and lowers client energy bills. As part of the weatherization of a dwelling the insulation in the walls must be inspected for existing R-value and when possible, additional insulation added to raise the R-level to industry standards.

The agency must use a blower door to assure the thermal and pressure boundary is properly insulated per SWS 4.02 and WTC. A best practice, to assure proper insulation, is to use an IR camera.

A receipt for the insulation installed must be given to the occupant and posted. Documentation should include insulation material and R-value. The receipt must be dated and signed by the installer.

Note:

- Air sealing of wall holes and penetrations may be entered in the ‘Infiltration Section’ of the Energy Audit.
- If the material installed is visible every attempt should be made to match the aesthetic qualities of the original structure.
- It is best practice that balloon framed cavities are blocked at the bottom and top of the wall cavity and dense packed.

Detailed installation practices regarding wall spaces can be found in the SWS and Montana Weatherization Field Guides.

9200 Floors and Belly

Floor or Belly insulation is considered a “Major Measure”.

Adequate insulation in a dwelling reduces heat loss and lowers client energy bills. As part of the weatherization of a dwelling the insulation in the floor must be inspected for existing R-value and when possible, additional insulation added to raise the R-level to industry standards.

The choice to insulate either the floor or permanent foundation walls depends upon whether the space is heated, the ease of access, and the possibility of moisture issues.

Other considerations may include protecting the furnace, heat ducts, and water lines from cold temperatures.

A receipt for the insulation installed must be given to the occupant and posted. For loose fill, the receipt must show the coverage area, initial installed thickness, minimum settled thickness, R-value, and the number of bags used. To figure out the R-value of the insulation, use the data that the manufacturer gives you. The receipt must be dated and signed by the installer.

Notes:

- Air sealing of seams and penetrations may be entered in the 'Infiltration Section' of the Energy Audit.
- When insulating the floor of a site-built home, air sealing of the floor prior to installing the insulation is essential to assure the crawlspace/basement is not communicating with the conditioned space of the dwelling. A pre, production and post ZPD test will be conducted and recorded. 45 pascals or greater is required.
- Sills must be sealed.

Detailed installation practices regarding floor spaces can be found in the SWS and Montana Weatherization Field Guides.

9300 Rim Joist & Crawlspace/Basements

Adequate insulation in a dwelling reduces heat loss and lowers client energy bills. As part of the weatherization of a dwelling the insulation in the crawlspace or basement must be inspected for existing R-value and when possible, additional insulation added to raise the R-level to industry standards.

Rim joists are part of the thermal boundary and are essential to insulate and air seal. Rigid foam board, sealed around the edges with foam, is the preferred over fiberglass. Fiberglass batts allow for air circulation, carrying moisture, creating condensation, and encouraging mold and rot on the cold rim joist, Montana Weatherization Site-Built Field Guide.

- Select rigid insulation in accordance with ASTM E84 or UL 723, SWS 4.04
- If foam is less than 3 ¼" thick and is not permanently habitable no thermal barrier is needed, SWS 4.04
- If foam is thicker than 3 ¼" or doesn't meet the flame/smoke index or density requirements, or is in a permanently habitable space, a thermal barrier is required, SWS 4.04.

The choice to insulate either the permanent foundation walls or floor depends upon whether the space is heated, the ease of access, and the possibility of moisture issues. Other considerations may include protecting the furnace, heat ducts, and water lines from cold temperatures.

In general, it is not advised to insulate both the permanent foundation walls and floor. However, in some instances where floor insulation exists, it may prove beneficial to also insulate foundation walls. Justification for this must be documented in CEA.

A receipt for the insulation installed must be given to the occupant and posted. To figure out the R-value of the insulation, use the data that the manufacturer gives you. The receipt must be dated and signed by the installer.

Detailed installation practices regarding foundation wall spaces can be found in the SWS and Montana Weatherization Field Guides.

The agency must alert the homeowner to never store hazardous materials in the crawl space to maintain indoor air quality. (SWS2.02)

9305 Confined Spaces

All work associated with confined spaces must comply with the regulations.

In most situations due to the use of fans and respirators, the standard is complied with to satisfaction. The weatherization workers can “engineer out” most of the hazards by having a “competent person” perform the hazard evaluation and engineer a method to mitigate the risk such as a work/rest routine in the hot summer where you could work in the confined space in the morning when it is cool or use a fan or the blower door for ventilation.

In determining whether a hazard exists:

1. Identify the hazard.
2. Sampling can be done of air on the job to determine if it should be permit required. This is a free OSHA service.
3. The “competent person” is the experienced person making the hazard evaluation.
4. Ventilation is key in weatherization work to NOT be permit required.

5. Use work/rest routines. (Humidity, temperature, length of time working in the space all effect people differently).

Subgrantees must document the site analysis and any recognized hazards. The subgrantee will mitigate hazards with ventilation, other controls, lock-out tag-out, etc. The evaluation process and steps taken to “engineer out” the hazard should be documented for each weatherization job. If you can show that you have alleviated the hazard in a situation which would be considered “permit required” you can reclassify to a confined space situation.

It is rare to need a permit for weatherization. Subgrantees must be sure that there was a “good faith effort” to comply with the standard such as:

- Training employees
- Knowing the hazards
- Recognizing confined spaces
- Addressing how to deal with the hazard.
- Having rescue equipment available
- Adding “confined space” and “permit required” decision points to the work order.

The Permit can be created by the subgrantee. There are 14 elements (listed on the OSHA website) which need to be addressed.

9310 Vapor Barriers

Durable, effective ground moisture barrier provides long-lasting access and minimizes ground vapor.

A ground moisture barrier will not be installed if it interferes with the established drainage pattern (e.g., seasonal drainage).

Installation of a ground moisture barrier is at the discretion of the auditor for mobile homes and site-built homes. If ground moisture barrier is installed reference SWS 2.02.

Ground cover moisture barriers must be a 6-mil or greater and have a 0.1 perm or less, extend a minimum of 6 inches up the foundation wall, and be fastened and air sealed. All seams must overlap a minimum of 12" with a reverse of upsloping technique. At the

wall to floor connection, install the wall vapor barrier under the ground vapor barrier. All ground fasteners must be sealed with a compatible sealant.

The homeowner must be advised that all plastic has a life span much shorter than the home (5 years), and it will need replacing to remain effective.

A durable, easily seen signs, a minimum of 8.5" x 11" with a minimum or 10-year life will be installed at all accesses inside of the crawl space. Examples:

**PROHIBITED: DO NOT store
Hazardous or Flammable
Materials in this space.**

**Caution, do not damage:
Air Barrier,
Ground Moisture Barrier,
Insulation, and
Mechanical Components
If damaged, it must be repaired
immediately.**

9350 Mobile Home Skirting

Belly insulation is considered a "Major Measure".

If the mobile home skirting is already insulated, enter appropriate information in the Buffer Correction Factor column of the Floor section and R value information in the Existing column in the Crawlspace/Rim Joist section of CEA. If the energy audit and

site conditions will allow for additional belly insulation based on the proposed SIR, the belly insulation should be added.

All skirting work requires preapproval by IHSB staff. Insulated skirting can be installed where belly insulation is inaccessible and not repairable, or under extenuating circumstances. Extenuating circumstances will be reviewed and approved on a case-by-case basis.

In general, when there is an existing, accessible, and intact belly, skirting would not be insulated as the thermal boundary can be established at the belly.

Skirting that is repaired, replaced, or installed as incidental to the belly ECM (rodents, wind protection, etc.) is allowable with pre-approval and when supported by the overall SIR of the audit.

Where there is no Floor/Belly ECM present, skirting work would be limited to situations where it would be incidental to other ECMs in the home (wall insulation, etc.), or where it can fit in an appropriate H&S Minor Repair category (Pests, Building Structure). Minor Repair costs are limited to \$500 in aggregate without monitor preapproval.

The request for approval for the repair, installation, insulation, flashing, or skirting stiffener/high wind support related to mobile home skirting must include the reason(s) why belly insulation is unable to be installed.

4.0388.1 requires skirting to be installed to allow for movement. However, Montana received a variance from the Department of Energy to allow skirting to be securely fastened. With winds and snow loads it is not practical to allow for movement of skirting. Ensuring that the skirting (other than the access/entry panel(s)) remains stable, allows the belly to be protected from freezing temperatures, snow, and animals; achieving the desired outcome to prevent wind, weather, debris, and pests from the underside of the home. Skirting of Mobile Homes is allowed in Montana on a Grantee Pre-Approval basis where the belly clearance or other factors prevent insulation of the belly.

The request must also show that the costs for skirting the mobile home meet an acceptable Savings-to-Investment Ratio (SIR) (Currently 1.0) in the Rim Joist/Crawlspace/Basement Wall section of the Computerized Energy Audit (CEA).

Written approval must be received from the Department prior to any procurement, repair, installation, insulation, flashing, or skirting stiffener/high wind support on

mobile home skirting can begin. Photos of the underside of the mobile home need to be added to the file and uploaded into Energy Audit that show why skirting is needed.

Closeable skirting vents should be used as needed to control moisture and airflow under the mobile when the pressure/thermal boundary has not been defined at the skirting.

RV's and campers will normally not be considered for skirting based on the mobility of the dwelling.

9400 Windows and Doors

Window and door replacement/installation procedures can be found at SWS 3.02 and Montana Weatherization Field Guides.

Windows:

1. Existing U Value - The agency can input existing U values of up to 1.2 into the CDS Energy Audit without department approval. To use an existing U value of greater than 1.2; the agency must request and receive written permission from the Department before proceeding. The Department can approve an existing U value of up to 1.5.

Full window replacements need to be run in the Window section of Energy Audit and show and SIR of 1 or greater. Window replacements cannot be entered under the Infiltration section of the CDS Energy Audit.

Doors:

1. Residence Primary Door - Door replacement must show an SIR of 1.0 or greater. Solid core replacement doors **without windows** are to be used. Auditors should use care in completing the door section of the Computerized Energy Audit such that doors with windows **should not** be treated as solid-core doors.
2. Outside Access Water Heater Doors – If the agency elects to address an outside access water heater door, the costs is entered in the CDS Energy Audit under Heating System-Water Heat.
3. Existing U Value - Existing U values can be referenced from manufacturer information or found in the Help section of CEA. The agency can input existing U values of up to 1.2 into the CDS Energy Audit in situations that the condition of

the existing door warrants such a value. Photos of existing door are required in the client file. Department approval is not required for 1.2 or less existing U values. For use of an existing U value of greater than 1.2; the agency must request and receive CDS approval or written permission from the Department before proceeding. The Department can approve an existing U value of up to 1.5.

4. Doors with a Window – A door with a window can be installed if the client or landlord is willing to pay the cost differential between a standard core door and a standard core door with a window.

Example:

Standard door with a 1.0 or better SIR payback – Cost \$300.00

Standard door with an energy efficient window – Cost \$375.00

Client or landlord pays difference of \$75.00 to the agency for installation of the door. The \$75.00 is then put back into the Weatherization Program and applied to the actual cost of the door.

Note: It is the intent of the Montana Weatherization program to focus weatherization work on insulating the major measure of a dwelling. The major measures are Infiltration, Attics, Walls (including rim joist and above and below grade foundation walls), Floors, and Furnace systems (duct and boot sealing, insulation of ductwork in unconditioned spaces).

Egress Compliance - Window and Door

LIHEAP weatherization funds can be used to replace, repair, or install egress windows or doors under Health and Safety Minor Repair when weatherization activities directly cause egress compliance to apply, and the door or window doesn't pay back as an energy conservation measure in CDS Energy Audit. This is restricted to situations where a code-compliant egress window or door is not currently installed, is inoperable, or is removed. The wall framing must be able to support the replacement or installation of a door or window, i.e., an existing header is present in the wall.

The cost associated with installing a code required egress window or door, when the repair or replacement does not meet an SIR of 1.0 or greater, can be entered under the "Building Structure and Roofing Repair" line item in the Health and Safety table in the Energy Audit. Pre-approval is required if the combined minor repair costs are going to exceed a total of \$500.

Note: DOE funds cannot be used to correct window or door egress issues.

9500 Infiltration

Air sealing is considered a “Major Measure”.

Adequate air sealing in a dwelling reduces heat loss and lowers client energy bills. As part of the weatherization of a dwelling, air sealing is to continue if it meets overall cost effectiveness. Air sealing will be prioritized and completed based on the amount of pressure contributing to air exfiltration/infiltration driven by the Stack Effect. Air sealing measures are to be prioritized starting with the attic, followed by the basement/crawl space, and only proceeding to the rest of the home after these high priority areas have been sealed.

DOE WPN 19-4 states blower door guided air sealing may have an SIR less than 1.0, if the cumulative SIR of the package of measures is equal to or greater than 1.0, not including H&S measures. It is required that the crews and contractors use a blower door to guide air sealing work. SWS 3.01 and the Montana Weatherization Field Guides detail air sealing practices. Additional air sealing verifications are Zone Pressure Diagnostic, a smoke pencil, and IR thermal imaging.

9600 Incidental Repair Measures

Incidental Repair Measures (IRMs) must be limited to those repairs necessary for effective performance or preservation of measures being installed as part of the work scope. WAP funds cannot be used to install IRM's deemed necessary to protect materials which existed in the building before the audit is performed.

Incidental repair costs must be clearly linked to an ECM, or group of ECM's and the justification for the IRM must be provided via notes in the relevant ECM section(s) in CDS Energy Audit. Additionally, an IRM must be justified by written and photo documentation in the client's file. (WPN 19-5) The IRM costs are not to be included in ECM totals. The total cost of all IRMs is added to the cost of the package of weatherization measures and are included in the Overall SIR calculations of the audit. The Overall SIR for the audit must remain at 1.0 or greater for the IRM costs to be allowable.

Ethylene Propylene Diene Terpolymer (EPDM) Rubber Roofing:

EPDM rubber roofing can be installed on mobile homes as an IRM to protect weatherization measures that are installed as part of the work scope and enhance the durability of the building. The cost of the IRM will be included in the overall SIR calculation for the audit and the overall SIR must remain at a 1.0 or higher to be allowable.

Framing or Repairing Windows and Doors:

Framing or repairing windows and doors to meet code compliance when a WAP measure directly causes a code compliance requirement is allowable as an IRM. When weatherization measures trigger code-compliance the specific code requirement with reference to the weatherization measure(s) that triggered the code compliance issue must be documented in the client's file.

Framing or repairing windows and doors which cannot otherwise be caulked or weather-stripped when necessary to weatherize. In accordance with WPN 19-5, any repair necessary for the effective performance or preservation of newly installed weatherization materials, that are not part of a standard installation.

Window and Door Replacements:

IRM window and door replacements must first be treated as an ECM. Window replacements cannot be entered under the Infiltration section of the CDS Energy Audit.

In addition, window and door replacements must be justified in the client file with an explanation of need and relationship to a specific energy conservation measure (ECM) or group of ECM's.

Egress Compliance - Window and Door

Egress compliance costs will be run as a Health and Safety expenditure and only LIHEAP weatherization funding can be used. Please see section 5100 Health and Safety Related Repairs.

Note: DOE funds cannot be used to correct window or door egress issues.

Chapter 10 MISCELLANEOUS MEASURES

10000 Smoke Alarms

Smoke alarms shall be installed in all dwellings where alarms are not present or are inoperable. Operation verification of existing smoke alarms is required. Any existing smoke alarm that is inoperable must be replaced. All subgrantee installed battery-operated smoke alarms shall have a sealed, non-replaceable, 10-year battery. Replace functional smoke alarm battery if battery is designed to be replaced.

SWS 2.0101 requires that battery operated smoke alarms are listed and labeled in accordance with UL 217 and are installed in locations required by the Authority Having Jurisdiction (AHJ). The IRC, section R314.3 requires smoke alarms to be installed in the following locations:

- In each sleeping room.
- Outside each separate sleeping area in the immediate vicinity of the bedrooms.
- On each additional story of the dwelling, including basements and habitable attics and not including crawl places and uninhabitable attics.
- In dwellings or 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 the lower level is less than one full story below the upper level.

The costs for installation of smoke alarms must be entered in the CEA as a Health and Safety measure.

Note:

WPN 17-7 Fire Extinguishers: Where solid fuel burning equipment is present, fire extinguishers may be provided as an allowable Health & Safety measure. Client education is required including verbal and written instructions on the use of fire extinguishers.

10100 Carbon Monoxide Alarms

Per ASHRAE 62.2-2016 a Carbon Monoxide (CO) alarm shall be installed in all dwellings (including all electric dwellings) where alarms are not present or are inoperable. Operation verification of existing CO alarms is required. Any existing CO alarm that is inoperable must be replaced. All subgrantee installed battery-operated

CO alarms shall have a sealed, non-replaceable, 10-year battery. Replace functional CO alarm batteries if the battery is designed to be replaced.

SWS 2.0102 requires CO alarms are listed and labeled in accordance with UL 2034 and are installed in locations required by the AHJ. The IRC section R315.3 requires that a CO alarm be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms. Where a fuel-burning appliance is located within a bedroom or its attached bathroom, a CO alarm shall be installed within the bedroom.

If a CO alarm is not installed in a client's dwelling under the NWE Free Weatherization Program, the sub-grantee must note in CEA the reason why the alarm was not installed.

CO alarms will be installed within the combustion zone of an open-hearth fireplace and the occupants will be educated on the danger signs.

CO alarms must be installed to the manufacturer's specifications by the agency and not left at the dwelling for the client to install.

The costs for the installation of CO alarms must be entered in CEA under the Heating System section.

10200 Appliance Replacements

Refrigerator replacement is not eligible weatherization measure.

BPA funds may be used to:

- replace non-Energy-Star rated clothes washers with Energy-Star rated clothes washers.
- provide a new microwave oven if electric cooking exists and there is no working microwave oven. (Any existing non-functional microwave ovens shall be removed and taken to a facility for recycling).

Chapter 11 WX PROGRAM TRAINING

11000 Training and Certification Requirements

The Department contracts with the Montana State University's Weatherization Training Center (MTWTC) to provide tiered weatherization related trainings throughout the program year.

- Tier 1 trainings are comprehensive, occupation specific trainings that follow a curriculum aligned with the DOE Job Task Analysis (JTA) for that occupation.
- Tier 2 trainings are single issue, short-term training events aimed to strengthen the field such as ASHRAE, dense packing and others. Conference trainings are considered Tier 2 trainings.

The MTWTC policy defines the prerequisites and standard requirements for students to be admitted to a Montana Weatherization Training Center course. IHSB & MTWTC work together to provide the following definable training pathway for weatherization students, and clearly outline the prerequisites and requirements for each course offered at the MTWTC.

Procedures

On the student application form, students must:

- detail their previous training experience or equivalent experience to ensure that the student is prepared and qualified for each course offered.
- The MTWTC training coordinator then reviews each registration form and provides approval for the student to attend the course based on experience, training, and expertise.
- Agency Weatherization Directors approve each student's participation in any course to make sure that the course is appropriate for their career path and ability. The Agency Director and the student must sign the registration form, ensuring that the MTWTC, the student, and the agency director are all aware of a student's participation in any given training.
- The definition of requirements and prerequisites are available on the [MTWTC website](#) for download, and are provided below. This ensures consistent and equitable treatment of students and a formalized set of prerequisites for each course taught at the MTWTC.

MTWTC Course Prerequisites and Course Completion Summary

Retrofit Installer Technician

- Select appropriate Personal Protective Equipment (PPE) for a weatherization job.

- Understand basic building performance principles.
- Apply building science lecture topics to hands-on practice in the lab.
- Use common weatherization safety protocols.
- Select appropriate materials for a weatherization job.
- Apply basic air sealing measures.
- Understand whole house weatherization.
- Demonstrate proper dense-pack insulation techniques.
- Understand basic machine and tool maintenance.
- The final is a written test, and each student must pass with an 70% score or higher. Students that do not pass will be allowed to retake the exam in accordance with the Montana Weatherization Training Center retesting policy.

EPA Renovation, Repair, and Painting Rule (RRP)

- Identify appropriate lead-safe practices for a job.
- Perform and direct lead-safe work practices.
- Provide hands-on training to non-certified workers.
- Use EPA-recognized test kits to identify lead-based paint.
- Maintain containment areas to minimize the spread of dust.
- Implement the cleaning verification procedure.
- Prepare and maintain required records.
- The final exam is a written 25-question test. Each student must pass with a 70% score or higher. Students that do not pass will be allowed to retake the exam in accordance with the Montana Weatherization Training Center retesting policy.

Weatherization Crew Lead

- Understand the responsibilities of a Weatherization Crew Leader
- Identify successful leadership styles.
- Identify materials and staffing needs for a job.
- Demonstrate project management and staff training.
- Manage installation work on a job site.
- Interpret energy audits.
- Identify work site hazards.
- The final exam is a written test. Each student must pass with an 70% score or higher. Students that do not pass will be allowed to retake the exam in accordance with the Montana Weatherization Training Center retesting policy.

Mobile Home Weatherization

- Understand pressure diagnostics regarding mobile homes.
- Comprehend the importance of duct and boot connections.
- Detail the anatomy of mobile homes.

- Understand methods for insulating walls, bellies, and roofs of a mobile home.
- Calculate insulation quantities needed for a job.
- Identify common Weatherization measures for mobile homes.
- Demonstrate mobile home evaluation techniques.
- The final exam is a written test. Each student must pass with an 70% score or higher. Students that do not pass will be allowed to retake the exam in accordance with the Montana Weatherization Training Center retesting policy.

Basic Furnace

- Understand how heating systems work.
- Know the effects of Carbon Monoxide on home inhabitants and ability to measure it.
- Identify the combustion appliance zone (CAZ)
- Identify different types of furnaces and hot water heaters.
- Inspect ventilation systems and analyze drafts.
- Perform duct diagnostic test (pressure pan and duct blaster)
- Perform worst case CAZ depressurization test.
- Utilize the furnace lab to give students practical understanding.
- Develop confidence troubleshooting a working furnace.
- Be familiar with vent sizing.
- Evaluate combustion through basic analysis and inspection.
- Identify spillage, gas leaks, and complete thorough visual inspection of appliance.
- The final exam is a written test. Each student must pass with an 70% score or higher. Students that do not pass will be allowed to retake the exam in accordance with the Montana Weatherization Training Center retesting policy.

OSHA 10

- Recognize the history and intent of OSHA and how that program is administered and enforced.
- Discuss workers' rights, employer responsibilities, and how to file a complaint.
- Summarize OSHA's prevention programs.
- Recognize the OSHA Focus Four Hazards
- Choose the correct Personal Protective and Lifesaving Equipment for the hazard.
- Identify Health Hazards in Construction
- Identify certain OSHA standards and regulations per subsection of 29 CFR 1926
- The final exam is a written test. Each student must pass with a 70% score or higher. Students that do not pass will be allowed to retake the exam in accordance with the Montana Weatherization Training Center retesting policy. Students must attend all 10 hours of lecture for certification.

Energy Auditor

- Identify common environmental health risks such as mold, asbestos, and lead paint.
- Conduct an accurate blower door assessment and interpret the results.
- Perform pressure pan and duct blaster assessment test.
- Understand building science basics.
- Demonstrate appropriate communication with a client.
- Understand the importance of complete and accurate paperwork.
- Recognize potential health and safety risks for installers and crew members.
- Conduct a worst-case CAZ depressurization test.
- Perform accurate volume calculations for a home.
- Demonstrate appropriate estimation of materials, labor, and other costs for a job.
- Evaluate the safety and efficiency of a forced air furnace.
- Use infrared thermography to evaluate the energy efficiency of a building.
- **Field exam:** The field exam is a hands-on exam that must be completed successfully to pass, regardless of any other exam score. The Energy Auditor Scheme Handbook and Field Guide are found on the BPI website.
- The final exam is a written test. Each student must pass with an 70% score or higher. Students that do not pass will be allowed to retake the exam in accordance with the Montana Weatherization Training Center retesting policy.

Quality Control Inspector

- Conduct quality checks for a weatherization job.
- Perform post-project inspections.
- Evaluate worker professionalism.
- Inspect and assess the building envelope.
- Interpret energy audit information such as blower door readings, pressure pan testing, and zonal diagnostics reports.
- Understand basic combustion appliance diagnostics.
- The final exam is a written test. Each student must pass with an 70% score or higher. Students that do not pass will be allowed to retake the exam in accordance with the Montana Weatherization Training Center retesting policy.

11010 Training and Certification Courses

Training opportunities are offered each program year. When the schedule is developed for each upcoming year, the MTWTC and DPHHS consider Agency training needs and requests. Agencies may request specific training, such as insulation training for mobile homes, addressing multifamily units, managerial training, procurement training, hot water heaters, or specified heating system training, such as electric furnaces or wood stoves.

The following flow chart outlines the training courses in relation to cumulative accomplishment and advancement through the Job Task Analyses (JTA). There are three JTAs: Crew Lead, Energy Auditor and Quality Control Inspector. As per Weatherization Program Notice 15-4 and Montana State Policy, the Quality Control Inspector (QCI) is a required certification for those conducting final inspections on Department of Energy (DOE) weatherization jobs.

Montana Weatherization Training Center courses and curricula tracks teaching material aligned with the four (4) Job Task Analyses requirements. Course names are shown next to the corresponding curriculum.

Retrofit Installer Technician: A residential energy efficiency professional who installs energy efficiency upgrades in dwelling units.

- Retrofit Installer: Building Shell (Available Online)
- Retrofit Installer: Mechanical Systems
- Mobile Home Weatherization
- Renovation, Repair and Painting
- OSHA 10 or 30
- Electrical Principles, Equipment Grounding and Jobsite Safety

Crew Leader: A Crew Leader is responsible for supervising and assisting in the retrofitting activities specified in the scope of work. The Crew Leader is responsible for quality control, interacting with the client, managing personnel and materials, and ensuring a safe and efficient job site.

- Retrofit Installer: Building Shell (Available Online)
- Retrofit Installer: Mechanical Systems
- Mobile Home Weatherization
- Renovation, Repair and Painting
- Basic Furnace and Heat Pumps (Available Online)
- OSHA 10 or 30
- Weatherization Crew Leader- Advanced Skills (Available Online)
- Healthy Housing Principles
- Advanced Pressure Diagnostics

- Advanced Combustion Testing
- Advanced Furnace
- Troubleshoot Equipment with Modern Multimeters

Energy Auditor: An experienced professional who evaluates the health and safety issues, durability, comfort, and energy use of a residential building. The Energy Auditor (EA) conducts advanced diagnostic tests, gathers, and analyzes data, and creates energy models to draw conclusions and make recommendations to the client for improvements.

All above listed Crew Leader classes, plus:

- Intro to Energy Auditing (Available Online)
- Energy Auditor & Written Exam
- Certified Residential Thermographer

Quality Control Inspector: A certified residential energy-efficiency expert who ensures the completion, appropriateness, and quality of energy upgrade work by conducting a methodical inspection of the building and performing safety and diagnostic tests.

All above listed Energy Auditors classes, plus:

- Quality Control Inspector (Available Online)

Individuals must obtain an Energy Auditor certification from the Building Performance Institute by meeting BPI qualifications, passing a written test and passing a field test. After obtaining an Energy Auditor Certification from BPI individuals wanting a QCI certification must be approved by the Building Performance Institute to sit for the required written test and must receive a passing grade to achieve QCI certification. Energy Auditor and QCI certification is renewed every three years. To be eligible for recertification, candidates must have accumulated a minimum of **24 qualifying continuing education units (CEUs)** over the three years of certification. When the minimum CEU requirement is met the candidate must successfully complete the field examination that is current at the time of renewal. Candidates who do not meet the CEU requirements must retake the written and field exam that is current at the time of renewal. Candidates must also re-attempt to and sign the Code of Ethics to be eligible for recertification.

Note: The Department requires the OSHA 10 class for all weatherization workers.

Chapter 12 WX PROGRAM MANAGEMENT

12000 Equipment Inventory and Disposal

Local agencies are required to maintain an inventory of equipment with a purchase price of \$5,000 or more. The agency is required to send to the Department on an annual basis a copy of the inventory of equipment purchased for \$5,000 or more.

All equipment purchased for use in the weatherization program, regardless of acquisition costs, must be maintained on the agency's perpetual inventory until disposed of or no longer used in the program. A physical inventory of the property must be taken, and the results reconciled with the property records at least once every two years (see section 12300 for a list of information required in local agency property records).

- A. If a local agency has no need for equipment that has a current fair market value (FMV) of \$5,000 or less, the equipment can be sold or otherwise disposed of with no further obligation to the Federal awarding agency, unless otherwise provided for in the terms and conditions of the Federal award. Pre-approval via email is required for equipment disposal. Please reference 2 CFR 200.313 Equipment which states, "states must use, manage and dispose of equipment acquired under a federal award by the state in accordance with state laws and procedures."

Local Governments, Tribal Organizations, Nonprofit Organizations and Subgrantees shall follow their appropriate property regulations found in 2 CFR 200.310-316 - Property Standards. Any potential discrepancies between guidance contained in this document and 2 CFR 200 shall be resolved in favor of 2 CFR 200.

- B. If a local agency has no need for equipment purchased with federal funds, where the current per unit FMV exceeds \$5,000, The local agency must do the following:
 - (1) Request disposition instructions from the Federal awarding agency if required by the terms and conditions of the Federal award. The Federal awarding agency is entitled to an amount calculated by multiplying the current FMV or proceeds from the sale by the Federal awarding agency's percentage of participation in the cost of the original purchase (note: the local agency may, with permission, be eligible to retain \$500, or 10% of the proceeds, whichever is less, for its selling and handling expenses).
 - (2) If purchased with Department of Energy (DOE) funds, offer the equipment to local agencies with weatherization programs.

- (3) This process is coordinated through local agency representative wishing to dispose of the equipment.
- (4) Equipment will be given to local agencies on a first come first serve basis.

If not purchased with DOE funds, equipment may be used as trade-in for newly purchased equipment.

If no local agencies want the equipment purchased with DOE funds, the agency may, with written Department approval, sell or dispose of the equipment.

- a. The local agency must sell or dispose of the equipment in compliance with the agency's fiscal policies.
- b. If the equipment is sold the agency must use the income in the program or programs which originally purchased the equipment.
- c. Proceeds from equipment sales must be tracked and reported as program income.
- d. All equipment purchased for use in the weatherization program, regardless of acquisition costs, must be maintained on the agency's perpetual inventory until disposed of or no longer used in the program.

12010 Equipment Disposal Recordkeeping

1. Agency files must include the following documentation regarding disposal of equipment purchased for \$5,000 or more with weatherization funds:
 - a. Copy of written notification to the Department regarding intent to dispose of or sell weatherization equipment.
 - b. Copy of written Departmental approval to sell the equipment, if applicable.
 - c. Any data relevant to the ultimate disposition of the property, including at a minimum, the date of disposal and/or the sale price.

12100 WX Client File Documentation Checklist

The Client Weatherization file must be retained for a period of eight (8) years past the end of the DPHHS Master Contract. A signed copy of this checklist must be included in each Client File: Client files must include the following documentation (the documentation can be combined):

- Priority number or reason for deviating from the priority list and LIHEAP Case ID, if there is a deviation from the Department-supplied priority list, please provide:
 - a. Reason for deviation.
 - b. Calculated priority number using formula found in Wx Policy and Procedure Manual Section 1100. Priority is based upon elderly, household members with a disability, children under age eighteen (18), energy burden, and energy usage. Households with an emergency can be moved to the top of the priority list.
- Central Database System (CDS) Energy Audit Number.
- Completed Standardized Audit Form EAP-035 must be in the client file and uploaded into CDS Energy Audit when data has been entered into CEA, before requesting any pre-approval and/or before weatherization work begins.
- Job Order Worksheet (or an acceptable substitute) and an itemized financial records worksheet showing work completed and cost of each weatherization measure, including a total for all measures completed.
- Documented use of the Blower Door including pre-weatherization, production and final inspection test results including Zone Pressure Diagnostics and Duct system test (when applicable); dates performed; and worker sign off.
- Documentation of WC CAZ and spillage results obtained after each workday in which significant air or duct sealing has occurred (where open combustion equipment is present). The "End of Day WC CAZ Test Documentation" form (or equivalent) can be used.
- In homes with primary or secondary solid fuel burning appliances (wood stoves, coal stoves, pellet stoves and open-hearth fireplaces), documentation of pre-, production, and post-weatherization worst case combustion appliance zone (WC CAZ) depressurization testing must be retained. All solid fuel appliances require placement of a CO alarm in the solid fuel CAZ and visual inspections verifying NFPA 211 compliant installations. Unsafe secondary units must be repaired, or removed and disposed of, or deferral is required.

- A copy of any issued Dangerous Conditions forms (EAP-023) needs to be in the client file and uploaded in CDS Energy Audit.
- Documentation of reasons for installation of Health and Safety measures performed on the dwelling as part of the weatherization process.
- Documentation of procurement for any non-contracted services.
- Copy of the "Weatherization Assistance Program(s) Access Agreement" (DPHHS-EAP-013) must be in the client file and uploaded in CDS Energy Audit.
- Any applicable notices relative to hazardous conditions, health and safety related deferrals, or owner/occupant refusal of SIR qualified measures (EAP-020/EAP-023/Mold form). Client Signatures must be on all notices.
- Documentation of compliance with Lead Safety for Renovation Repair and Painting (LSRRP) protocols as outlined in the Lead Safety for Renovation, Repair and Painting training course and Student Manual. Please include copies of the following:
 - a. Test kit results report provided to the client and landlord.
 - b. A complete and signed occupant/landlord confirmation of receipt of the "Renovate Right-Important Lead Hazard Information for Families, Child Care Providers and Schools" pamphlet.
 - c. Pre-renovation education records
 - d. On the job records
 - e. Post renovation report

Please note that in addition to containment photos in the client file, the CDS Energy Audit must contain a sampling of photographic documentation (as described in Section 4500 of the Wx Policy and Procedure Manual) of lead safe weatherization procedures for all dwellings where the agency performs any LSRRP work, including window and/or door replacement or repair (If applicable).

- Completed Heating Worksheet (DPHHS-EAP-008) with Contractor/Agency HVAC Technician signature must be in the client's file and uploaded in CDS Energy Audit before requesting pre-approvals and/or before weatherization work begins.
- DOE completions require a completed Onsite Final Inspection Form with client and QCI certified final inspector's signatures. If the home is reviewed as part of a monitoring visit, two QCI signed final inspection forms should be included in the client file; one from the original final inspection and one from the Monitor's inspection.
- Non-DOE funded completions require a completed Onsite Final Inspection form with client and final inspector's signatures.
- A completed Onsite Final Inspection Form must be in the client file and uploaded in CDS Energy Audit.
- Documentation of asbestos sampling results (if any) and relevant worker certifications (if applicable).
- If LIHEAP CRF emergency assistance is provided during weatherization, documentation of the conditions of the emergency and compliance with the 18/48-hour rules (as applicable must be recorded on a LIHEAP Emergency Assistance Request Form (DPHHS-EAP-250).
- In accordance with the MCA Title 70, Chapter 24 Montana Landlord Tenant laws, the LIHEAP recipient (tenant/renter) should give the landlord written notice informing the landlord of the

furnace problem and give the landlord “reasonable” time to fix the problem. This must be documented in the client file.

- Red Tags or the NorthWestern Energy Natural Gas Space/Water Heat Replacement Worksheet (as appropriate) must be added to the client file and uploaded in CDS Energy Audit.
- Documentation of clients being asked about pre-existing or potential health concerns, at the time of the initial audit, must be recorded on Appendix B (or equivalent).
- Documentation of Historic Preservation processes, when relevant and as described in Chapter 18 of the Montana Weatherization Policy and Procedure Manual.
- Energy Education must be performed using EES Lite. A signed and dated copy of the EES Lite report shall be uploaded to CDS Energy Audit and placed in the client file. If energy education is not conducted, an explanation must be included in the client file.
- If replacing doors during weatherization, a photo(s) of the original door(s) must show why the door needs to be replaced. The photo(s) must be in the client file and uploaded into CDS Energy Audit before requesting any pre-approvals and/or before weatherization work begins.
- If skirting is needed, a photo of the underside of the mobile home must be added to the client file and uploaded into CDS Energy Audit to show why the skirting is needed.
- Photos of all four sides of the exterior of the home must be added to the client file and uploaded into CDS Energy Audit before requesting any pre-approvals and/or before weatherization work begins.
- RedCalc worksheet must be added to the client file and uploaded into CDS Energy Audit.
- Copies of all client correspondence including complaints, documented resolution, call backs, client requests, etc.
- Weatherization Readiness Funds “Data Tracking Sheet” must be uploaded in CDS Energy Audit and maintained in the client file.

Employee Responsible for File Content Review: _____

Signature: _____ Date: _____

12200 Counting funding source completions:

Department of Energy dwelling units must have a final Quality Control Inspection (QCI) to be counted as a completion.

CDS Energy Audits for homes weatherized under this Task Order need to be completed by the tenth day of the month (January, April, July, and October) past the end of the quarter (March, June, September, and December).

- After the tenth of the month (January, April, July, and October) audits can no longer be completed in CDS Energy Audit for the previous quarter.
- The State reports completions to DOE quarterly. To receive credit for the completion, the audit must be submitted as complete by the tenth of the month following the end of the quarter. The quarterly program status report will automatically be generated by utilizing the CDS Demographics Report.
- Example: Reports due April 10th, for homes completed in Q1 (Jan-Mar),

The 'Conservation Demographics Report' can be used to adjust completions within a funding source. This report is open to make these changes between the 16th and 25th of the month following the quarter when a contract closes.

Units must be counted in the contract period in which they are completed.

All goods, services, and equipment must be purchased by the last day of the contract to be charged to that contract.

Local agency fiscal files must include copies of final closeout reports for each funding source.

12300 Inventory control:

Property and equipment:

1. Local agencies will maintain their inventory and capital asset records according to the funding source:
 - a. DOE– 2 CFR 200.439(2) "Capital expenditures for special purpose equipment are allowable as direct costs, if items with a unit cost of \$5,000 or more have the prior written approval of DOE and the State of Montana.
 - b. LIHEAP – Uniform Guidance

2. When acquiring tangible personal property (equipment, tools, etc.), procedures concerning purchasing, prior approval, bids, grant contract, etc. will be followed.
3. Equipment and tools with a value established by the Federal regulations will be placed on the local agency's inventory.
4. As equipment is added to the local agency's inventory, the following information will be recorded in the inventory records as required by 2 CFR 200.313(d)(1):
 - a. description of the property,
 - b. a serial number or other identification number,
 - c. the source of funding for the property (including the FAIN),
 - d. who holds title,
 - e. the acquisition date,
 - f. cost of the property,
 - g. percentage of Federal participation in the project costs for the Federal award under which the property was acquired,
 - h. the location,
 - i. use and condition of the property, and
 - j. any ultimate disposition data including the date of disposal and sale price of the property.
5. A physical inventory of all assets on inventory will be taken on an annual basis, at a minimum, by the local agency or at any other time required by grantors. The physical inventory shall be reconciled to the property log and adjustments made as necessary.
6. A control system must be developed to ensure adequate safeguards to prevent loss, damage, or theft of the property. Any loss, damage, or theft must be investigated.
7. Adequate maintenance procedures must be developed to keep the property in good condition.
8. If authorized or required to sell the property, proper procedures must be established to ensure the highest possible return.

12310 Inventory of materials:

Description of Inventory:

The local agency will maintain an inventory of materials used for home weatherization.

Examples of such items include but not limited to:

- Doorknobs.
- Roof vents.
- Bags of insulation.

- CFL's
- LED's
- Water Heater Blankets
- Aerators
- Showerheads
- Smoke alarms
- CO alarms

12320 Accounting for Inventory:

1. The local agency will establish a written inventory policy. The written policy must include the coordination of all functions – including scheduling, completions, purchasing, storage, and cash flow.
2. The local agency will maintain records, perform inventories, and maintain control systems to prevent loss, damage, or theft of equipment, materials, and supplies.
3. All materials received must be accounted for by invoices from vendors which describe the material(s), number of units, total costs, shipping charges, if any, and sales tax.

12330 Usage of Inventory:

A daily usage system must be a central feature of the inventory system. The agency must maintain records showing materials put into and removed from inventory to be installed as part of the weatherization services.

A physical count of inventory will be performed every fiscal year at a minimum.

Chapter 13 CLIENT EDUCATION

13000 Client Education

There are two parts to client education. Households receive energy education, and health and safety education.

For health and safety education, this policy section follows Department of Energy (DOE) WPN 22-7, the latest guidance.

WPN 22-7: Over the years, several issues have been addressed to ensure that weatherization activities do not cause or exacerbate health and safety problems for workers and occupants. While not every possible health and safety issue is addressed herein, the guidance should provide enough relevant examples and direction to provide clarity to the many issues encountered.

Client Education & Participation Required Due to ASHRAE 62.2.2016 Standard

Client education & benefits:

- Like all Weatherization measures, client refusal is NOT an option. Provide Client Ed and obtain client permission for the ASHRAE 62.2.2016 standard prior to commencing other Weatherization measures.
- Be positive, this is a significant improvement to the program! A feature not available in the past.
- Use the State provided ASHRAE client education brochure to guide the conversation with the client.
 - The program combines additional air sealing with smart, healthy ventilation.
 - Ask about clients concerns with focus on Indoor Air Quality (IAQ), H&S, and moisture. Provide information and solution to address concerns.
 - If air sealing is performed, the savings from reduced infiltration will be greater than the cost of running the fan as prescribed.
 - With potential improvement in IAQ, there may be a reduction in respiratory related health issues.
 - Client homes should see a decrease of condensation or moisture collection. (Windows, ceilings, etc.)
- Alert occupants to potential hazards contributing to poor IAQ after tightening up a home without installing mechanical ventilation such as: moisture, odors, chemicals, smoking, pets, etc. If these are observed, document and consider increasing the use/flow rate of the continuous fan.

- Instruct clients on correct operation of the fans and importance of periodic maintenance.
- If using a simple wall switch, place a Label on switch; “Ventilation Fan - Leave On at All Times.”

13100 Energy Education:

Energy education must be provided to every household unless it is refused by the applicant. Sub-grantees conduct energy education using the Energy Education System Lite (EES Lite). If there is not enough data history available for EES Lite, households should still receive basic energy education. Energy education, or why energy education could not be completed, must be documented in client files. All charges for energy education are entered under “Customer Education Costs” in the energy audit. For NWE EES Lite Customer Education Cost is limited to \$150.00.

13200 Health and Safety Education:

Client health and safety education must be provided to every household for issues identified during the audit or during weatherization. It is required that occupants be asked about preexisting or potential health concerns at the time of the initial audit. This information should be compared to the household’s response on the LIHEAP/Weatherization application.

The Department’s “Client Education” checklist of issues, when identified, are required to be discussed with occupants, along with written materials by the EPA and DOE. The occupant must sign and date the checklist and other required forms. Sub-grantees may use the Department checklist (see Appendix B) and EPA/DOE materials or their own if all the same issues are discussed and documented with dated signatures in the client file.

The Department’s “Client Education” checklist and EPA/DOE materials fully follow WPN 22-7 guidelines and requirements possible. While every possible health and safety issue is not addressed by WPN 22-7 and therefore the Department checklist, where hazards are identified, clients must be informed in writing and the document must be signed and dated by the client. A copy must be maintained in the client file.

All EPA materials are obtained and may be printed from the [EPA website](#) at. [Some materials may also be ordered from the EPA.](#)

Chapter 14 FISCAL REQUIREMENTS

14000 General Standards for Allowable Costs

Allowable weatherization costs must be:

1. Reasonable for the performance of the contract and of benefit to the program for which the funds are provided.
2. Allocated to the contract under these policies.
3. Conform to any limitations or exclusions set forth in these policies or in the contract as to type or amount of cost of items.
4. Consistent with policies and procedures that apply uniformly to other activities of the organization and are accorded consistent treatment.
5. Determined in accordance with generally accepted accounting principles.
6. Adequately documented.

Local agency files must include all required expenditure documentation. See funding source contract for specific terms and conditions, policies and procedures, or policies and guidelines for allowable costs specific to each funding source (e.g., WPN 11-03 issued by DOE, effective December 15, 2010, provides the following:

GUIDANCE:

Grantees and sub-grantees may not charge the WAP for additional work on homes that have already been reported to DOE as completed, weatherized units. Once a home is reported to DOE as complete, the required final inspection indicates that all applicable work performed was done so in a workmanlike manner, including all work that may have been contracted out such as furnace work, etc. Performing activities such as routine maintenance, repairs, or warranty-type work is not permitted using DOE funds for work beyond those costs already invoiced. Grantees and sub-grantees may use other funds that are not included as a part of their DOE WAP budget plans to pay for the costs associated with these activities.

See funding source contract for allowable weatherization measures and fund source limitations and allowances.

14100 Method of Compensation:

The Department will reimburse local agencies for all allowable costs upon receipt of authorized requests for reimbursement.

Local agencies are responsible for complying with all applicable guidelines and procedures, demonstrating responsible management of cash flow, inventory control, equipment purchase, and administrative costs.

- a. If a local agency wants to subcontract work under this program, the agency's subcontract template must be reviewed and approved by the Department. Once the template has been approved, the agency can use the contract for all subcontracts.
- b. Subcontractors must be selected using competitive procedures among potential bidders for weatherization services.
- c. Local agencies must keep records that fully disclose the following:
 - I. Amount and disposition of funds received.
 - II. Total cost of a weatherization project.
 - III. Source and amount of funds used from all funding sources.
- d. Records must be retained for eight (8) years past the end of the DPHHS Master Contract.
- e. NWE Records must be retained for eight (8) past the end of the DPHHS Master Contract.

14200 Reports:

Local agencies will provide reports or answers in writing to specific questions, reports or surveys requested by the Department or its funding sources by the specified deadline.

a. As per 10 CFR 440.18(d)(6) requests for vehicles purchased with DOE funding require prior written DOE approval. Allow ten (10) business days for DOE review. Steps to obtaining prior approval:

- 1) Grantees shall identify any need for vehicles and equipment (including Subgrantee needs) and provide the minimum information required below, if known at time of application. Upon approval of the award by the DOE Contracting Officer, the prior approval requirement is satisfied without the need for subsequent approvals.
- 2) Grantees that identified a need for vehicles and/or equipment in their annual application (including Subgrantee needs) but were unable to provide the minimum information required below at that time, shall ensure the minimum information required, as identified below, is provided to the DOE Project Officer and DOE Administrator identified in

the Assistance Agreement in a timely manner and as agreed upon with DOE.

- 3) Grantees that determine a need for vehicles and/or equipment after the award is approved by the DOE Contracting Officer (including Subgrantee needs), shall submit an individual request to the DOE Project Officer with a copy to the DOE Administrator identified in the Assistance Agreement and provide the minimum information required, as identified below, in a timely manner and as agreed upon with DOE.

Grantees shall review all Subgrantee requests to ensure all requirements are met before making a recommendation to DOE for approval. Upon receipt of the minimum required information for step 2 or 3 above, DOE anticipates approval or review and follow-up if additional information is deemed necessary within ten business days.

Minimum information required:

The following must be submitted to DOE:

- A copy of the purchase request identifying the Grantee/Subgrantee.
- Where the vehicle(s) and/or equipment will be used and how it will be used – specify full or part time use in the Weatherization Assistance Program.
- Identification of funding source(s) that will be used for purchase (e.g., DOE Weatherization - Program Operations funds) and a statement of whether the vehicle(s) is a replacement or intended for program expansion. If this is a replacement, address the trade-in, if applicable. In your explanation, please indicate the amount of any non-DOE WAP cost sharing, especially if part-time usage is proposed.
 - Note that Grantee purchases of vehicles or equipment which are directly related to specific training and technical assistance activities, such as monitoring, etc. may be charged to technical and training assistance (T&TA). However, T&TA funds shall not be used to purchase vehicles or equipment for Subgrantees to perform Weatherization services. The cost of these vehicles or equipment to support the Program must be charged to the vehicle/equipment or program operations categories. Provide a brief description of how the procurement was done, and confirmation that Agency, Grantee, and Federal procurement guidelines in 2 CFR Part 200 – Financial Assistance Rules were met.
- Copies of the bid specification (vehicle/equipment description with required features) and a bid analysis indicating at a minimum, each bidder, their bid price, and a determination whether each proposal met the bid specification.

- Statement showing that the lowest responsive bid was selected or provide a sufficient justification of the “best value selection” if lowest bid is not recommended for DOE approval.

As indicated in 2 CFR 200.317-326 - Procurement Standards, Grantee and Subgrantee procedures must provide for a review of proposed procurements to avoid purchase of unnecessary or duplicate items. Consideration should be given to consolidating or breaking out procurements to obtain a more economical purchase. Where appropriate, an analysis must be made of lease versus purchase alternatives, and any other appropriate analysis to determine the most economical approach.

DOE approval is not required for a vehicle lease that does not include a "purchase option." However, if a lease-purchase option is proposed and even if the purchase price is as small as one dollar, DOE would need to approve the purchase of the vehicle. Grantees and Subgrantees may not pre-pay leases that exceed the end of the award project period.

14400 Authorized Expenditures:

OMB (Office of Management and Budget) Uniform Guidance is used as general guidelines for determining which weatherization costs are allowed.

Exceptions exist where costs conform to specific categories in the applicable contract, policies and procedures, weatherization budget, state law, or local ordinance.

The Department determines the proper interpretation of the federal or state procedures as they relate to costs allowed or prohibited under this program.

1. Local agency files must include the following documentation:
 - a. Description of agency subcontracting process and copies of pertinent contracts and procurement procedures.
 - b. All necessary records that disclose fiscal accountability.
2. Inventory Control.
3. See funding source contract for allowable weatherization measures and fund source limitations and allowances.
4. DOE follows 10 CFR 440.18(d)(6); 2 CFR 200.317-326; and 2 CFR 200.439(2). LIHEAP follows OMB Uniform Guidance.

Chapter 15 ADMINISTRATIVE/PROGRAM COSTS

15000 Administrative Costs/Production Overhead

Administrative or Production Overhead (referred only to NWE funding) are costs associated with those functions of a general nature not clearly identifiable with a program. These functions may include, if identified, planning, budgeting, and accounting, and establishment and direction of local agency policies, goals, and objectives.

Note: For NWE production overhead, expenditures shall not exceed 35% of the contractor's actual expenditure of total contract funds at any point in the duration of the contract

1. Allowable administrative costs are:

- Non-Specific Board/committee meetings.
- Executive Director.
- Non-Specific staff meetings.
- Office management.
- Accounting, auditing, and budgeting.
- Corporate legal services.
- Personnel management.
- Purchasing and distribution of supplies.
- Insurance and bonding.
- Central clerical services.
- Word processing, computer services and equipment.
- Organizational Policy and Procedure Development
- Record keeping.
- Office space/facilities lease or rental.
- Utilities in the office space/facilities.
- Telephone equipment and services.
- Administrative staff training.

2. Allowable Admin/Production Overhead

- Labor for intake and outreach staff (labor, fringe, payroll taxes, accrued leave (liability), vacation, sick leave, employer's share of life/health/dental/disability insurance and retirement, flexible spending accounts).
- Off-site supervision for procurement and program management.

- Postage
- Clerical support
- General personal liability and property insurance to be charged to the liability line item of the contract. (DOE Only)
- Depreciation/Amortization expenses for:
- Building Use (Excluding the cost of or any portion of building, equipment, or land purchased using federal funds or donated by the Federal government, contributed by or for a non-profit organization to satisfy a statutory match requirement.)
- Capital improvements.
- Equipment (Excluding vehicles purchased outright with weatherization funds requiring DOE pre-approval)
- Fixed asset
- Professional organization dues or subscriptions
- Equipment maintenance and repair
- Photocopies of applications or materials
- Printing related to materials used in energy conservation education or outreach.
- Taxes and license
- Consumable supplies (office and cleaning supplies).
- Supplies/Uniform Cleaning
- Non-consumable supplies defined as:
- Non-capital computer equipment.
- Computer software.
- Expenditures for supplies for the operation of the weatherization program such as desks, tables, chairs, electronic equipment, cabinets, and any supplies that are not consumed and do not meet capitalization policy.
- Warehouse costs (not included in material costs).
- Non-capital equipment (personal computers, insulation blowers, trailers, blower door machines, etc.)
- Purchase, lease, or rental of tools/equipment/vehicles.
- Lodging, per diem, salary and travel costs associated with attending Department sponsored training. (DOE Training and Technical Assistance Plan)
- Delivery of materials.
- Payment of staff involved in purchasing, inventory, and distribution of weatherization materials.
- Transportation costs of materials for NWE charge to Production Overhead. All other funding sources this should be charged to Program Operations.

- Transportation of crews, tools, and equipment to and from weatherization sites (includes gas, maintenance, and insurance of vehicles) for NWE charge to Production Overhead. All other funding sources this should be charged to Program Operations.
- Travel for Weatherization Crew/Contractor for NWE charge to Production Overhead. All other funding sources this should be charged to Program Operations.

3. Indirect Rates

- a. Local agencies may apply an approved indirect cost rate to charge administrative costs only if both of the following conditions are met:
 - (1) The agency has an approved indirect cost agreement with a cognizant federal agency.
 - (2) The application of indirect cost charges may not result in exceeding applicable contract budget limits.

Note:

1. Local agencies may gain approval of cost allocation plan.
2. Local agency files must include the following documentation:
 - a. All applicable costs.
 - b. Indirect cost agreement approval letter.

15100 Program Operations/Direct Costs

Definitions:

1. Program Operations Costs – activities clearly identified with a specific program or weatherization of a dwelling. Program Operations costs include material and labor costs associated with installing weatherization measures, making energy-related health and safety or weatherization-related repairs, and other costs directly related to the installation of weatherization measures.
2. Material Costs - costs associated with energy conservation materials installed on an eligible dwelling. Only weatherization materials that meet or exceed the standards listed in Appendix A, 10 Code of Federal Regulations (CFR) 440 may be installed on an eligible dwelling. However, while a material may be listed on Appendix A it is at the discretion of the Department if the materials are allowed in the MT WAP, e.g., 2-part spray foam, installation of storm doors, and heat pumps. Materials used for insulation, windows, doors, and infiltration must be included in and meet the cost-effectiveness calculations of the computerized energy audits. Materials used for ancillary, incidental repairs, and health and safety measures are not weatherization materials and are not required to be listed in Appendix A. Material costs for incidental repairs, heat systems, health and safety, miscellaneous measures and client

education must be included in the respective sections of the computerized energy audits.

3. Installation Specific Costs - are all the non-material costs associated with energy conservation measures installed or services performed on an eligible dwelling. Installation costs must be used in the insulation, windows, doors, and infiltration sections of the computerized energy audit and must meet and be included in the cost-effectiveness calculations. Installation costs for incidental repairs, heat systems, health and safety, miscellaneous measures and client education must be included in the respective sections of the computerized energy audits.

4. Audit costs - averaged costs directly associated with the pre-inspection of a dwelling (including the time involved for the inspection of the dwelling and the pre-blower door testing), hourly rate for data input into the computerized energy audit, case documentation, printing work orders, etc., the time involved in the final inspection of the dwelling after the weatherization work is completed (including the post-blower door testing) and the finalization of the computerized energy audit. Audit costs are separate charges that must be charged to each computerized audit. The following spreadsheet can be completed to assist with tracking audit costs.

Note: Changes to the agencies' total audit cost requires Departmental approval prior to implementation.

Note: Quality Control Inspection costs may be included in the audit costs. Quality Control Inspection Costs that exceed the audit costs are tracked separately under QCI Inspection. Example:

Agency Name:	Date:	
Audit Activity	Number of Hours	Total Costs Wages/Fringes/Materials
Costs Directly Associated with Pre-Inspection		
Dwelling Assessment		
Pre and Post Blower Door Tests (Labor for testing)		
Computerized Energy Audit Data Entry and Analysis		
File Documentation and Job specific paperwork		
Final Inspection and Paperwork		
Finalization of the Computerized Energy Audit		
Other Audit Activities (Describe)		
Total Audit Costs		

Direct Cost Charged to Program Operations

A. Allowable material costs include:

- Material costs charged by a subcontractor.
- Purchase and delivery of materials. (See WAP Manual Section 16000, for procurement guidance for recycled insulation materials.)
- Payment of staff involved in purchasing, inventory, and distribution of weatherization materials.
- Travel for Crews/Contractor to and from job site.
- On-site
- Payment for labor involved in fabricating materials.
- Purchase of supplies and equipment associated with installing energy measures on homes.
- Purchase of materials provided to a household during the inspection of a dwelling or for client education purposes.

B. Allowable labor costs include:

- Labor costs charged by a subcontractor.
- Local agency weatherization crew costs (salary and all fringe benefits).
- Installation costs.
- Direct supervision of program services and other direct program management/oversight responsibilities.

C. Other Related Installation Costs

- Testing for presence of lead or asbestos
- Lead Renovation, Repair and Painting costs
- Tools (drills, saws, hammer, IR camera, etc.).
- Building Permits to install materials.
- General supplies (glass cleaner, towels, etc.) for weatherization installations.
- Installation of in-kind (donated) materials
- Any other costs directly associated with the installation of weatherization materials for a dwelling.

Dwelling Unit Cost Control Records:

1. Local agencies must keep records that track costs for each weatherized dwelling unit and provide information for all weatherization work performed on a unit according to the specific allowances of the different funding sources used separately and in combination with other funding sources.

The Department of Energy (DOE) requires that **measures** performed with DOE funds cannot be co-funded with another funding source. Co-funding is allowed on a **job** funded with DOE but not within a measure. If there is a measure that is to receive a homeowner/landlord contribution this measure cannot be funded with DOE. The Agencies may continue to co-fund measures with funding sources other than DOE.

2. The fiscal records for all dwelling unit expenditures must be traceable and costs charged to each funding source requires supporting documentation.
3. Specific Limits:

Note: When weatherization services are provided with Department of Energy (DOE) and Bonneville Power Administration (BPA) funding, the agency must adhere to the average cost per weatherized dwelling unit established by DOE. DOE adjusts that average limit annually. Average cost limits for other federal and/or utility weatherization projects are contained in the contract with the Department.

Weatherization-related Health and Safety Repairs

Energy-related health and safety expenditures may not exceed the average expenditure limits established for each contract fund source.

Health and Safety Repairs – DOE and NWE allow only 17.5% of all labor, material, and on-site supervisory costs. MDU and LIHEAP will pay 100% for all health and safety repairs or measures. BPA will pay thirty percent (30%) of total dwelling weatherization costs.

Miscellaneous Measures

new will pay 100% for presumed cost-effective measures of attic air sealing, low-flow shower heads, faucet aerators, pipe wrap, compact fluorescent lamps and/or light emitting diode (LED) light bulbs, carbon monoxide detectors, energy audit costs, client education costs, water heater jackets, heating system safety and tune-up checks and health and safety related measures for primary account holders and 50% for secondary account holders.

Miscellaneous Measures excluding Attic Air Sealing, for all funding sources, may not exceed \$250.

Liability Insurance

- Liability insurance is a program cost.
- Costs for liability insurance covering personal injury and property damage for on-site work may be charged to the liability insurance line item of the contract.

Note:

1. Local agencies must organize all bookkeeping and production records systems to account for the different cost allowances and budget categories of the various funding sources involved.
2. Local agencies must report program expenditures to the Department as required.
- 3.

Chapter 16 WEATHERIZATION RELATED FISCAL RESPONSIBILITIES

16000 Compliance with Federal Rules for Use of Recycled Insulation Materials

1. The Department and local agencies must comply with Environmental Protection Agency (EPA) regulations regarding the use of recycled materials: 10 CFR 247.12, [Comprehensive Procurement Guideline for Products Containing Recovered Materials](#).
 - a. Local agencies are required to make good faith efforts to procure insulation products that contain recycled materials.
 - b. Exceptions to this policy may be made only if the following conditions can be documented:
 - (1) Inability of the product to perform its intended purpose.
 - (2) Unavailability of the product at a reasonable price.
 - (3) Inability to obtain the product within a reasonable period.
 - (4) Inadequate number of vendors for obtaining and verifying estimates of recovered materials content to insure a satisfactory level of competition at the time of procurement.
2. In addition to meeting procurement specifications, local agencies must establish an affirmative procurement program consisting of four items.
 - I. EPA regulations provide three general approaches:
 - (a) Minimum content standards that identify the minimum content of recovered materials that an insulation product must contain.
 - (b) Case-by-case procurement, allowing competition between insulation products made of new materials and those with recovered materials.

- (c) An alternative approach that accomplishes the same objectives as (a) and (b).
- II. EPA regulations recommend that the procuring agency use minimum content amount for commercially available insulation products that may contain recovered materials. These include:
 - (a) Cellulose, loose fill, and spray-on (75 percent post-consumer recovered paper by weight).
 - (b) Perlite composite board (23 percent post-consumer recovered paper by weight).
 - (c) Rock wool (50 percent recovered materials).
 - (d) Promotion Program
 - (e) Procedures for obtaining estimates and certifications of recovered materials content and for verifying the estimates and certifications.
- III. Annual review and monitoring of the effectiveness of the program.

Note: Local agencies must allow the Department access to all affirmative procurement program documentation upon request.

- IV. Local agency files must contain the following documentation:
 - (a) Procurement conditions that prohibit compliance with 10 CFR 247.12.
 - (b) Verification the agency follows EPA’s affirmative procurement program.

16100 Training and Technical Assistance

- 1. Expenditure of contract funds awarded specifically for training and technical assistance (T&TA) purposes are subject to the following conditions:
 - a. Agency must submit a T&TA Workplan and Budget to the Department for written approval prior to any expenditure being made to the Department of Energy (DOE) contract T&TA line item.
 - b. Agency must submit to the Department a Training and Technical Assistance worker (crew and contractor) training inventory. Example:

Training Inventory

Agency	Employee	Title	Hire Date	Completed Training	Not Trained	In training	RRP Certification Date	QCI Certification Date

- c. Training must have direct application and benefit to local agency weatherization programs and assigned staff. If the training is not strictly for the benefit of the weatherization program staff, local agencies must document how other programs will share the training costs.
 - d. Priority is to be given to direct training opportunities for staff, crews, and subcontractors.
 - e. Equipment and materials related to training may also be purchased with these funds.
 - f. Salaries may not be paid with T&TA funds unless to cover time spent attending or providing training that is directly related to weatherization program job duties, requirements, and support.
 - g. T&TA funds may not be used to purchase vehicles or equipment for local agencies to perform weatherization services. Cost to purchase vehicles or equipment to support the program must be charged to the specified program costs budget category.
 - h. Local agencies must keep T&TA expense documentation on file for review.
2. The Department may occasionally reimburse local agency costs for providing, training travel to receive training and technical assistance through the Peer Exchange Program or special projects.
- a. Prior Department approval is required for this reimbursement.
 - b. Local agencies must submit a form designated by the Department.

Note: Local agency files must include the following documentation:
 Cost-sharing plan if training is not strictly for the benefit of weatherization program staff.

16200 Vehicles and Equipment

Per 2 CFR 200.33, Equipment means tangible personal property (including information technology systems) having a useful life of more than one year and a per-unit acquisition cost which equals or exceeds the lesser of the capitalization level established by the non-Federal entity for financial statement purposes, or \$5,000.

1. Vehicle Purchases:
- a. All purchases of vehicles with values exceeding \$5,000 require Department written approval.
 - (1) Local agencies must submit a request for the purchase of vehicles over \$5,000 to the Department.
 - (2) The Department will review each request for approval and provide the agency with a written decision.
 - b. As per 10 CFR 440.18 (d)(6) requests for vehicles purchased with Department of Energy (DOE) funding require prior written DOE approval. DOE anticipates

approval or review and follow-up if additional information is deemed necessary within ten (10) business days.

- (1) Vehicles should be acquired with grant funds from DOE only after all other options or funding sources have been explored.
 - (2) Lease vs. purchase should be evaluated carefully.
 - (3) New vs. used vehicle purchases should be evaluated carefully.
- c. In some instances, purchases made with more than one fund source may be the only way to acquire needed equipment. If the equipment to be purchased for use in the local agency's weatherization program will also be used by other local agency programs, there should be a proportionate share in the purchase cost.
- d. Equipment Allowance
- (1) For the purposes of determining the average cost per dwelling limitation, costs for the purchase of vehicles or other certain types of equipment as defined in 10 CFR 440.18(c)(3) may be amortized over the useful life of the vehicle or equipment.

Amortizing these costs over the useful life of the vehicle or equipment provides the Grantee with a reasonable approach in determining the average cost per home, even though the full purchase price is reported in the year in which it occurs.

For example, if a Subgrantee purchases a new vehicle for \$24,000 with an expected useful life for the vehicle of 8 years (96 months), the cost of that vehicle could be amortized at the rate of \$3,000 per year or at \$250 per month.

- (2) If, at the time of purchase, there are no plans to share equipment with a non-weatherization program, but it is deemed desirable in the future, then a rental fee based on proportionate use of the equipment must be applied.

Note: Local agency files must include the following documentation:

- a. Competitive bid documentation for the purchase of equipment.
- b. According to 10 CFR 440.18(d)(6), all vehicles purchased with DOE funds must receive prior approval by DOE.
- c. Certificates of Title for motor vehicles.

16400 Financial Audits

1. All program funds made available to local agencies will be audited annually in accordance with the following:
 - a. Generally accepted accounting principles.

- b. Governmental Auditing Standards ("The Yellow Book") issued by the General Accounting Office (GAO).
 - c. The Office of Management and Budget (OMB) Compliance Supplement for Single Audits of State and Local Governments.
 - d. OMB Uniform Guidance.
 - e. Department of Energy (DOE) 2 CFR 200, Financial Assistance Rules.
 - f. All state and federal laws and regulations governing the programs in which local agencies participate.
2. Costs of audits will be incorporated into Department contracts, charged to the local agency's Financial Audit category of expenditure.
 3. Local agency auditing will be conducted by a single independent Certified Public Accountant (CPA) firm selected by the local agency.
 4. All auditors employed must provide positive assurance to local agencies that they meet independent CPA provisions defined in the Yellow Book, including annual training.

Note: Local agencies must provide the Department with a copy of all audit reports and audit finding action plans.

Chapter 17 PROCUREMENT

17000 Procurement

Procurement is the methodology used by an agency on property acquisitions, including purchasing vehicles and equipment, for use in the Weatherization Program.

All grant awards made under this program shall comply with applicable law and regulations including the Weatherization Assistance Program regulations contained in 10 CFR 440 and Uniform Guidance regulations for Procurement. All Subgrantees must follow procurement standards set forth in 2 CFR 200.318 through 200.327. These standards are furnished to ensure materials and services are obtained in an effective manner and in compliance with applicable federal statutes and executive orders.

As indicated in 2 CFR 200.317-326 - Procurement Standards, Grantee and Subgrantee procedures must be documented and provide for a review of proposed procurements to avoid purchase of unnecessary or duplicative items. Consideration should be given to consolidating or breaking out procurements to obtain a more economical purchase. Where appropriate, an analysis must be made of lease versus purchase alternatives, and any other appropriate analysis to determine the most economical approach.

Subgrantees must establish written procurement procedures to provide:

- Standards of conduct covering conflicts of interest and governing the actions of its employees engaged in the selection, award and administration of contracts as described in 2 CFR 200.318. The written standards of conduct covering organizational conflicts of interest must also apply to parent, affiliate, or subsidiary organizations.
- The Subgrantee must award contracts only to responsible contractors possessing the ability to perform successfully under the terms and conditions of a proposed procurement. Consideration will be given to such matters as contractor integrity, compliance with public policy, record of past performance, and financial and technical resources. See also [§ 200.214](#) Suspension and Debarment.
- The Subgrantee must maintain records sufficient to detail the history of procurement. These records will include, but are not necessarily limited to, the following:
 - rationale for the method of procurement,
 - selection of contract type,
 - contractor selection or rejection, and
 - the basis for the contract price.
- The subgrantee must be responsible, in accordance with good administrative practice and sound business judgment, for the settlement of all contractual and administrative issues arising out of procurements. These issues include, but are not limited to, source evaluation, protests, disputes, and claims. These standards do not relieve the Subgrantee of any contractual responsibilities under its contracts.
- Agencies avoid purchasing unnecessary items.
- Where appropriate, a lease versus purchase analysis is made to determine the most economical and practical procurement.

Competitive Procurement

All procurement transactions for the acquisition of property or services required under a Federal award must be conducted in a manner providing full and open competition consistent with the standards of this section and [§ 200.320](#).

To ensure objective contractor performance and eliminate unfair competitive advantage, contractors that develop or draft specifications, requirements, statements of work, or invitations for bids or requests for proposals must be excluded from competing for such procurements.

Some situations considered to be restrictive of competition include but are not limited to:

- Placing unreasonable requirements on firms qualifying them to do business,
- Requiring unnecessary experience and excessive bonding,
- Noncompetitive pricing practices between firms or between affiliated companies,
- Noncompetitive contracts to consultants that are on retainer contracts,
- Organizational conflicts of interest,
- Specifying only a “brand name” product instead of allowing “an equal” product to be offered and describing the performance or other relevant requirements of the procurement, and
- Any arbitrary action in the procurement process.

The Subgrantee must conduct procurements in a manner that prohibits the use of statutorily or administratively imposed state, local, or tribal geographical preferences in the evaluation of bids or proposals, except in those cases where applicable Federal statutes expressly mandate or encourage geographic preference. Nothing in this section preempts state licensing laws.

When contracting for architectural and engineering (A/E) services, geographic location may be a selection criterion provided its application leaves an appropriate number of qualified firms, given the nature and size of the project, to compete for the contract.

The non-Federal entity must have written procedures for procurement transactions. These procedures must ensure that all solicitations provide:

- A clear and accurate description of the technical requirements for the material, product, or service to be procured. This description must include the functions to be performed or the performance required, including a range of acceptable characteristics or minimum acceptable standards. Such description must not, in competitive procurements, contain features which unduly restrict competition.
- Requirements which the bidder must fulfill and all other factors to be used in evaluating proposals.
- The specific feature of brand name or equal descriptions that bidders are required to meet when such items are included in the solicitation.
- The acceptance, to the extent practicable and economically feasible, of products, of products and services dimensioned in the metric system of measurement.
- Preference, to the extent practicable and economically feasible, for products and services that conserve natural resources, protect the environment and are energy efficient.

- Positive efforts, whenever possible, to utilize small businesses, minority owned firms and women's business enterprises.

Methods of procurement to be followed:

The Subgrantee must have and use documented procurement procedures, consistent with the standards of 2 CFR 200.317-326 for any of the following methods of procurement used for the acquisition of property or services required under a federal award or sub-award.

A. **Informal procurement methods.** When the value of the procurement for property or services under a Federal award does not exceed the *simplified acquisition threshold (SAT)*, as defined in [§ 200.1](#), or a lower threshold established by the agency, formal procurement methods are not required. The agency may use informal procurement methods to expedite the completion of its transactions and minimize the associated administrative burden and cost. The informal methods used for procurement of property or services at or below the SAT include:

1) **Micro-purchases -**

- i. **Distribution.** The acquisition of supplies or services, the aggregate dollar amount of which does not exceed the micro-purchase threshold (See the definition of *micro-purchase* in [§ 200.1](#)). To the maximum extent practicable, the agency should distribute micro-purchases equitably among qualified suppliers.
- ii. **Micro-purchase awards.** Micro-purchases may be awarded without soliciting competitive price or rate quotations if the Subgrantee considers the price to be reasonable based on research, experience, purchase history or other information and documents it in files accordingly. Purchase cards can be used for micro-purchases if procedures are documented and approved by the Subgrantee.
- iii. **Micro-purchase thresholds.** The Subgrantee is responsible for determining and documenting an appropriate micro-purchase threshold based on internal controls, an evaluation of risk, and its documented procurement procedures. The micro-purchase threshold used by the Subgrantee must be authorized or not prohibited under State, local, or tribal laws or regulations.

2) **Small purchases -**

- i. **Small purchase procedures.** The acquisition of property or services, the aggregate dollar amount of which is higher than the micro-purchase threshold but does not exceed the simplified acquisition threshold. If small purchase procedures are used, price or rate quotations must be obtained from an adequate number of qualified sources as determined appropriate by the non-Federal entity.

- ii. **Simplified acquisition thresholds.** The Subgrantee is responsible for determining an appropriate simplified acquisition threshold based on internal controls, an evaluation of risk and its documented procurement procedures which must not exceed the threshold established in the Federal Acquisition Regulation (FAR). When applicable, a lower simplified acquisition threshold used by the Subgrantee must be authorized or not prohibited under State, local, or tribal laws or regulations.

B. **Formal procurement methods.** When the value of the procurement for property or services under a Federal financial assistance award exceeds the Simplified Acquisition Threshold (SAT), or a lower threshold established by the agency, formal procurement methods are required. Formal procurement methods require following documented procedures. Formal procurement methods also require public advertising unless a non-competitive procurement can be used in accordance with [§ 200.319](#) or [paragraph \(c\)](#) of this section. The following formal methods of procurement are used for procurement of property or services above the SAT or a value below the SAT the agency determines to be appropriate:

- 1) **Sealed bids.** A procurement method in which bids are publicly solicited and a firm fixed-price contract (lump sum or unit price) is awarded to the responsible bidder whose bid, conforming with all the material terms and conditions of the invitation for bids, is the lowest in price.
 - a. The sealed bids method is preferred for procuring construction, under the following conditions:
 - i. A complete, adequate, and realistic specification or purchase description is available,
 - ii. Two or more responsible bidders are willing and able to compete effectively for the business, and
 - iii. The procurement lends itself to a firm fixed price contract and the selection of the successful bidder can be made principally based on price.
 - a. If sealed bids are used, the following requirements apply:
 - i. Bids must be solicited from an adequate number of qualified sources, providing them sufficient response time prior to the date set for opening the bids, for local, and tribal governments, the invitation for bids must be publicly advertised,
 - ii. The invitation for bids, which will include any specifications and pertinent attachments, must define the items or services for the bidder to properly respond,
 - iii. All bids will be opened at the time and place prescribed in the invitation for bids, and for local and tribal governments, the bids must be opened publicly,

- iv. A firm fixed price contract award will be made in writing to the lowest responsive and responsible bidder. Where specified in bidding documents, factors such as discounts, transportation cost, and life cycle costs must be considered in determining which bid is lowest. Payment discounts will only be used to determine the low bid when prior experience indicates that such discounts are usually taken advantage of; and
- v. Any or all bids may be rejected if there is a sound documented reason.

2) **Requests for Proposals.** A procurement method in which either a fixed price or cost-reimbursement type contract is awarded. Proposals are generally used when conditions are not appropriate for the use of sealed bids. They are awarded in accordance with the following requirements:

- i. Requests for proposals must be publicized and identify all evaluation factors and their relative importance. Proposals must be solicited from an adequate number of qualified offerors. Any response to publicized requests for proposals must be considered to the maximum extent practical,
- ii. The non-Federal entity must have a written method for conducting technical evaluations of the proposals received and making selections,
- iii. Contracts must be awarded to the responsible offer or whose proposal is most advantageous to the non-Federal entity, with price and other factors considered; and
- iv. The non-Federal entity may use competitive proposal procedures for qualifications-based procurement of architectural/engineering (A/E) professional services whereby offeror's qualifications are evaluated, and the most qualified offeror is selected, subject to negotiation of fair and reasonable compensation.

3) **Noncompetitive procurement.** There are specific circumstances in which noncompetitive procurement can be used. Noncompetitive procurement can only be awarded if one or more of the following circumstances apply:

- i. The acquisition of property or services, the aggregate dollar amount of which does not exceed the micro-purchase threshold (see [paragraph \(a\)\(1\)](#) of this section);
- ii. The item is available only from a single source,
- iii. The public exigency or emergency for the requirement will not permit a delay resulting from publicizing a competitive solicitation,
- iv. The Federal awarding agency or pass-through entity expressly authorizes a noncompetitive procurement in response to a written request from the agency; or

- v. After solicitation of several sources, competition is determined inadequate.
- The type of procuring instrument used (e.g., fixed price contract, cost reimbursable contract, purchase orders and incentive contract) shall be determined by the agency but shall be appropriate for the procurement and for promoting the best interest of the program and project involved. ***“Cost plus a percentage of cost” methods of contracting shall not be used.***
 - Contracts shall be made only with those subcontractors who possess the potential ability to perform successfully under the terms and conditions of the procurement. Consideration shall be given to such matters as contractor integrity, record of past performance, financial and technical resources. Contracts may not be made with those persons listed as “debarred or suspended”.
 - Agencies shall make available for review any Request for Proposal (RFP) or procurement document when any of the following apply:
 - Procedures fail to comply with the standards found in OMB Uniform Guidance or 10 CFR 200 or 10 CFR 440.
 - The procurement is expected to exceed the small purchase threshold and is to be awarded without competition or only one bid or offer is received in response to a solicitation.
 - The procurement which is expected to exceed the small purchase threshold specifies a brand name product.
 - The proposed award which is greater than the small purchase threshold is to be awarded to other than the lowest bidder under a ‘sealed bid’ procurement.
 - A proposed contract modification changes the scope of a contract or increases the contract amount by more than the amount of the small purchase threshold.
 - Bid package:

The agency’s contract or purchasing officer shall prepare a bid package which includes:

- Cover sheet.
- Statement of work specifications or materials to be purchased.
- Minimum requirements.
- Evaluation criteria.
- Work quality standards.
- Proposal format.
- Sample contract.
- Date of bidder’s conference, if applicable.
- Right of the agency to accept or reject all bids.
- Period of contract.

- Affirmative action statement.

The agency shall make awards only to responsible contractors possessing the ability to perform successfully under the terms and conditions of proper procurement. Consideration must be given to contractor integrity, compliance with public policy, record of past performance and financial and technical resources.

Minimum requirements cannot be unreasonable or excessive.

Solicitation of sealed bids and Requests for Proposals (RFP):

The establishment of a standard method of advertising procurement activities assures maximum open and free competition.

The agency must:

- Prepare the advertisement newspapers.
- Prepare a notice to be posted.
- Submit the advertisement to the newspapers and post the announcement.
- Secure documentation of the advertisement from the newspapers.
- Notify all individuals on the agency's bidder's list of the solicitation, if applicable.
- Record the names of the individuals, firms or businesses requesting bid packages, the date the request was received and the date the bid package was sent.
- Prepare technical information for bidder's conference.
- Facilitate bidder's conference.
- Document attendance at bidder's conference and record minutes.

No information about the solicitation will be provided to anyone until the bidder's conference. If the agency does not conduct a bidder's conference, any information provided to prospective bidders must be forwarded and maintained by the agency's Contracts Officer.

Receipt of bids or proposals:

The agency must establish procedures which will be followed to assure equal treatment to all prospective bidders.

- All sealed bids or requests for proposals will be logged into a bid/proposal control sheet.
- When the bid or proposal is received by the agency the bid or proposal will be date stamped and the time of receipt will be documented by the person receiving the bid or proposal.
- The received bids or proposals will be maintained in a secured location until time of opening.
- Return all bids or proposals received or submitted after the closing date. The late bids must be returned unopened with a letter of explanation for the reason of the return

Evaluation of bids or proposals and contract award:

The agency must evaluate the bids or proposals submitted, select a contractor, and award the contract. The agency must assure that the agency's Personnel Policies and Procedures manual provides standards of conduct for employees, officers, or agents to avoid conflicts of interest or the appearance of conflicts of interest. The agency will:

- Conduct the bid opening (public or private).
- For public bid openings, the bid amounts will be announced at the opening. The contract is not awarded at a public bid opening.
- Schedule a meeting of the evaluation panel.
- Evaluate bids or proposals for compliance with all requirements.
- Evaluate responsive bids or proposals based on cost criteria established in the bid package. A responsive bid meets all requirements identified in the bid package.
- Prepare a written summary of points and costs for all responsive bidders or proposers.
- Submit the name, bid amount and the justification for the selection of the successful bid or proposal for the contract award to the agency's Contracts Officer.
- Notify the selected contractor and secure:
 - Certificate of insurance, if applicable.
 - Copy of required licenses or permits as applicable.
 - Certification regarding suspension or disbarment.
- Verify insurance coverage for successful bidder or proposer meets requirements.
- Secure a fully executed contract with successful bidder or proposer.
- Provide written notification to unsuccessful bidders.
- After the contract award, unsuccessful bidders or proposers may be informed of the points received and the dollar amounts of the successful bidder.

Protest procedures:

The agency must provide specific actions to be taken should a protest be filed by an unsuccessful bidder or proposer.

The protester must file a written complaint using the agency's specific format within ten (10) working days after the notice of rejection is mailed. The protest must contain the following:

1. Notice of protest and the specific reasons for filing.
2. Statement asserting the letter is a protest.
3. Detailed statement of the grounds for the protest.
4. A specific request for a ruling by the agency's protest committee and a statement of the relief requested.

When a written complaint is received, the agency must:

- Notify the successful contractor that a complaint of protest has been filed.
- Schedule a meeting of the protest committee to review the complaint. The meeting must be held within ten (10) working days of the filing of the protest and the minutes of the meeting must be recorded. The individuals who sit on the protest committee must be identified in writing prior to the commencement of all procurement activities. The agency's Contracts Officer should not be involved in the protest procedures other than to provide technical support.
- The protest committee must issue a decision within five (5) working days from the date of the meeting.
- The agency must notify the protester of the decision of the protest committee.

Chapter 18 HISTORIC PRESERVATION

18000 Historic Preservation and Weatherization:

Historic Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property.

Properties greater than 50 years old are to be considered for Historic Preservation.

Prior to the expenditure of federal funds to alter any structure or site, the Agency is required to comply with Section 106 of the National Historic Preservation Act (NPA). Section 106 applies to historic properties or sites that are listed on or eligible for listing on the National Register of Historic Places.

To fulfill the requirements of Section 106, the Agency must contact the State Historic Preservation Officer (SHPO) to coordinate the Section 106 review as set forth in 36 C.F.R. Part 800.

[Learn more about SHPO contact information.](#)

18100 Exemptions from Section 106 Review:

The Programmatic Agreement between the Department of Energy (DOE); the Montana Department of Public Health and Human Services (DPHHS) and the Montana State Historical Preservation Office (SHPO) is effective from July 29, 2010, through December 31, 2030. This agreement provides the following:

- Recipient will maintain file records with verification that undertakings were determined to be exemptions for a period of three (3) years from project completion and make them available for review if requested by DOE or the Advisory Council on Historic Preservation (ACHP).
- If a property has been determined to be ineligible for inclusion in the National Register within the last five (5) years from the date the Recipient made its application for DOE financial assistance, then no further review is required.
- If the agency needs to submit a review of proposed undertaking to the SHPO for review, it should submit the requisite form to SHPO.

- The Agency **shall not submit** to the SHPO undertakings in accordance with Appendices A or B of this agreement as they do not have the potential to cause effects on historic properties even when historic properties may be present.

18200 Historic Preservation Appendix A

All undertakings will be done in accordance with applicable local building codes or the International Building Code, where applicable. In accordance with 36 CFR 800.3(a)(I), the following undertakings have been determined to have no potential to cause effects on historic properties:

Exterior Work

1. Air sealing of the building shell, including caulking, weather-stripping, and other air infiltration control measures on windows and doors, and installing thresholds in a manner that does not harm or obscure historic windows or trim.
2. Thermal insulation, such as non-toxic fiberglass and foil wrapped, in walls, floors, ceilings, attics, and foundations in a manner that does not harm or damage historic fabric.
3. Blown in wall insulation where no holes are drilled through exterior siding, or where holes have no permanent visible alteration to the structure.
4. Removable film on windows (if the film is transparent), solar screens, or window louvers, in a manner that does not harm or obscure historic windows or trim.
5. Reflective roof coating in a manner that closely resembles the historic materials and form, or with materials that restore the original feature based on historic evidence, and in a manner that does not alter the roofline, or where not on a primary roof elevation or visible from the public right-of-way.
6. Storm windows or doors, and wood screen doors in a manner that does not harm or obscure historic windows or trim.
7. In-kind replacement or repair of primary windows, doors and door frames that closely resemble existing substrate and framing.
8. Repair of roof and wall leaks prior to insulating attics or walls, provided repairs closely resemble existing surface composite.

EPDM rubber roofing can be installed as an Incidental Repair Measure to protect weatherization measures (attics, walls, floors, etc.) as well as enhance the durability of the building.

Interior Work

Note: Undertakings to interior spaces where the work will not be visible from the public right of way; no structural alterations are made; no demolition of walls, ceilings or floors occurs; no drop ceilings are added; or no walls are leveled with furring or moved, should be automatically excluded from SHPO review. This work includes:

1. Energy efficiency work within the building shell:
 - a. Thermal insulation in walls, floors, ceilings, attics, crawl spaces, ducts, and foundations.
 - b. Blown in wall insulation where no decorative plaster is damaged.
 - c. Plumbing work, including installation of water heaters.
 - d. Electrical work, including improving lamp efficiency.
 - e. Sealing air leaks using weather stripping, door sweeps, and caulk and sealing major air leaks associated with bypasses, ducts, air conditioning units, etc.
 - f. Repair or replacement of water heaters.
 - g. Adding adjustable speed drives such as fans on air handling units~ cooling tower fans, and pumps.
 - h. Install insulation on water heater tanks and water heating pipes per SWS 5.02 and 7.03
 - i. Repair or replace electric motors and motor controls like variable speed drives.
 - j. Incorporate other lighting technologies such as dimmable ballasts, day lighting controls, and occupant-controlled dimming.

Work on heating and cooling systems:

- a. Clean, tune, repair or replace heating systems, including furnaces, boilers, heat pumps, vented space heaters, and wood stoves.
- b. Clean, tune repair or replace cooling systems, including central air conditioners, window air conditioners, heat pumps, and evaporative coolers.
- c. Install insulation on ducts and heating pipes.
 - a. Conduct other efficiency improvements on heating and cooling systems, including replacing standing pilot lights with electronic ignition devices and installing vent dampers.

- b. Modify duct and pipe systems so heating and cooling systems operate efficiently and effectively, including adding return ducts, replace diffusers and registers, replace air filters, install thermostatic radiator controls on steam and hot water heating systems.
- c. Install programmable thermostats, outdoor reset controls, UL listed energy management systems or building automation systems and other HVAC control systems.
- d. When replacing existing thermostats, identify and dispose of any mercury containing thermostats in accordance with Environmental Protection Agency (EPA) guidance.
 - ☒ Paraphrased from 40 CFR 273.14: A universal waste mercury-containing thermostat or container containing only universal waste mercury-containing thermostats should be labeled or marked clearly with any of the following phrases: "Universal Waste-Mercury Thermostat(s)," "Waste Mercury Thermostat(s)," or "Used Mercury Thermostat(s)."

Energy efficiency work affecting the electric base load of the property:

- a. Convert incandescent lighting to compact fluorescent lamp (CFL) or light emitting diodes (LED).
- b. Add reflectors, LED exit signs, efficient HID fixtures, and occupancy (motion) sensors.
- c. Replace appliances using BPA funding only.

Health and safety measures:

- a. Installing fire, smoke, or Carbon Monoxide alarms
- b. Repair or replace vent systems on fossil-fuel-fired heating systems and water heaters to ensure that combustion gases draft safely to outside.
- c. Install mechanical ventilation, in a manner not visible from the public right of way, to ensure adequate indoor air quality if house is air-sealed to dwelling unit tightness limit.

18300 Historic Preservation Appendix B

In addition to the undertakings provided in Exhibit A; (WAP Undertakings exempt from Section 106 Review), DOE and the SHPO have concluded that the following undertakings do not have the potential to cause effects on historic properties per 36 CFR § 800.3(a)(1):

Category 1 - No Consultation Required

1. General efficiency measures not affecting the exterior of the building:

- a. Energy audits and feasibility studies.
- b. Weatherization of mobile homes and trailers.
- c. Caulking and weather-stripping around doors and windows in a manner that does not harm or obscure historic windows or trim.
- d. Water conservation measures – like low flow faucets, toilets, shower heads, urinals – and distribution device controls.
- e. Repairing or replacing in kind existing driveways, parking areas, and walkways with materials of similar appearance.
- f. Excavating to gain access to existing underground utilities to repair or replace them, provided that the work is performed consistent with previous conditions.
- g. Ventilating crawl spaces.
- h. Replacement of existing HVAC equipment including pumps, motors, boilers, chillers, cooling towers, air handling units, package units, condensers, compressors, heat exchangers that do not require a change to existing ducting, plumbing, electrical, controls or a new location, or if ducting, plumbing, electrical and controls are on the rear of the structure or not visible from any public right of way.
- i. Adding or replacing existing building controls systems including HVAC control systems and the replacement of building-wide pneumatic controls with digital controls, thermostats, dampers, and other individual sensors like smoke detectors and Carbon Monoxide alarms (wired or battery operated).
 - When replacing existing thermostats, identify and dispose of any mercury containing thermostats in accordance with Environmental Protection Agency (EPA) guidance.
- j. New installation of non-hard-wired devices including photo-controls, occupancy sensors, Carbon Monoxide alarms, thermostats, humidity, light meters, and other building control sensors, provided the work conforms to applicable state and local permitting requirements.
- k. Adding variable speed drive motors.
- l. Insulation of water heater tanks and pipes.
- m. Furnace or hot water tank replacement that does not require a visible new supply or venting.

Insulation measures not affecting the exterior of the building:

- a. Thermal insulation installation in walls, floors, and ceilings (excluding spray foam insulation).
- b. Duct sealing, insulation, repair, or replacement in unoccupied areas.
- c. Attic insulation with proper ventilation.

- d. Band joist insulation.
- e. Water heater tank and pipe insulation.

Electric base load measures not affecting the exterior of the building:

- a. Appliance replacement (upgrade to Energy Star appliances) using BPA funding.
- b. CFL bulbs or LED bulbs.
- c. Energy efficient light fixtures, including ballasts (Replacement).
- d. LED light fixtures and exit signs (Replacement).
- e. Upgrade exterior lighting (replacement with metal halide bulbs, LEDs, or others) along with ballasts, sensors, and energy storage devices not visible from any public right of way.

Chapter 19 PROGRAM VIOLATION REFERRALS

19000 Program Violations/Sanctions

Program Violations – For the purpose of the Low-Income Weatherization Assistance Program, a program violation is the act of obtaining assistance to which one is not entitled, by means of willfully submitting false statements or withholding information pertinent to:

- The determination of a recipient's eligibility for assistance; or
- Receiving a benefit

WILLFUL WITHHOLDING OF INFORMATION – Includes but is not limited to:

- Willful misstatements (either oral or written) made in response to oral or written questions from the sub-grantee.
- Willful failure by the recipient to report changes in status each year, at time of application or subsequent transfer to other sub-grantee jurisdictions.
- Willful failure by the recipient to report changes in status affecting the benefit award, such as family number, housing size and type, fuel type, etc.
- Willful failure by the recipient to report receipt of a benefit or payment on his/her behalf which he/she knows or should know represents an erroneous benefit award or overpayment.
- Willful transfer of property for qualifying for assistance.

19100 Program Violation

SUB-GRANTEE – If an individual appears to have committed a program violation under the Low-Income Weatherization Assistance Program, the sub-grantee must report in writing all facts pertaining to the alleged program violation to the Department. The Department may refer the matter to the Department of Public Health and Human Services Quality Assurance Division Program Compliance Bureau.

INTERESTED PARTY – Any interested party may report any individual appearing to have committed a program violation under the Low-Income Weatherization Assistance Program to the sub-grantee, or the Department. This referral should be done in writing. The information shall include the name of the recipient, the county in which he/she resides, and the type of assistance that he/she is receiving.

AMOUNT OF A PROGRAM VIOLATION UNDER \$10.00 – When the net amount of the alleged program violation is under \$10.00 no recoupment will be attempted.

REPORTING SUSPECTED PROGRAM VIOLATION –

1. The 'LIHEAP/Weatherization Investigative Referral' form is completed by the sub-grantee with a brief explanation of events causing the referral to be made.
 - a. The sub-grantee must report, in writing, all facts pertaining to the alleged program violation to the Department.

Note: When the net amount of alleged program violation is under \$10.00 no recoupment will be attempted.

2. The IHSB Field Monitor will evaluate and determine if a referral is appropriate.
 - a. If not, report back to the agency
 - b. If so, the case will be referred to DPHHS Office of Inspector General Program Compliance Bureau.
3. DPHHS Office of Inspector General Program Compliance Bureau will review the case.
 - a. If additional Information is needed the Program Compliance Bureau will contact the agency directly.
 - b. Once investigation is complete findings will be reported to IHSB with one of the following recommendations:
 - i. Drop
 - ii. Pursue
4. The Field Monitor will review the investigative results and proceed as necessary.
 - a. Dropped cases will be reported to the agency.
 - i. Document on the Investigation Spreadsheet
 - b. Overpayments will be calculated.
 - i. Overpayment Letter will be sent with the Fair Hearing language as provided in ARM 37.70.106
 - ii. Repayment Agreement will be sent.
 - iii. Overpayment box needs to be checked in CDS LIHEAP Case
5. The completed LIHEAP/Weatherization Investigative Referral form should be kept in the case file for future reference.
6. Overpayments will be recouped in one of the following ways:
 - a. Lump Sum Payment in Full

- b. Installment Payments
- c. Reduction of future LIHEAP benefits to repay entire unpaid balance.

Note: If there is no response to the repayment request, the household's tax refund may be offset to pay back the Weatherization measures received.

19200 Program Violation Investigations

UNIT'S OBJECTIVES – The department's major objectives are:

- To investigate all referrals of program violation for the Weatherization Assistance Program.
- To refer the matter to the Department's Program Compliance Bureau (PCB) for further action.

INVESTIGATOR'S CHECKLIST – The following items are presented here to show the kind of contact an investigator from the Office of Inspector General Program Compliance Bureau will have with the staff of the sub-grantee. These are some, but not all, of the Investigator's work steps.

- Discuss the case record with the sub-grantee staff who handled the case.
- Obtain all relevant hard copy and/or digital documentation that will help in the prosecution of the case, including those items that are not part of the case record. (e.g., payment checks issued by the Department, checks on behalf of the recipient issued by the Department, business office ledger cards or printouts, payroll and personnel information, court records, insurance policies, rent receipts, etc.)
- Review the case record and other evidence with the prosecuting attorney.
- Interview all witnesses as to the facts alleged in the program violation complaint.

Chapter 20 GLOSSARY

GLOSSARY

"Act of God" - an event caused solely by forces of nature without human involvement.

"Ancillary Items" - Items necessary for the proper installation of weatherization materials. Ancillary item refers to small items such as hardware, nails/screws, other fasteners, adhesive, sealant, etc. Does not include large-ticket items such as dry wall, roof/floor-decking, rough framing, etc., as these are considered incidental repairs. Ancillary items are required by materials manufacturers, general construction, and/or WAP field standards to achieve a finished product in a typical installation where no unusual or extensive repairs are needed. The costs of ancillary items and installation are to be included within the cost of an individual ECM when calculating the SIR for the individual ECM. Although the WAP requires the use of appropriate, durable ancillary materials, standards for ancillary items are typically not listed in 10 CFR Part 440, Appendix A.

"Buy Down" – aligns with a private interest and the funding source retains the decision-making authority in identifying the building being selected for installation of the measure(s).

"Child" – a person who is under age eighteen (18).

"Disability" – Is as defined in 20 CFR 416.905, which is the basic definition of disability for Social Security law purposes. Is determined by the Federal Social Security Administration (SSA) under Title II or Title XVI of the Social Security Act. Verification of disability will be determined by persons showing a Supplemental Security Income disability care, Social Security disability check or award letter.

"Egress Compliance, Window and Door" - means allows you to get from inside of a property to an exterior point of safety. A form of egress can be either a window or a door. Windows must meet certain size requirements to be considered compliant to code as a point of egress. Egress compliance costs will be run as a Health and Safety expenditure and only LIHEAP weatherization funding can be used. Please see section 5100 Health and Safety Related Repairs.

"Elderly" - a person who is sixty (60) years of age or older.

"Energy burden" - the percentage of a household's income which is allocated to energy costs for the household's dwelling. The energy burden is calculated by dividing the household's actual or estimated annual heating costs by the household's annual income.

"Energy Conservation Measure (ECM)" - A procedure, including materials and installation, which is considered or performed for its anticipated energy savings. An ECM often includes installation of ancillary items but will not include IRMs. The installed cost of all ancillary items associated with the proper installation of an individual ECM must be added to the cost of its ECM when calculating the SIR for the individual ECM.

"Energy usage" - the amount of energy used over a given period. The annual energy usage is determined by using actual or estimated heating cost over a twelve-month period.

"Ethylene Propylene Diene Monomer (EPDM) Rubber Roofing" - EPDM rubber roofing can be installed in mobile homes as an Incidental Repair Measure to protect weatherization measures that are installed as part of the work scope and enhance the durability of the building. The cost of the IRM will be included in the overall SIR calculation for the audit and the overall SIR must remain at a 1.0 or higher to be allowable.

"Friable Material" – Friability will be assessed based on the AHERA definition: Any material containing more than 1% asbestos that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. For program purposes, non-friable material that will be disturbed during weatherization activities will be treated as friable material.

"Health and Safety Measure" - Health and safety measures are those actions necessary to maintain the physical well-being of both the occupants and/or weatherization workers where the actions MUST be taken to effectively perform weatherization work, or the actions are necessary because of weatherization work.

"Incidental Repair Measure (IRM)" - 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, to seal materials installed under this program. Incidental Repairs must be justified in the client file and the Energy Audit with an explanation of their need and relationship to a specific energy conservation measure (ECM) or group of ECM's.

“Leverage”– aligns with the intention of supplementing the weatherization resources and the funding source does not identify specific buildings for the investment. WAP related funds that are considered “leveraged”, indicates the funding source has transferred decision-making authority to the WAP agency to determine which buildings will receive the measure(s).

“Major Measures” - high priority weatherization measure, which if skipped, would result in partial weatherization of a unit. Measure skipping of a cost justified major measure is not permitted at any time. The major measures are Infiltration, Attics, Walls (including rim joist and above and below grade foundation walls), Floors, and Furnace systems (duct and boot sealing, insulation of ductwork in unconditioned spaces).

“Primary Heat Source” - The primary system is generally understood to be the unit (or system of units) most relied upon to provide heating/cooling throughout the season. These systems may or may not be centralized but do provide most of the heating for the home.

“Secondary Heat Source” - Secondary systems or unit are employed only in extreme weather or as backup to the primary system and do not provide heat to the entire dwelling.

“Savings Investment Ratio” – add definition, formula/calculation?

“Tribal Indian Households” – households in which any of the following apply:

- Member(s) of Confederated Salish & Kootenai Tribes (CSKT) living on the CSKT Reservation, or
- CSKT direct decedents (1st generation) living on the CSKT Reservation
- Household contains a CSKT direct decedent 18 years of age or older living on the CSKT Reservation
- Native American (Member of any recognized tribe) living on any reservation, excluding CSKT and Crow Reservation

"Weatherization related imminent threat to the health or safety of a household" - any adverse condition in a dwelling that:

- a. relates to a structure, appliance, system, or equipment that directly and significantly impacts the dwelling's energy usage or energy conservation, including but not limited to the dwelling's primary water heating and/or space heating systems; and
- b. creates a serious and immediate risk to the physical health or safety of residents of the dwelling.

"Weatherization services" - improvements, repairs, or other modifications made to a dwelling for reducing a household's energy usage.

Chapter 21 MONITORING SUBGRANTEES

The Human and Community Services Division (HCSD) shall conduct ongoing monitoring and evaluation of Subgrantees and ensure that funds are expended in keeping with the purposes for which they were contracted.

MONITORING: The Human and Community Services Division (HCSD) shall conduct on-going, in-house, desk monitoring of each Subgrantee. The monitoring will be performed using:

- All documents submitted by the sub-grantee for:
 - data collection,
 - reporting, and
 - requests for funds.
- Monthly reports generated from Central Database System (CDS).

EVALUATION: Human and Community Services Division (HCSD) shall:

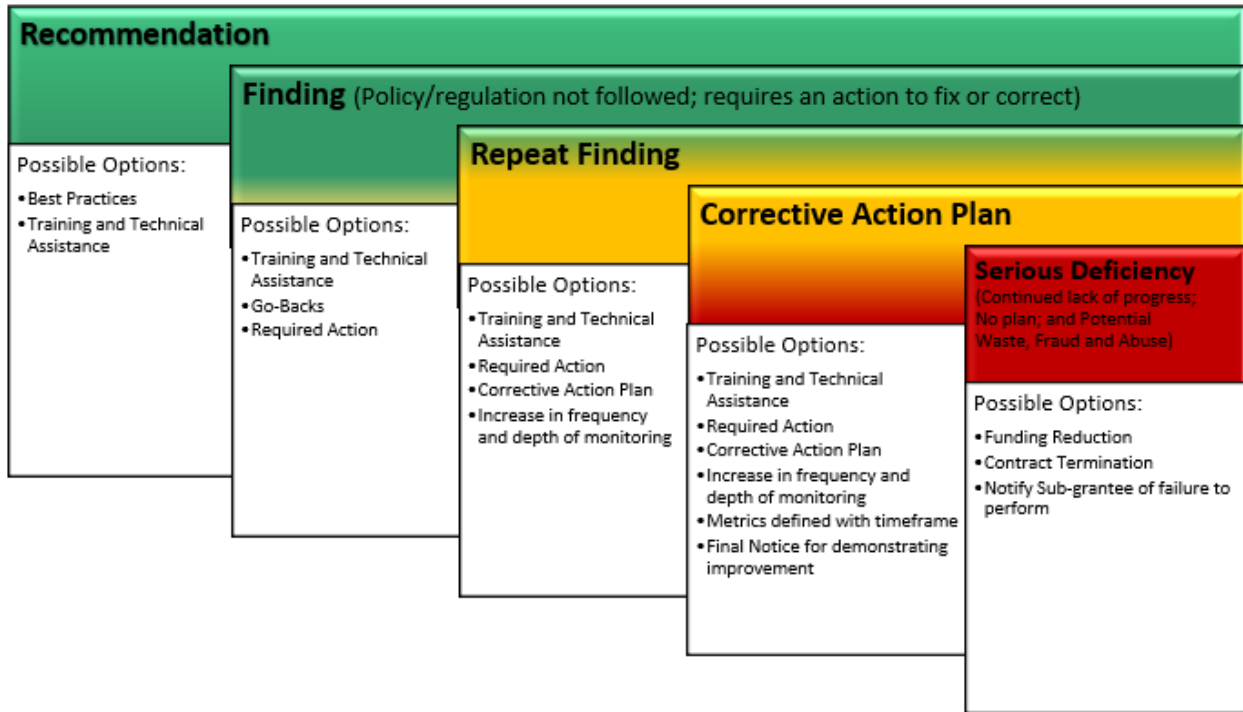
- Conduct an evaluation of each Subgrantee on an individual basis.
- Evaluate each Subgrantee at least once annually.
- Provide written notification to each Subgrantee of the time individuals need to be present and the subject areas to be covered at the evaluation.
- Conduct the evaluation. The file review will take place prior to the monitoring visit, and the summary of the findings will occur on site. Original files, or copies, will be mailed, or sent through the State of Montana File Transfer System, to the Monitor prior to the monitoring visit.
- Review 10% of all weatherization completed files per contract and select 5% of the dwellings to visit.
 - ✓ DOE requires an inspection be completed by Subgrantee QCI for any audit where DOE funds were used.
 - ✓ Grantee Monitors will inspect five (5) or ten (10) percent of homes reported as DOE completions.
 - ✓ The percentage is determined based on whether the Subgrantee's DOE completions were inspected by an independent QCI. Subgrantees must have QCI inspections on all DOE completions.
- Verify QCI(s) credentials before or during the annual monitoring visit.
- Verify the final inspection form contains the QCI's printed name, signature, certification number and date.
- Verify the final inspection includes a review and assessment of the energy audit that

confirms the accuracy of the field site data collection, energy audit software inputs and that measures called for on the work order were appropriate and in accordance with the Grantee energy audit procedures and protocols approved by DOE.

- Verify compliance with DOE regulations, MT Weatherization policies, procedures, SWS, and Field Guides.
- Review WC CAZ testing and ensure documentation of WC CAZ testing is present in the client file.
- Review client files to determine if subgrantees are consistently using the Standardized Audit form.
- Review client files to determine if subgrantees are providing accurate calculations for input to the Red Calc tool and consistently documenting the data on the Standardized Audit form. Data includes:
 - The number of people in the household, or the number of bedrooms plus one, whichever is greater.
 - The above grade building height, -
 - The conditioned area total square footage,
 - The existing kitchen and bath exhaust fan flow, and
 - The blower door measured leakage in CFM.
- Review energy audits and client files to determine if Subgrantees are consistently collecting and entering correct AFUE values and actual seasonal efficiency values in energy audit.
- Verify Subgrantee work orders contain R-values, U-values and efficiency values that are consistent with the energy audit of the home.
- Review Fiscal Manuals for applicable Federal and Weatherization Assistance Program (WAP) requirements and references.
- Verify Subgrantees have procedures for keeping Fiscal Manuals current with Federal and WAP requirements.
- Follow-up as needed to ensure Subgrantee Fiscal Manuals are current and comply with Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.
- Review weatherization vehicle and equipment inventory property records applicable to Federal and WAP requirements.
- Verify Subgrantee weatherization vehicle and equipment inventory property records are current and updated as needed.
- Verify Subgrantees have procedures to ensure weatherization vehicle and equipment inventory property records are current with Federal and WAP requirements.
- Ensure weatherization vehicles and equipment property records include:
 1. a description of the property,
 2. a serial number or other identification number,
 3. source of funding for the property (including the FAIN),
 4. who holds title,

5. acquisition date,
 6. cost of the property,
 7. percentage of Federal participation in the project costs for the Federal award under which the property was acquired,
 8. location,
 9. use and condition of the property, and
 10. any ultimate disposition data including the date of disposal and sale price of the property.
- Review two procurement files to determine if:
 - cost of noncompetitive procurements was reasonable.
 - documentation sufficiently shows a cost price analysis was completed for each procurement.
 - Review fiscal policy and procedure manual for applicable procurement procedures to include:
 - Reasonable negotiation of noncompetitive contractor procurements
 - Ensure compliance with 2 CFR 200.324 (b)
 - Subgrantee must obtain pre-approval from IHSB by submitting the Non-competitive Procurement Justification Request form.
 - Hold an exit interview with those staff designated by the Subgrantee Director to discuss the results of the evaluation.
 - Send a written report within 30 days to the Subgrantee detailing evaluation results, which shall include a timetable for any corrective action.
 - Ensure the Subgrantee replies to the written monitoring report within 45 days.
 - Maintain evaluation reports on file at the Intergovernmental Human Services Bureau (IHSB) Helena office.
 - Follow-up as appropriate, including specific recommendations with technical assistance within specified timetables.

21000 Quality Improvement Sequence



If the monitoring process results in the identification of repeat findings, corrective actions, or deficiencies, a Quality Improvement Plan (QIP) including appropriate metrics and timeline for required action may be requested from the agency. The IHSB staff will consider the seriousness of the identified issue(s) and may exercise discretion on whether a QIP is appropriate or necessary. Examples include, but are not limited to the following:

- A repeat finding, corrective action or deficiency that has not been resolved within a reasonable timeframe.
- Failure of a QCI to adequately inspect weatherization jobs following BPI standards and protocols and WTC Weatherization Field Guide.
- Failure of the agency to sufficiently monitor sub-recipients.
- A deficiency involving waste or abuse.

The agency will have 60 days after the request to develop and submit their QIP. The QIP should list actions that will be taken to correct the identified issue(s), staff responsible, and the amount of time required to implement the actions or resolve the issue(s).

The submitted QIP will be reviewed by IHSB monitoring staff to ensure that it addresses appropriate actions to remedy or resolve the identified issue(s). A decision on whether the plan is approved or not will be issued within 14 days. This notification will specify the

specific reason why the plan was not approved as well as the information and actions necessary for acceptance. Discretion will be exercised based on specific circumstances.

Agencies engaged in a QIP will be identified as medium or high risk for the duration of the plan.

Should the agency not comply with or work through the QIP, additional actions may be taken which could include:

- Additional desk or on-site monitoring and increased depth of monitoring.
- Final notice for demonstrating improvement and metrics defined with a reasonable timeframe.
- De-certification from performing Final Inspections, Remedial training, written reprimand, and on the job training/oversite by a qualified QCI until the disqualified QCI can demonstrate proficiency and be recertified (retake QCI Certification).
- Notification to BPI, employer and/or other impacted parties (Sub-grantee, State and/or Contractor) that despite remedial training efforts and repeated warnings, QCI has failed to perform and will be prohibited from performing any Final Inspections within the state's current Weatherization program for the remainder of the grant period or 1 year whichever is less or permanently depending upon circumstances.

The status of a subgrantee can improve, or decline based on how the agency complies with repeat findings, deficiencies, and a corrective action plan. Once repeat findings, deficiencies, or a corrective action plan has been resolved the agency's status can be restored.

APPENDICES

APPENDIX A – Lead Renovation, Repair and Painting Standards

Quick Guide - EPA RRP Rule Requirements**

Rules/Guidance	EPA Renovation, Repair and Paint Rule - RRP 40 CFR part 745
1. Training**	RRP Certified Renovator Training – 8 hours + skill sets, 5-year certification non-certified workers must be trained job by CR. Renewal certification – 4 hours, 5-year certification.
2. Certified Renovators on Job**	Applies to all Renovations (including Weatherization)
3. Certified Firm	Applies to companies w/ Certified Renovators
4. Pre-1978 Target Housing	Pre-1978 Target-Housing/Child Occupied Facilities
5. Lead-Testing	Assume presence of lead or CR may test with EPA Recognized Test Kits (Lead Check swabs or D-Lead). Paint chip testing allowable using NLLAP lab. XRF by Certified Risk Assessor or Inspector.
6. Client Education – Using EPA Renovate Right publication**	RRP Pre-Renovation Education notification no greater than 60 days prior to work/at least 7 days w/certified mail. Form in file – 3 years.
7. De Minimis areas**	Rule does not apply if job does not disturb more than 6 sq. ft interior or 10 sq. ft exterior, unless demolition and replacing windows
8. Client Opt-Out	Does not apply
9. Access Restrictions	Signs and barriers to restrict access from interior workspace and 20 ft. exterior workspace.
10. Containment**	Containment – if more than 6 sq. ft interior or 20 sq. ft exterior

Rules/Guidance	EPA Renovation, Repair and Paint Rule - RRP 40 CFR part 745
11. Prohibited Tools/Practices **	Open flame burning/torching, heat gun above 1100°F. Power sanding, power grinding, power planning, needle gun, abrasive blasting with HEPA vacuum attached shrouds.
12. Shrouded Tools	Required on prohibited tools/practices.
13. Personal Protection Clothing	Compliance with OSHA. Minimum - Respirator Protection (disposable HEPA/purple/100 respirator), disposable painter's hat and disposable coveralls. Additional required depending on job hazards.
14. Post work, pre-tear down clean-up	<ol style="list-style-type: none"> 1. Pick and bag all debris. From top to bottom HEPA vac and wash/wet wipe/mist all containment, permanent work surfaces, tools, and PPE before removing tools, debris and tearing down containment. 2. wash/wet wipe permanent surfaces. 3. mist containment plastic, fold dirty side in & bag
15. Visual Inspection	Certified Renovator to conduct visual inspection following clean-up using "flashlight visual". Re-clean if debris/dust particles found.
16. Cleaning Verification (CV)	Certified Renovator to conduct cleaning verification using EPA CV card. Re-clean if needed.
17. Dust Clearance Examination**	Permitted using Lead Inspector, Risk Assessor or "Dust Sampling Technician".
18. Solid Waste Disposal	Secure off-site. Dispose as household waste.
19. Water Waste Disposal	Collect all wastewater, filter, and dispose in toilet.
20. Recordkeeping**	All forms/documentation related to job keep 3 yrs.
21. On-site Forms	Pre-renovation forms and training verification forms must be kept on site.
REFERENCE	www.epa.gov/lead

Note: States, Tribes, Municipalities, and organizations may require more stringent requirements.

Note: HUD work does have more stringent lead control requirements. This information is for reference only and is NOT a substitute for training. For full disclosure RRP Rule requirements, training is required. Revised July 1, 2019.

APPENDIX B -Client Education

Client Education

Do any household members have pre-existing or potential health conditions to take into consideration for weatherization of the residence*? Yes or No

Please contact the agency with any potential health condition issues.

Name: _____ Phone: _____ Phone: _____

If applicable, provide the occupant with information of any known risks:

_____ _____

Air Conditioning and Heating Systems*:

Discuss and provide information on appropriate use and maintenance of units.

Appliances and Water Heaters*:

Discuss and provide information on appropriate use, maintenance, and disposal of appliances/water heaters.

Asbestos:

- Assumption of presence of asbestos containing materials – Notice of Dangerous Conditions form required (DPHHS-EAP023)
- Test results are positive for asbestos containing materials – Notice of Dangerous Conditions form required (DPHHS-EAP023)
- Provide “EPA Fact Sheet, Protect Your Family from Asbestos-Contaminated Vermiculite Insulation” (EPA #550R09004)

Biological and Unsanitary Conditions:

Discuss observed conditions and provide information on how to maintain a sanitary home.

Building Structure and Roofing:

Discuss observed conditions.

Code Compliance:

Discuss observed issues: *When weatherization measures trigger code-compliance the specific code requirement with reference to the weatherization measure(s) that triggered the code compliance issue must be documented in the client's file.* Combustion Gases:

- Discuss combustion safety and hazards, including exhaust ventilation when cooking and keeping burners clean.
- Provide “Preventing Carbon Monoxide Poisoning” (EPA #100R09009)

Drainage*:

- Discuss cleaning and maintaining drainage systems – gutters, down spouts, extensions, flashing, sump pumps, etc.

Electrical, other than Knob-and-Tube Wiring*:

- Discuss overloading circuits, electrical hazards (Aluminum wiring)

Electrical, Knob-and-Tube Wiring:

- Discuss over-current protection, overloading circuits, electrical hazards.

Fire Hazards:

- Discuss observed fire hazards.

Formaldehyde, VOCs, and other Air Pollutants*:

- Discuss observed conditions and associated risks.
- Provide “Care for Your Air: A Guide to Indoor Air Quality” (EPA #402F08008)
- Pollutants pose a risk to workers and removal cannot be performed or is not allowed. Weatherization deferred - Agency Health and Safety and Work Agreement form required (DPHHS-EAP-020)

Injury Prevention of Occupants and Weatherization Workers:

- Discuss observed conditions Lead Based Paint:
- Discuss conditions and follow EPA’s Lead; Renovation, Repair and Painting Program (RRP) requirements.

Mold and Moisture*:

- Provide “Montana Mold Assessment and Release Form” (DPHHS-EAP-032)

Pests:

- Discuss observed conditions and associated risks.

Radon*:

- Provide “A Citizen’s Guide to Radon” (EPA#402K09001)

Refrigerant:

- Inform occupant not to disturb refrigerant.

Smoke/Carbon Monoxide Detectors and Fire Extinguishers:

- Discuss use of detectors and extinguisher
- Leave the manufacturer’s written information on the use of smoke/CO detectors and fire extinguishers.

Solid Fuel Heating:

- Discuss safety and how to recognize depressurization.
- Provide "[Combustion Appliance Back drafting](#)" (EPA)

Space Heaters - Stand Alone Electric:

- Discuss safety hazards.
- Removal is not allowed – deferral required.

I am aware stand-alone electric space heaters present safety risks and will not allow the heater(s) to be removed from the dwelling. (Weatherization Deferral is Required)

Occupant Name **Signature** **Date**

Space Heaters – Unvented Single Family

- Discuss safety hazards, including CO, moisture, and NO2.
- Provide "[Preventing Problems with Combustion Equipment](#)" (EPA)

Space Heaters – Unvented Mobile Homes

- Deferral of Weatherization is required.

Spray Polyurethane:

- Discuss plans to use two-part foam and the precautions that may be necessary.
- Provide "[Vacate and Safe Re-Entry Time](#)" (EPA) Provide other materials that may be necessary

Ventilation (ASHRAE 62.2.2016) *:

- Provide written information on function, use, and maintenance of the ventilation system and components.
- Explained to client that ASHRAE standards are a mandatory program requirement that cannot be refused.

Disclaimer: AHSRAE 62.2 does not account for high polluting sources or guarantee indoor air quality.

Other Identified Hazards:

- _____
- _____
- _____

Relevant issues above have been discussed, and I have received materials as documented. I agree to hold the agency performing weatherization work harmless from future problems associated with pre-existing conditions in the home.

Occupant Name **Signature** **Date**

Radon Informed Consent Language

(Can be added to existing Release of Liability and Waiver of Claims forms)

Weatherization achieves energy and cost savings and improved comfort, health, and safety of homes through a variety of home retrofit measures, including some which improve the airtightness of the building. According to the Department of Energy (DOE) sponsored study, [Building Assessment of Radon Reduction Interventions with Energy Retrofits Expansion \(BEX\) Final Report \(ORNL/TM-2020/1769\)](#): “There is a small risk of increased radon levels in homes when the building air tightness levels are improved. The study results show that current practices have produced substantial benefit compared to previous practices, and that there are no statistically significant changes in indoor radon levels on the lowest living levels with these practices”. These increases are smaller in manufactured housing everywhere, and all homes in low-radon potential counties, and higher in site-built homes in high-radon-potential counties. There is some evidence that the installation of continuous mechanical ventilation reduces radon levels in homes, and counteracts any radon increases that are due to improved building air tightness levels.

Precautionary Measures: Precautionary measures indicated below may be installed as part of weatherization:

- Cover exposed dirt floors within the pressure/thermal boundary with a sealed soil gas retarder
- Cover sump well/pits with airtight covers
- Implement ventilation as required by ASHRAE 62.2-2016
- Other: _____
- Other: _____
- Other: _____
- Other: _____

I am aware that weatherization may result in increased levels of radon, and that mechanical ventilation may counteract those increases.

I have received the Environmental Protection Agency’s (EPA’s) “A Citizen’s Guide to Radon,” and radon-related risks were discussed.

I have chosen to go forward with weatherization and accept all risks of injury or damages.

I have carefully read this informed consent form and have signed it of my own free will.

Site Address: _____

Client Printed Name: _____

Client Signature: _____ Date: _____

Subgrantee Representative Printed Name: _____

Subgrantee Representative Signature: _____

APPENDIX C – Combustion Appliance Classification

	Negative Pressure in Flue	Positive Pressure in Flue
Noncondensing	Category I 83% efficient or less Very common appliances Standard venting: single wall, B-vent, masonry	Category III 83% efficient or less Uncommon appliances Specialized venting: Z-vent or manufacturer specific
Condensing	Category II Over 83% efficiency Very uncommon, no longer commercially available	Category IV Over 83% efficient (usually 90% or above) Low temperature venting: PVC – must be airtight

APPENDIX D – Combustion Appliance and Fuel Distribution System Inspection

Equipment required for combustible gas and CO detection, CO measurements, depressurization, and spillage test.

- Combustible gas detector (CGD) capable of digitally displaying Lower Explosive Limit (LEL) and/or provide an alarm when combustible gas concentration exceeds 10% LEL.
- CO measurement equipment, Combustion Analyzer, used for flue gas CO measurement.
- Personal Ambient CO monitor, auditors/inspectors performing CO inspections shall always, have on their premise, a fully functional personal CO monitor.
- Equipment required for depressurization and spillage assessment are a mirror, a smoke pencil, and one or more manometer(s).

The Auditor/Inspector shall measure ambient combustible gas level and CO in the indoor air environment.

Combustible Gasses

- Indoor ambient air shall be sampled with a CGD in at least one location per floor of occupied space upon entering the home.
 - If measured concentrations of combustible gas exceed 10% of the LEL the home will be evacuated immediately, and the appropriate emergency services and fuel provider will be notified from outside the home.

CO Monitoring

- The auditor/inspector shall always have a designated ambient CO monitor. The auditor/inspector shall comply to the CO exposure levels specified in Table 1. Work shall not proceed when ambient CO concentrations exceed 70ppm.

Order of procedures

After the auditor/inspector has verified that ambient CO reading is below 70ppm and combustible gas concentration is below 10% LEL, the following inspections, as applicable to the specific circumstances of the home, shall be performed, per BPI-1200 Chapter 7.

- Natural gas (NG) and liquid petroleum (LP) gas piping system inspection
- Oil supply system inspection
- Visual inspection of combustion appliance zone (CAZ)
- Visual Inspection of the heating system, water heater and venting system

Where open combustion appliances are in use, CAZ testing shall be performed at the audit, the end of each day when envelope or duct sealing takes places and at the final inspection. End of Day WC CAZ and spillage testing does not require in-flue CO measurement. Per WPN 22-7, in flue CO measurement test is required at the audit and final inspection whenever an open combustion natural draft appliance is present.

- Set up CAZ per BPI-1200 7.9
- Conduct Spillage Test per BPI-1200 7.9.1 For a cold vent, spillage/smoke test will be conducted at 5 minutes of main burner operation. Warm vent and domestic hot water heaters will be conducted at 2 minutes of the main burner operation. Action levels for spillage shall be in accordance with Annex D, Table D.1.A. If CO spillage cannot be resolved per Annex D, Table D.1.A, the agency shall take action to address and resolve the CO spillage. No dwelling will be left with combustion appliances that fail the spillage test.
- In flue CO Measurement per BPI-1200 7.9: For a cold or warm vent, CO measurements of undiluted flue gas shall be taken at 5 minutes of the main burner operation. The CO measurement shall be compared with the appropriate CO threshold in Table 2. Action levels exceeding the appropriate threshold in Table 2 shall be in accordance with Annex D, Table D.1.B. In flue CO test is not required for the end of day WC CAZ/spillage test.
 - For a Shared Chimney per BPI-1200 7.9.4: When combustion appliances share a chimney, they are tested from the lowest to the highest BTU input rating. The appliance with the lowest BTU input rating shall be tested for spillage and CO measurement as described above. Once the spillage and CO measurements are completed, put the next largest appliance in operation while the first appliance is still firing. Retest the first appliance for spillage at 2 minutes. If applicable test for spillage on the second

appliance immediately after. Measure the CO level in the undiluted flue gas in the second appliance at 5 minutes. If there are additional appliances sharing the same flue, continue this process until all appliances are running simultaneously.

- For Direct Vent and Power Vented appliances per BPI-1200 7.9.6: Measure the CO level in the undiluted flue gas at 5 minutes of the main burner operation. The CO measurements shall be compared to the appropriate CO thresholds in Table 2. For CO exceeding the appropriate level action shall be taken according to Annex D, Table D.1.B.
- For Gas Oven and Range Tops per BPI-1200 7.9.7: Gas ovens shall be tested for vented CO and range burners shall be visually inspected. Turn oven on to bake, 500° F. Do not turn the oven to broil or self-cleaning setting. At 5 minutes, measure the undiluted CO in the oven’s exhaust vent. Once the CO level is stable record the reading and compare to the appropriate CO threshold in Table 2. For CO exceeding the threshold limit, refer to Annex D, Table D.1.B.
- For Unvented Heaters and Gas Log sets per BPI-1200 7.9.8: Turn on the appliance, at 5 minutes measure the CO and compare the reading to the appropriate threshold in Table 2. If CO exceeds the appropriate threshold reference Annex D, Table D.1.B. For Gas log sets verify the damper is open.

Placing appliances back in operation:

- If no safety concerns or hazards were identified during the combustion appliance inspection return all appliances to their pre-existing state. If appliance related safety concerns or hazards were identified, follow the appropriate actions levels.

TABLE 1 - Ambient CO Action Levels (per BPI 1200 sections 7.3)

Equal to or Greater than 70ppm	Terminate the audit/inspection and notify the homeowner/occupant and evacuate the building. Outside the building notify the appropriate emergency services
36ppm – 69ppm	The auditor/inspector shall advise the homeowner/occupant that elevated CO levels have been detected. All doors and windows shall be opened and must be recommended that all possible sources of CO be turned off immediately. If it appears that the source of CO is a permanently installed appliance, the auditor/inspector must

	recommend that the appliance be turned off. The homeowner/occupant must be advised to contact a qualified professional.
9ppm – 35ppm	The auditor/inspector must advise the homeowner/occupant that CO has been detected and recommend that all possible sources of CO be checked and to open all windows and doors. If it appears that the source of CO is a permanently installed appliance, the homeowner/occupant shall be advised to contact a qualified professional.

TABLE 2 - CO Thresholds for Fossil Fuel Fired Combustion Appliances (per BPI 1200 Section 7.9.5)

Appliance	Threshold Limit
Central Furnace (all categories)	400 ppm air free
Boiler	400 ppm air free
Floor Furnace	400 ppm air free
Gravity Furnace	400 ppm air free
Wall Furnace (Direct Vent)	400 ppm air free
Vented Room Heater	200 ppm air free
Unvented Room Heater	200 ppm air free
Water Heater	200 ppm air free
Oven/Broiler	225 ppm as measured
Clothes Dryer	400 ppm air free
Gas Log (Gas Fireplace)	25 ppm as measured in vent
Gas Log (Installed in wood burning fireplace)	400 ppm air free in firebox

Annex D/ Action Levels for Spillage and Carbon Monoxide in Combustion Appliances (Per BPI 1200)

D.1. Spillage assessment and CO measurement results shall be based on the following criteria:

- CO measured at 5 minutes of the main burner operation.
- Spillage assessed at 2 minutes of the main burner operation for warm vent, or in Domestic Water Heaters
- Spillage assessed at 5 minutes of the main burner operation for cold vent.

- CO level at or below threshold in Table 1 for the appliance being tested is ACCEPTABLE.
- CO level exceeding threshold in Table 1 for the appliance be tested is UNACCEPTABLE.

TABLE D.1.A – ACTION LEVELS FOR SPILLAGE IN COMBUSTION APPLIANCES

Test Results	Action Required
Greatest CAZ depressurization occurs with air handler on*	Conduct further analysis of the distribution system to determine if leaky ducts or other HVAC-induced imbalances are the cause of the spillage. If so, recommend distribution system repairs that will reduce or eliminate the CAZ depressurization.
Greatest CAZ depressurization occurs with the door to CAZ closed, but is alleviated when the door is open*	Recommend measures to improve air transfer between the CAZ and the core of the house
The cause of spillage has been traced to excessive exhaust** independent of CAZ door position, air handler, or a problem with the flue†	Verify that sufficient combustion air is available per <i>ANSI Z223.1/NFPA 54</i> for gas-fired appliances and <i>NFPA 31</i> for oil-fired appliances or recommend verification by a qualified professional. And/or Recommend further evaluation/service by a qualified professional to address the venting/combustion air issues

*In the case where both spillage and excessive CO are present, in addition to the specific recommendations above, recommend that the appliance be shut down until it can be serviced by a qualified professional. No dwelling will be left with combustion appliances that fail the spillage test.

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

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

TABLE D.1.B – ACTION LEVELS FOR CO IN COMBUSTION APPLIANCES

Test Results	Action Required
Unacceptable CO level	Advise the homeowner/occupant that the appliance should be serviced immediately by a qualified professional. Note: If ambient CO levels do not exceed 70 ppm, testing of other appliances and other audit procedures may continue at the discretion of the auditor
Acceptable CO level	No action required