



THDA WAP MANUAL

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Chapter 1 – General Program Requirements

- 1.1 Program Purpose and Overview
- 1.2 Tennessee Climatic Conditions
- 1.3 Funding Allocation Distribution
- 1.4 WAP Benefits
 - 1.4.1 Benefit Caps
- 1.5 Outreach to Potential Clients
- 1.6 Application Processing
 - 1.6.1 Additional Application Documents
 - 1.6.2 Suspension of Application Acceptance
 - 1.6.3 Application Processing Timeframe
 - 1.6.4 Job Number Assignment
- 1.7 General Eligibility Requirements
 - 1.7.1 Applicant
 - 1.7.2 Proof of Residence
 - 1.7.3 Social Security Numbers
 - 1.7.4 Disability
 - 1.7.5 Definition of a Child
 - 1.7.6 Tribal Organizations
 - 1.7.7 Applicant Privacy
 - 1.7.8 Additional Eligibility Documentation Requirements
 - 1.7.9 Retention of Documentation
- 1.8 Income Eligibility
 - 1.8.1 Income Standards
 - 1.8.2 Definition of Income
 - 1.8.3 Treatment of Income for Children and Illegal Aliens
 - 1.8.4 Verification of Income
 - 1.8.5 Calculation of Income
- 1.9 Unit Eligibility
 - 1.9.1 Ineligible Units
- 1.10 Rental Unit and Landlord Requirements
- 1.11 Multi-Family Buildings
- 1.12 Client Notification of Eligibility
- 1.13 Appeal Rights
- 1.14 Re-Weatherization
- 1.15 Case Closure
- 1.16 Right to Reapply for WAP

Chapter 2 – Priority and Wait List

Chapter 3 – State Historic Preservation

Chapter 4 – Energy Pre-Audit

- 4.1 Purpose of the Pre-Audit
- 4.2 Expiration of a Conducted Pre-Energy Audit
- 4.3 Energy Auditor Assignment
- 4.4 Timeframe to Complete a Pre-Audit Once Assigned
- 4.5 Client Notification of Pre-Energy Audit to be Performed
- 4.6 Tennessee Weatherization Field Guide and Standard Work Specifications
- 4.7 Weatherization Assistant (NEAT/MHEA)
- 4.8 Weatherization Assistant Library
- 4.9 Allowable Measures
 - 4.9.1 Savings-to-Investment (SIR)
- 4.10 Weatherization Assistant (WA) User Guide
- 4.11 Diagnostic Tests
 - 4.11.1 Blower Door
 - 4.11.2 Manometer Use and Certification
 - 4.11.3 Combustion Safety and Efficiency Testing
 - 4.11.4 Infrared Scanning (Optional)
 - 4.11.5 Other Testing Equipment
 - 4.11.6 Calibration of Equipment
- 4.12 Client Health Assessment
- 4.13 Client Education
 - 4.13.1 Client Notification of Health and/or Safety Risks
 - 4.13.2 Client Materials
 - 4.13.3 Client Education Packet
- 4.14 Reporting Applicant Changes to the Local Sub-grantee
- 4.15 Deferrals
- 4.16 Work Order Creation
 - 4.16.1 Air Infiltration Reduction
- 4.17 Documentation
- 4.18 Energy Audit Data Submission
- 4.19 Questioned Costs

Chapter 5 – Deferrals

Chapter 6 – Procurement of Weatherization Work

- 6.1 Contractor Approval
- 6.2 Single Bid Requirement
- 6.3 Multi-Family Buildings
- 6.4 Work Order
- 6.5 Walk-Through Inspection Prior to Bid Submissions
- 6.6 Competitive Bid Process
 - 6.6.1 Awarding a Bid in the Event of a Tie
 - 6.6.2 Bid Calculation Error
- 6.7 Insufficient Number of Bids Submitted
- 6.8 Jobs over Maximum Allowable Amount
 - 6.8.1 Removal of Measures
 - 6.8.2 Negotiating the Bid
 - 6.8.3 Request to Exceed Maximum Cap
- 6.9 Validation of SIR Based on Actual Expenditures
- 6.10 Awarding of Jobs
 - 6.10.1 Contractor Declines Award
 - 6.10.2 Job Contract
 - 6.10.2.1 Job Contract Template
 - 6.10.2.2 Contract Penalty Clauses
 - 6.10.2.3 Job Contract Attachments
 - 6.10.2.4 Contract Start Date
- 6.11 Work Completion Timeframes
- 6.12 Change Orders
 - 6.12.1 Change Order Request
 - 6.12.2 Site Inspections for Requested Change Orders
 - 6.12.3 Establishing the Cost of the Change Order
 - 6.12.4 Removal of Measures from Contract Work Order
 - 6.12.5 Change Order Documentation
 - 6.12.6 Change Orders that Result in Job Exceeding Maximum Cap
- 6.13 Payment for Work
 - 6.13.1 Partial Payment Request
 - 6.13.2 Collection of Contractor Penalties
- 6.14 Contractor Default and Re-Bidding of Job
 - 6.14.1 Contractor Default- Job Not Begun
 - 6.14.2 Contractor Default – Job Begun

6.15 Job Cannot Be Completed

Chapter 7 –Weatherization Work

- 7.1 Energy Measures
- 7.2 Incidental Repairs
- 7.3 Health and Safety
- 7.4 SIR Values
- 7.5 Typical Energy Conservation Measures
 - 7.5.1 Air Sealing
 - 7.5.2 Insulation
 - 7.5.2.1 Attic Insulation
 - 7.5.2.2 Floor Insulation
 - 7.5.2.3 Wall Insulation
 - 7.5.2.4 Other Insulation
 - 7.5.2.5 Insulation Certificate
 - 7.5.3 Domestic Water Heater
 - 7.5.4 Furnace Maintenance, Repair and Replacement
 - 7.5.5 Cooling System Maintenance, Repair and Replacement
 - 7.5.6 Ductwork
 - 7.5.7 Windows
 - 7.5.8 Doors
- 7.6 Refrigerators and Electric Baseload Measures
- 7.7 Unvented Space Heaters
- 7.8 Low-Cost or No-Cost Energy Measures
- 7.9 Fuel Switching
- 7.10 Permit and Code Compliance
- 7.11 Mold and Moisture
 - 7.11.1 Moisture Source-Reduction

Chapter 8 – Health and Safety

- 8.1 Funding Allocations
- 8.2 Maximum Amount of Health and Safety Funds per Unit
- 8.3 Savings-to-Investment (SIR) Requirements
- 8.4 Determining Cost for Health and Safety Measures
- 8.5 Allowable Health and Safety Measures

Chapter 9 – QCI Post-Energy Audit

- 9.1 Purpose of the QCI Post-Energy Audit

- 9.2 Energy Auditor Assignment
- 9.3 Scheduling the QCI Post-Energy Audit
 - 9.3.1 Timeframe for Completion
 - 9.3.2 Client Notification
- 9.4 Conducting the QCI Post-Energy Audit
 - 9.4.1 Preparation
 - 9.4.2 Validity of the Pre-Energy Audit
 - 9.4.3 Diagnostic Testing
 - 9.4.4 QCI Post-Energy Audit Documentation
 - 9.4.5 Client Refusal to Sign Passed QCI Post-Energy Audit Form
- 9.5 Failure of the QCI Post-Energy Audit
 - 9.5.1 Re-Inspections
 - 9.5.2 Reporting Jobs as Completed that Failed Post-Inspection
- 9.6 Exceptions to QCI Post-Energy Audit Requirement
 - 9.6.1 Client Refusal
 - 9.6.2 Property Destroyed or Damaged
 - 9.6.3 Property No Longer Occupied by Household
 - 9.6.4 Completed Units with No Final Audit
- 9.7 State Inspections

Chapter 10 – Energy Auditor Requirements

- 10.1 Minimum Energy Auditor Qualifications
- 10.2 OSHA Training for Auditors
- 10.3 Certified Renovator and Lead Safe Weatherization (LSW)
- 10.4 Suspension and Debarment
- 10.5 Sub-grantee Additional Requirements for Energy Auditors
- 10.6 Contracted Energy Auditors
- 10.7 Maximum Payment Amounts for Energy Audits
- 10.8 Energy Auditor Restrictions
- 10.9 Energy Auditor Probation, Suspension and Termination
- 10.10 Communication and Program Updates
- 10.11 Disallowed Costs for Energy Audits

Chapter 11 –Contractor Requirements

- 11.1 Licensure
- 11.2 Contractor Certification Training
- 11.3 Contractor Experience
- 11.4 OSHA Training for Contractors

- 11.5 Lead Safe Weatherization Training
- 11.6 Certified Firm Status – EPA’s Lead-Based Paint Renovation, Repair and Painting
 - 11.6.1 How to Determine if Requirements Apply to Job
 - 11.6.2 Identifying the Need for a Certified Firm/Renovator
- 11.7 Liability Insurance
- 11.8 Prohibition of Illegal Immigrants
- 11.9 Suspension and Debarment
- 11.10 Contractor Use of Blower Doors
- 11.11 Warranty of Work
- 11.12 Certificates
- 11.13 List of Approved Contractors
- 11.14 Disallowed or Questioned Costs

Chapter 12 – Disaster Recovery Plan

Chapter 13 – Training and Technical Assistance

- 13.1 Funding Allocations for Training and Technical Assistance
- 13.2 Training
 - 13.2.1 Title VI –Civil Rights Training
 - 13.2.2 Mold and Moisture
 - 13.2.3 Lead Safe Weatherization
 - 13.2.4 Identification of Training Needs
 - 13.2.5 Procurement of One-Time and Specialized Training
- 13.3 Technical Assistance
 - 13.3.1 State Inspections
 - 13.3.2 Sub-Grantee Technical Experts
 - 13.3.3 Tennessee Weatherization Field Guide
 - 13.3.4 THDA/Sub-Grantee Communication
- 13.5 Contractor T&TA Retention Agreements
- 13.6 Continuing Education for Energy Auditors and Weatherization Contractors

Chapter 14 – Fiscal Accountability

- 14.1 SAMS and DUNS Number
- 14.2 Pollution Occurrence Insurance (POI)
- 14.3 Financial Audit
- 14.4 Contract and Amendments
- 14.5 Budget and Budget Amendments
 - 14.5.1 Allowable Administrative Expenditures

- 14.5.2 Caps on Administrative Expenditures
- 14.5.3 Line Item Limitations
- 14.5.4 Budget Revisions
- 14.6 Reimbursement of Expenses
- 14.7 Advance Payments
- 14.8 Equipment Purchases
- 14.9 Submission of Invoices
 - 14.9.1 Frequency
 - 14.9.2 Documentation
- 14.10 Reporting Requirements

Chapter 15 – Monitoring and Corrective Action

- 15.1 Programmatic and Management Monitoring
- 15.2 Financial Monitoring
- 15.3 Technical Monitoring
- 15.4 Desktop Monitoring
- 15.5 Sub-Grantee Compliance
- 15.6 Monitoring Reports and Corrective Action Plans
- 15.7 Financial Audit Requirement (Sub-grantees receiving over \$500,000)
- 15.8 Reporting

Chapter 16 – Sub Grantee Administrative Responsibility

- 16.1 Client Files and Case Documentation
 - 16.1.1 Client Files Contents
- 16.2 Case File/Documentation Retention
 - 16.2.1 Listing of all Weatherization Units
- 16.3 WAP Database
- 16.4 Operational Plan
- 16.5 Procurement of Services
- 16.6 Management of Work
 - 16.6.1 Oversight of Work Being Performed
 - 16.6.2 Addressing Poor Performance
 - 16.6.3 Corrective Action Plans
- 16.7 Client Appeal Processes
- 16.8 Client Confidentiality and Protection of Records
- 16.9 Client Education

Chapter 17 – WAP Database

- 17.1 Approved Users
- 17.2 Database Functions
 - 17.2.1 Add Jobs
 - 17.2.2 Search Jobs
 - 17.2.3 Add Prior WAP
- 17.3 Database Tabs
 - 17.3.1 Client Information Tab
 - 17.3.2 Property Detail Tab
 - 17.3.2.1 Landlord
 - 17.3.3 Pre-Audit Tab
 - 17.3.4 Contractor Tab
 - 17.3.4.1 Contractor Name
 - 17.3.4.2 Bid Amount
 - 17.3.5 Post-Audit Tab
 - 17.3.6 Job Cost Tab
 - 17.3.6.1 Pre and Post CFM
 - 17.3.6.2 Low Cost Measures (LCM)
 - 17.3.6.3 ECM/IR Measures
 - 17.3.6.4 Health and Safety Measures
 - 17.3.6.5 Total Job Costs
- 17.4 Application Status
- 17.5 Reports
 - 17.5.1 Completed Units
 - 17.5.2 Per-Audit Completed
 - 17.5.3 Job Status
 - 17.5.4 Job Process
 - 17.5.5 Priority Point Listing
 - 17.5.6 Duplicate Addresses

Chapter 18 – Forms

- 18.1 WAP Application-Single Family
- 18.2 WAP Application-Multi-Family Building
- 18.3 WAP Application-Multi-Family Building Resident
- 18.4 Permission Form-Homeowner
- 18.5 Permission Form-Renter
- 18.6 Landlord Agreement Form-Single Family
- 18.7 Landlord Agreement Form-Multi-Family
- 18.8 Applicant Appeal Form
- 18.9 Energy Bill Release Form

- 18.10 Notarized Self Certification of Income / Zero Income
- 18.11 Statement of Support Form
- 18.12 Client Education Checklist
- 18.13 RRP Pamphlet Form
- 18.14 Insulation Certificate Form
- 18.15 Quality Control Inspection Form
- 18.16 Contractor Requirement Checklist
- 18.17 Authorized Signature Form
- 18.18 Request to Exceed ACPU Cap Form
- 18.19 Mold Release Form
- 18.20 Radon Informed Consent Form

Chapter 19 – Templates

- 19.1 Incomplete Application Notice Template
- 19.2 Approval Notice Template-Single Family
- 19.3 Approval Notice Template-Multi-Family
- 19.4 Denial Notice Template-Single Family
- 19.5 Denial Notice Template-Multi-Family
- 19.6 Termination Notice Template-Single Family
- 19.7 Termination Notice Template-Multi-Family
- 19.8 Deferral Notice Template-Single Family
- 19.9 Deferral Notice Template-Multi-Family
- 19.10 Audit Notice Template-SF and MF
- 19.11 Scope of Work Notice Template-Single Family
- 19.12 Scope of Work Notice Template-Multi-Family
- 19.13 QCI Notice Template- SF and MF
- 19.14 State QCI Notice Template-SF and MF
- 19.15 Contract Template-Energy Auditor
- 19.16 Contract Template-Subcontractor
- 19.17 TTA Retention Agreement Template
- 19.18 Reverification Template – Single Family
- 19.19 Reverification Template - Multi Family
- 19.20 Notification of Reverification – Single Family
- 19.21 Notification of Reverification - Multi Family

Chapter 20 – Appendix

- 20.1 DOE Appendix A – Standards for Weatherization Materials
- 20.2 EPA Mold and Moisture Brochure

**Tennessee Housing Development Agency
WAP Manual**

- 20.3 Mold and Moisture Training PowerPoint #1
- 20.4 Mold and Moisture Training PowerPoint #2
- 20.5 RRP Renovate Right Brochure
- 20.6 EPA Citizen's Guide to Radon Brochure
- 20.7 Health and Safety Plan
- 20.8 [Tennessee WAP Standard Work Specifications Field Guide](#)

CHAPTER 1 – GENERAL PROGRAM REQUIREMENTS

1.1 Program Purpose and Overview

The Weatherization Assistance Program (WAP) was established under Title IV of the Energy Conservation and Production Act and amended by the National Energy Conservation Policy Act, the Energy Security Act, the Human Services Reauthorization Act of 1984, and the State Energy Efficiency Programs Improvement Act of 1990. The program is administered and funded at the federal level by the U.S. Department of Energy (DOE). This program is designed to assist low-income households in reducing their fuel costs and to contribute to national energy conservation through increased energy efficiency and consumer education. Weatherization measures provided by this program will reduce heat loss and energy costs by improving the thermal efficiency of dwelling units occupied by low-income households.

Tennessee's WAP is administered by the Tennessee Housing Development Agency (THDA) as the Grantee Agency. THDA sub-contracts with a network of local community agencies that provide services in all ninety-five counties in Tennessee. There is one sub-grantee for each county. Sub-grantees who are currently administering the WAP on behalf of the Grantee will be given preference, provided the sub-grantee continues to meet performance and quality standards. All sub-grantees contract out the weatherization work, rather than operating sub-grantee crews to perform the work.

The Weatherization Program Operational Plan Manual is a living document and will be updated as program regulations and policies change and posted on the THDA website. Sub-grantees are responsible for ensuring they are accessing the current version.

1.2 Tennessee Climatic Conditions

Tennessee has a generally temperate climate, with warm summers and mild winters. However, the state's varied topography leads to a wide range of climatic conditions. The westernmost part of the state, between the Mississippi and Tennessee Rivers, is a region of gently rolling plains. The Central Basin makes up middle Tennessee, and lies between the Tennessee River to the west, the hilly Highland Rim to the north and the Cumberland Plateau to the east. The Cumberland Plateau, with an average elevation of 2,000 feet, extends northeast to southwest across the State in a belt 30 to 50 miles wide, overlooking the Great Valley of East Tennessee. The Great Valley, which runs parallel to the Cumberland Plateau on the west and the Great Smokey Mountains on the east, is a funnel shaped valley varying in width from 30 to 90 miles. The Great Smokey Mountains lie along the Tennessee-North Carolina border, with peaks ranging from 4,000 to 6,000 feet.

Tennessee's topography contributes to the variance of temperature, with an average of three degrees Fahrenheit decrease per 1,000 feet increase in elevation. As a result, higher portions of

the State, such as the Cumberland Plateau and the mountains in the eastern portion of the state, have lower average temperatures than those found in other parts of the state. Across the state the average annual temperature ranges from 62 degrees in extreme southwest portion to 45 degrees at the top of the highest peaks in the east.¹ Statewide, the average annual temperature is 58 degrees, with a winter average of 39 degrees and a summer average of 76 degrees. Average annual precipitation in Tennessee is 53 inches², with the greatest rainfall occurring in the winter and early spring. Snowfall varies and is more prevalent in the eastern portion of the state.

¹ <http://climate.tennessee.edu/Climate%20of%20TN.pdf>

² <http://www.ncdc.noaa.gov/oa/climate/research/cag3/tn.html> (1960-2011 data)

1.3 Funding Allocation Distribution

Weatherization funds will be allocated annually on the basis of the relative need for weatherization assistance by low-income persons, in accordance with 10 CFR Part 440.14(b)(ii). Initial funding allocations to sub-grantees will be based on the percentage of the State's low income population in each county. However, if a sub-grantee is not meeting production goals and/or quality standards, the state reserves the right to reallocate funds within the program year.

An annual funding allocation amount will be provided for each county. A sub-grantee that serves multiple counties will be required to adhere to each county's allocation of Weatherization funds to provide services to residents of that county. A sub-grantee may only reallocate funds to another county within their service delivery area when the reallocation has been authorized in writing by a sub-grantee's governing board and approved by THDA.

Unexpended funds from the annual contract period will be recaptured by the Grantee at the end of the contract period, unless THDA opts to extend the specific contract for that program year. All expenditure category limitations will be based on the amount of actual expenditures. Recaptured funds will be re-distributed in the subsequent contract period in a manner to be determined by THDA.

1.4 WAP Benefits

The WAP provides energy conservation measures to a residential unit occupied by a low-income household in order to make it more energy efficient, with the goal of reducing the energy costs for the residents of the unit. Each home receives an energy audit prior to any work being performed. The purpose of the audit is to determine the specific measures for the home that will provide the greatest benefit in terms of energy savings. In addition to allowable energy conservation measure retrofits, limited repairs that are necessary in order to install and maintain the ECMs are allowed. ECMs and related incidental repairs must meet the savings-to-

investment ratios (SIR) before they can be considered. It is important to remember that the WAP is not a building rehabilitation program.

The WAP recognizes that often homes have significant health and safety issues present. Although addressing all health and safety concerns is beyond the scope of WAP, there are some limited funds available to address allowable energy related health and safety issues that are necessary to maintain the physical wellbeing of both the occupants and/or weatherization worker. Additional guidance may be found in the Health and Safety Plan.

1.4.1 Benefit Caps

A maximum of \$7,541.00 may be spent per unit. This amount must include all materials and labor for energy conservation measures, related incidental repairs and health and safety items. This amount is a maximum, but it does not mean that each unit is entitled to that amount of work. Each unit is unique, and the work to be performed will be determined through the energy audit.

The cap per Multi-Family unit will be based on the number of units within the building that have been determined as occupied by a household that meets WAP requirements. The State Office may grant approval to exceed this cap on a case-by-case basis.

1.5 Outreach to Potential Clients

Sub-grantees are required to conduct program outreach to their communities, if there is an insufficient number of applicants on the wait list. The frequency and method of outreach is at the discretion of the sub-grantee. However, they are required to assist applicants, as needed, with the completion of their application, and to provide alternatives to office visits for submission of applications by elderly and disabled citizens.

1.6 Application Processing

Each client must complete and submit an application for WAP to the sub-grantee that serves their county of residence. Each sub-grantee is to utilize the state standard application form, found in Chapter 18. The sub-grantee has the flexibility to accept applications by mail or in person, but if needed, must provide assistance to applicants with the completion of the form. If the sub-grantee opts to require office visits for submission of applications, an alternative must be provided for elderly and disabled applicants for whom an office visit would be a barrier. Documentation of eligibility must be obtained as part of the application process, and maintained in the client file.

1.6.1 Additional Application Documents

The applicant must also complete an *Energy Bill Release Form* and the applicable *Permission Form*. If the applicant is the owner of the residence, the applicant should complete the *Homeowner Permission Form*, if the client is a renter, the *Renter Permission Form* should be completed. Additional documents may be required based on individual household and unit circumstances.

1.6.2 Suspension of Application Acceptance

Since program demand often exceeds availability of funding, a sub-grantee has the option to temporarily suspend the acceptance of applications when there is a sufficient number of approved applicants on the wait list for that specific county. The sub-grantee has the option to close the program to additional applications whenever the wait list of approved applications for that county exceeds a minimum of **two times** the number of clients who can be reasonably expected to be served with the funds allocated for that county in the program year. At the point the wait list for the county drops to a level where additional applications are needed, the sub-grantee is to resume acceptance of applications. As a best practice, sub-grantees are encouraged to maintain a list of individuals who have indicated interest in the program during a period of time when applications are closed. When resuming acceptance of applications, these interested individuals should be notified so they can file an application if they wish.

1.6.3 Application Processing Timeframe

A sub-grantee has a maximum of 90 days to approve or deny an application from the date a signed application is received by the sub-grantee (at any of its offices). The applicant is to provide required documentation of income and other eligibility factors during the application process. The sub-grantee shall offer assistance if the client is unable to obtain required documentation, but ultimately it is the client's responsibility to provide proof of eligibility and other required documentation for the household as a condition of eligibility.

1.6.4 Job Number Assignment

Every approved application will be automatically assigned a unique job number when entered into the WAP Database. If a home is re-weatherized, a unique number will be assigned, but any former job numbers will also be noted in the case file.

1.7 General Eligibility Requirements

1.7.1 Applicant

The applicant is the individual who signs the application. Applicants must be age 18 or older and a U.S. Citizen or Legal Alien and provide proof of identity. Proof of identity is not required for other members listed as residing in the home, unless it is considered questionable by the sub-grantee. Documentation of citizenship is required for every applicant, without regard to race, religion, gender, ethnicity or national origin, per the Tennessee Eligibility Verification for Entitlements Act. A copy of the documentation must be retained in the client file.

If the applicant is a U.S. citizen, acceptable forms of verification are:

- A valid driver license or photo identification license issued by the TN Dept. of Safety, or;
- A valid driver license or photo identification license issued by another state where the issuance requirements are at least as strict as those in TN, or;
- An official birth certificate issued by a U.S. State, jurisdiction or territory, including Puerto Rico, U.S. Virgin Islands, Northern Mariana Islands, American Samoa, Swains Island, Guam, (Exception: Puerto Rican birth certificates issues before 7/1/10 shall not be recognized), or;
- A valid, unexpired U.S. passport, or;
- A U.S. certificate of birth abroad (DS-1350 or FS-545), or;
- A report of birth abroad of a citizen of the U.S. (FS-240), or;
- A certificate of citizenship (N560 or N561), or;
- A certificate of naturalization (N550, N570 or N578), or;
- A U.S. citizen identification card (I-197 or I-179), or;
- Any successor document of subdivisions ((c) (4)- (9), or;
- A social security number that has been verified with the Social Security Administration in accordance with federal law.

If the applicant claims legal alien status, the following documentation is required:

- Two forms of documentation of identity and immigration status, as determined by the U.S. Dept. Of Homeland Security to be acceptable for verification through the SAVE program. If unable to provide two forms of acceptable documentation, then the applicant must present at least one document that can then be verified through the SAVE program.

Citizenship status must be declared on the application form for all additional household

members, but it does not have to be verified. Any household member who is not a U.S. citizen or legal alien by their own statement will not be included when determining the number of eligible household members in the homes. However, any income they have from countable sources will be considered as available in its entirety to the household when determining household income.

1.7.2 Proof of Residence

Only residences located in the State of Tennessee are eligible for the Tennessee WAP. The applicant must provide proof that they reside in the residence for which they are applying. If the applicant owns, or is buying the property, they must provide documentation of ownership.

1.7.3 Social Security Numbers

The application will request the applicant to provide social security numbers for all household members. This information will be used to identify the individual in the ACCENT system for purposes of obtaining eligibility documentation. Social security numbers do not have to be verified. **It is not a program requirement to provide social security numbers. Failure to provide social security numbers for all household members will not result in denial of the application.**

1.7.4 Disability

For purposes of WAP, disability is defined as an individual who is a handicapped individual as defined in Section 7 (6) of the Rehabilitation Act of 1973, **or** under a disability as defined in Section 1614 (a)(3) (A) or Section 223 (d)(1) of the Social Security Act, or Section 102(7) of the Developmental Disabilities Services and Facilities Construction Act, **or** an individual who is receiving benefits under Chapter 11 or 15 of Title 38, U.S.C.

- Rehabilitation Act of 1973, Section 7 (6): *The term “handicapped individual” means any individual who (A) has a physical or mental disability which for such individual constitutes or results in a substantial handicap to employment and (B) can reasonably be expected to benefit in terms of employability from Vocational Rehabilitation services provided pursuant to titles I and III of this ACT.*
- Social Security Act, Section 1614 (a) (3) (A): *Except as provided in subparagraph (C), an individual shall be considered to be disabled for purposes of this title if he is unable to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than twelve months. From subparagraph C referenced above: (C)(i) An individual under the age of 18 shall be considered disabled for the purposes of this title if that individual has a medically*

determinable physical or mental impairment, which results in marked and severe functional limitations, and which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than 12 months.

(ii) Notwithstanding clause (i), no individual under the age of 18 who engages in substantial gainful activity (determined in accordance with regulations prescribed pursuant to subparagraph (E)) may be considered to be disabled.

- Social Security Act 223(d)(1): *The term “disability” means—*
 - (A)) inability to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than 12 months; or*
 - (B)) in the case of an individual who has attained the age of 55 and is blind (within the meaning of “blindness” as defined in section 216(i)(1)), inability by reason of such blindness to engage in substantial gainful activity requiring skills or abilities comparable to those of any gainful activity in which he has previously engaged with some regularity and over a substantial period of time.*
- Development Disabilities Services and Facilities Construction Act, section 102(7): *The term “developmental disability” means a disability of a person which –*
 - (A) (i) is attributable to mental retardation, cerebral palsy, epilepsy, or autism;*
 - (ii) is attributable to any other condition of a person found to be closely related to mental retardation because such condition results in similar impairment of general intellectual functioning or adaptive behavior to that of mentally retarded persons or requires treatment and services similar to those required for such persons; or*
 - (iii) is attributable to dyslexia resulting from a disability described in clause (i) or (ii) of this sub-paragraph;*
 - (B)) originates before such person attains age eighteen;*
 - (C) has continued or can be expected to continue indefinitely; and*
 - (D) constitutes a substantial handicap to such person’s ability to function normally in society.*
- USC Title 38, chapter 11 or 15: *Veteran’s benefits associated with disability. Multiple definitions, both temporary or permanent may be found in these chapters.*

Proof of disability is required for any household member for whom disability is claimed before priority points can be given to the household, or the individual can be reported as disabled. Receipt of one of the benefits as described above typically establishes the disability.

1.7.5 Definition of a Child

A child is defined as any household member who is under age 18.

1.7.6 Tribal Organizations

Any applicant that is a member of a tribal organization will be treated the same as any other applicant. Such applicants will need to apply through the sub-grantee that serves their county.

1.7.7 Applicant Privacy

Per the DOE WPN 10-08 issued February 1, 2010, "DOE is legally required, pursuant to 5 U.S.C. 552(b)(6), of the Freedom of Information Act, to keep confidential any specifically identifying information related to an individual's eligibility application for WAP, or the individual's participation in WAP, such as name, address or income information. Thus states and local service providers should extend that same protection to their client records for WAP."

Based on this guidance, a sub-grantee cannot release any identifying information about a specific applicant or address without the written permission of the applicant. Information may be released about recipients in the aggregate and which does not identify specific individuals. For example, information on the number of recipients in a county, city or a zip code does not compromise the privacy of the recipients.

The applicant privacy statement is required to be included on the application and reads as follows:

Pursuant to federal law (5 United States Code 552(b)(6) and 10 Code of Federal Regulations 600.153(f)), identifying information provided by you for determination of your eligibility for Weatherization Assistance and for the provision of services from the program will be considered confidential and, unless otherwise authorized or required by law, will not be shared with any other persons or agencies except for purposes directly related to the administration of the WAP.

1.7.8 Additional Eligibility Documentation Requirements

Home Ownership: The ownership of the building must be established and documented. If the unit is owned by individuals - either in whole or part - permission must be obtained from all owners before work takes place. This applies to owners/co-owners that may or may not reside in the unit. If the applicant is renting, additional information is required from the landlord/building owner. Please see Section 1.10 for additional guidance.

Energy Costs: The applicant is required to provide the name of their energy provider(s) and proof of energy expenses. The Energy Bill Release Form allows the sub-grantee to obtain pre-weatherization and post-weatherization energy costs for evaluation purposes related to the effectiveness of the work performed.

Other Documentation: The sub-grantee has the option to require the applicant to provide additional documentation for statements contained on the application or made by the client that are considered to be questionable. If additional documentation is required, the client file should be documented to support why the request was made.

1.7.9 Retention of Documentation

Documentation may be maintained in hard copy or through electronic storage methods, but must be able to be produced upon request. The sub-grantee is required to maintain a client file for every applicant. The client file will be retained for five years from the date the grant is closed this includes units where weatherization services have been provided, or closed due to subsequent ineligibility or other reason.

The sub-grantee must maintain a comprehensive list of all properties that received weatherization services through their sub-grantee. This list may not be purged, and must be available for review upon request. Additional information may be found in Section 1.14.

1.8 Income Eligibility

1.8.1 Income Standards

The total countable income of the household must be equal to or less than 200% of the federal poverty level for the household size. If the income exceeds 200% of poverty, the household ~~is~~ is not eligible to receive services. Any household that has one or more members who receive or has received Temporary Assistance for Needy Families (TANF – known as *Families First* in Tennessee) or Supplemental Security Income for the Aged, Blind or Disabled (SSI) in the twelve (12) months preceding the application for WAP is considered to meet income limits. Verification of receipt of benefits is required.

**Tennessee Housing Development Agency
WAP Manual**

WAP Income Standards and Percentage of Poverty by Household Size					
Effective 01/11/2019					
*Updated 02/06/2019 per WPN 19-3					
HH Size	Max Income	HH Annual Income: 0-50% Poverty . <i>Include HHs over Max Income with TANF/SSI Member</i>	HH Annual Income: 51-100% Poverty	HH Annual Income: 101-150% Poverty	HH Annual Income: 151-200% Poverty
1	\$24,980	\$0 – \$6,245	\$6,246 – \$12,490	\$12,491 – \$18,735	\$18,736 – \$24,980
2	\$33,820	\$0 – \$8,455	\$8,456 – \$16,910	\$16,911 – \$25,365	\$25,366 – \$33,820
3	\$42,660	\$0 – \$10,665	\$10,666 – \$21,330	\$21,331 – \$31,995	\$31,996 – \$42,660
4	\$51,500	\$0 – \$12,875	\$12,876 – \$25,750	\$25,751 – \$38,625	\$38,626 – \$51,500
5	\$60,340	\$0 – \$15,085	\$15,086 – \$30,170	\$30,171 – \$45,255	\$45,256 – \$60,340
6	\$69,180	0 – \$17,295	\$17,296 – \$34,590	\$34,591 – \$51,885	\$51,886 – \$69,180
7	\$78,020	\$0 – \$19,505	\$19,506 – \$39,010	\$39,011 – \$58,515	\$58,516 – \$78,020
8	\$86,860	\$0 – \$21,715	\$21,716 – \$43,430	\$43,431 – \$65,145	\$65,146 – \$86,860

*For families with more than 8, 100% of poverty level increases \$4,420 for each additional person. Therefore, for weatherization at 200% of poverty level, add \$8,840 for each additional person.

1.8.2 Definition of Income *Updated 02/06/2019 Per WPN 19-3

A. Income means Cash Receipts earned and/or received by the applicant before taxes during applicable tax year(s) but not the Income Exclusions listed below in Section C. Gross Income is to be used, not Net Income.

B. Cash Receipts include the following:

1. Money, wages and salaries before any deductions;
2. Net receipts from non-farm or farm self-employment (receipts from a person's own business or from an owned or rented farm after deductions for business or farm expenses);
3. Regular payments from social security, railroad retirement, unemployment compensation, strike benefits from union funds, worker's compensation, veteran's payments, training stipends, alimony, and military family allotments;
4. Private pensions, government employee pensions (including military retirement pay), and regular insurance or annuity payments;
5. Dividends and/or interest;
6. Net rental income and net royalties;
7. Periodic receipts from estates or trusts; and
8. Net gambling or lottery winnings.

C. Income Exclusions: The following Cash Receipts are ***not*** considered sources of Income for the purposes of determining applicant eligibility:

1. Capital gains;
2. Any assets drawn down as withdrawals from a bank;
3. Money received from the sale of a property, house, or car;

4. One-time payments from a welfare agency to a family or person who is in temporary financial difficulty;
5. Tax refunds;
6. Gifts, loans, or lump-sum inheritances;
7. College scholarships;
8. One-time insurance payments, or compensation for injury;
9. Non-cash benefits, such as the employer-paid or union-paid portion of health insurance;
10. Employee fringe benefits, food or housing received in lieu of wages;
11. The value of food and fuel produced and consumed on farms;
12. The imputed value of rent from owner-occupied non-farm or farm housing;
13. Depreciation for farm or business assets;
14. Federal non-cash benefit programs such as Medicare, Medicaid, Food Stamps, school lunches, and housing assistance;
15. Combat zone pay to the military;
16. Child support, as defined below in Section E;
17. Reverse mortgages; and
18. Payments for care of Foster Children.

D. Proof of eligibility should be included in the client file.

1. Availability of Supporting Documentation: For purposes of review and audit, each client file must contain an application from the client that contains the required demographics and income for the entire family living in the residence. The file must also contain evidence provided by the Subgrantee that the client is eligible to receive WAP services.

This evidence may include, but is not limited to, a memorandum from a third party certification office stipulating the income levels of the family or source documentation for each income source listed on the application. These documents can be stored electronically or retained in hard copy for each client.

2. Eligibility Determined by Outside Agency/Program: If income eligibility is determined by an outside agency or program, i.e. Low-Income Home Energy Assistance Program (LIHEAP) or the U.S. Department of Housing and Urban Development (HUD), any document used to determine eligibility, such as a copy of LIHEAP eligibility or a copy of the HUD building list, will suffice as evidence of client eligibility. This document and any related documents must be retained in the client file. The HUD eligible building list can be found at: <http://www.energy.gov/eere/wipo/housing-and-urban-development-multifamilyproperties-eligible-weatherization-assistance>
3. Self-Certification: After all other avenues of documenting income eligibility are exhausted, self-certification is allowable. However, evidence of the various attempts at proving eligibility must be contained in the client file, including a notarized statement signed by the potential applicant indicating that he has no other proof of income.

E. Child Support: Child Support payments, whether received by the Payee or paid by the Payor, are not considered Sources of Income to be added to the payee income or deducted from the

payor income for the purposes of determining applicant eligibility.

1. Payee: Where an applicant receives Child Support from any state program or individual during an applicable tax year, such assistance is not considered income for the purposes of determining eligibility (i.e., where an applicant receives Child Support, he or she does not add that amount to his or her calculation of income for purposes of determining eligibility).
 2. Payor: Where an applicant pays Child Support through a state program and/or to an individual, such assistance is not considered a deduction to Income for the purposes of determining eligibility (i.e., where an applicant pays Child Support, he or she may not deduct said assistance from his or her calculation of Income for the purposes of determining eligibility).
- F. Annualization of Income: Where an applicant receives income for a part of the applicable tax year, their partial income may be annualized to determine eligibility. Example: Applicant A received income during January, February and March. The method of annualizing income to determine eligibility could be multiplied by four to determine the amount of income received during the year. The method of calculating annualized income is to be determined by the Grantee and must be applied uniformly by all Subgrantees.
- G. Re-Certification: Applicant eligibility is valid for 12 months. If an applicant comes up for weatherization service after 12 months, their eligibility has lapsed and re-certification must occur prior to service.

1.8.3 Treatment of Income for Children and Illegal Aliens

Children: All **earned** income for a household member under the age of 18 is excluded. Earned income is defined by the Social Security Administration as “wages, net earnings from self-employment, certain royalties, Honoria, and sheltered workshop payments.

OR Earned Income is defined by CFR 416.1110

Illegal Aliens: Any household member who is an illegal alien will have his/her income from countable sources verified and counted in full as available to the household for purposes of determining if the household meets the income standards.

1.8.4 Verification of Income

All countable sources of income must be verified for all household members (and illegal aliens who may reside in the home). Acceptable forms of verification include check stubs, employment statements, award letters, tax statements and other documents that verify the gross amount of the income from that particular source. Proof of income eligibility and associated documentation must be included in the client file.

Applicants who have or are currently receiving SNAP, Families First (TANF) or TennCare may have income verification documented in ACCENT, Tennessee's eligibility system for the Family Assistance programs. If the household's circumstances have been verified and documented in ACCENT within twelve months from the date of application, that information may be used to establish income eligibility for WAP. A copy of the ACCENT screen(s) used to document the income must be retained in the client file. The client has the option to provide alternative income documentation if they have updated information from what was last entered into ACCENT.

Income Documentation Not Available

At times, an applicant may not be able to provide documentation of income for either themselves or a member of their household. As a last resort, and only after all other options have been explored, a self-declaration will be accepted. Such a statement must be provided in writing, and must be notarized. The client file must contain the notarized statement, along with an explanation of the steps taken to obtain alternative documentation, and why other forms of income verification could not be obtained.

Households without Declared Means of Support

A household that declares little to no income, and that does not have alternative means of support identified, requires careful interviewing to ensure that an accurate picture of the household's circumstances is captured. If appropriate, the sub-grantee will require the household to complete a Statement of Support Form and or Self Certification of Zero Income Form that helps support the household's statement of circumstances. The Self Certification of Zero Income and Statement of Support Forms are located in Chapter 18.

1.8.5 Calculation of Income

Income eligibility is based on the countable household income for the 12 month period preceding the application. Countable income that may have terminated during this timeframe is still countable.

Income documentation must be obtained for a three month period of time preceding or during the time of application processing. Income that was only received during a portion of the twelve month period may be prorated to reflect actual gross amount received during the timeframe. The income verification will then be converted to an annual income amount. If an individual is ineligible based on three months of income verification that is converted to an annualized amount, the household has the option to provide income documentation for the entire year.

Unemployment income will be prorated to determine the annualized income, based on the expected number of eligible weeks in the 12 month period. The annual income will be based on the weekly benefit amount multiplied by number of weeks in which a benefit was expected.

Multiply the total of the three months' worth of income by four to obtain an annual amount of income. Total all countable income sources to obtain the total annual income for the household.

1.9 Unit Eligibility

The building to be weatherized must be the primary residence of the applicant. The unit may be a single family stick-built or manufactured home, or may be a multi-family building. The applicant may either own or rent the residence.

1.9.1 Ineligible Units

Regardless of applicant households' income eligibility, no weatherization funds may be used to weatherize a dwelling unit that:

- Is designated for acquisition or clearance by Federal, state or local program within 12 months from the date weatherization would be scheduled to be completed.
- Has been or is in the process of being condemned.
- Is currently listed for sale, through either a real estate agent or privately.
- Unoccupied (other than a temporary absence of no more than three months in duration, with expectation of return. Temporary absence due to disaster recovery will be evaluated on a case by case basis.)
- Secondary or vacation homes.
- Mobile homes that are not stationary, and can be moved to multiple locations.
- The resident has been or is in the process of being evicted.
- The property has been foreclosed, or is in the process foreclosure.
- The applicant is deceased or no longer residing in the home, and a spouse does not currently reside in the unit who is willing to assume applicant status.
- Which has been weatherized previously with WAP funds, and exceptions found in Section 1.14 do not apply.

1.10 Rental Unit and Landlord Requirements

The eligibility of a household is determined by occupant, not by the ownership of the dwelling unit. Therefore, income eligible applicants who rent their homes as well as those who own their homes are equally eligible.

When weatherizing a building, no undue or excessive enhancement shall occur to the value of the property. In the case of a renter-occupied unit, whether a single or multi-family building, the benefits of the WAP must accrue to the benefit of the applicant. As a condition of eligibility and before any rental dwelling unit can be weatherized, the building owner/landlord must agree to have the building weatherized. A *Landlord Agreement* must be signed by the building owner or his authorized agent and a fully executed copy maintained in the client file. The applicant is to be provided a copy of the agreement for their records. There are separate *Landlord Agreements*

for single-family and multi-family buildings. A copy of these agreements can be found in Chapter 18.

When signing this agreement, the landlord agrees to the following:

1. The benefits of the weatherization shall accrue primarily to the lessee;
2. The rent for the property identified above shall not be raised for a period of one year (three years for multi-family buildings) from the completion date of the weatherization work, unless the increase is demonstrably related to matters other than the weatherization work performed. This rent freeze remains in place for a period of one year (three years for multi-family) from date of completion of the weatherization work, even if the applicant above no longer resides in the property;
3. The Owner (or authorized agent) agrees that the lessee of the property identified above will not be evicted without legal cause (non-payment of rent, etc.) for a period of one year from the date of the completion of the weatherization work;
4. If a complaint regarding a rent increase or eviction action is received by the sub-grantee from the lessee of the property identified above, the Owner (or authorized agent) agrees to immediately provide the sub-grantee, upon request, written information that the terms of this Agreement have not been violated;
5. No undue or excessive enhancement shall occur to the value of the property identified above;
6. There is no known plan for government acquisition or clearance of the property within 12 months of its weatherization under the WAP;
7. Permission is granted for the sub-grantee to conduct or to make arrangements for the following activities:
 - (a) Survey and inspection of building inside and outside;
 - (b) Installation of weatherization materials as authorized;
 - (c) Supervision of installation;
 - (d) On-site inspection of all completed work; and
 - (e) Such other particulars as may be attached to this Agreement;
8. The terms of this Agreement shall be binding on the parties hereto, their heirs, executors, administrators, representatives, successors and assigns; and
9. If this Agreement is not adhered to by the Owner (or authorized agent), the cost of weatherization shall be reimbursed by the Owner to the sub-grantee, and returned to the WAP.

It is the responsibility of the sub-grantee to ensure compliance with the landlord agreement. Following completion of weatherization, if a tenant believes that his or her landlord is violating the terms of the agreement, then he or she should report the matter to the sub-grantee. The sub-grantee should then contact the landlord for a response. If the sub-grantee determines that the landlord's response is inadequate (does not justify a rent increase, etc.) then the sub-grantee should consult with State Office for further guidance.

Other possible landlord abuses include attempts to profit from the program by:

- Eviction of low income tenants to raise rents and obtain more affluent tenants;
- Quick sale of building at a price that includes the weatherization investment; and
- Deliberate movement of tenants from one unit to another to obtain more weatherization services.

Since sub-grantees are in a better position to observe and detect patterns which indicate such abuses, it is the responsibility of the sub-grantee to contact THDA when such abuses have been identified. It is the expectation that renters and owners receive equitable treatment. Such treatment is mandated by the DOE which is committed to increasing the national percentage of low-income renters served by the WAP.

1.11 Multi-Family Buildings

A building that has multiple (two or more) living units under a single roof is considered a multi-family building, regardless if renter or owner occupied. A single unit within a multi-family building **cannot** be weatherized as the entire building must be considered when providing weatherization services.

Work orders for eligible multi-family units will be sent to THDA to review before the job is posted for bids.

Multi-Family Application Form:

The building owner or authorized agent may initiate the process by completing and submitting a *Application for Multi-Family Buildings*. Residents of the building must also complete and submit an *Application for Multi-Family Building Residents*. The purpose of obtaining an application for each occupied unit is to gather unit demographics and to determine the number of units that are occupied by an eligible household. This information is required even if the building has been determined to meet minimum occupancy standards through inclusion on one of the DOE published lists.

A single resident in a multi-family building may apply for WAP utilizing the standard *Application* form, but additional residents must also apply in order to determine if the minimum occupancy requirements of eligible units exist for the multi-family building. These forms may be found in Chapter 18.

Occupancy Standards

Before services can be provided, the multi-family building must be determined to meet minimum eligibility standards regarding the number of units with eligible applicants. These standards are:

- Four or less units must have a minimum of 50% of all units occupied by an

eligible household.

- Five or more units must have a minimum of 66% of all units occupied by an eligible household.

If a multi-family building is included on the most recent DOE building lists with either USDA or HUD established eligibility, then the minimum occupancy eligibility standards are considered to have been met. The building is still subject to all other eligibility requirements. For any multi-family building not included on one of the DOE published lists, eligibility for residents of the units must be determined to establish if the minimum number of units for the size of the building contain household that qualify for the program. Unoccupied units at the time of eligibility determination cannot be used to meet the minimum occupancy standards, although they are counted in the total number of units within the building. If the minimum occupancy eligibility standards are not met, then no unit in the building may receive weatherization services under the program.

Multi-Family Agreement

As a condition of eligibility, the owner or his authorized agent must sign a *Multi-Family Landlord Agreement*. A copy of this form may be found in Chapter 18. If the multi-family building consists of only owner-occupied units, no rental agreement is necessary. However, the building must still meet all eligibility requirements.

The owner of a multi-family building with renter occupied units will not be required to participate financially in the cost of providing the WAP.

If services are provided, the weatherization of the entire building must be addressed, including all common areas and residential living space, even if a unit is not occupied by an eligible household. The maximum amount of DOE funds that can be spent on the multi-family building multiplied by the number of residential units currently occupied by eligible households as established by the sub-grantee. If sufficient funds are not available to address the entire building, then the building must remain on the wait list until funding is available.

Example: A multi-family building has 10 residential units. It has been determined that 7 of the units are occupied by eligible households, 2 units are occupied by ineligible households, and 1 unit is currently vacant. The multi-family building has a lobby and a laundry room that is considered to be shared space for all residents.

The maximum amount of DOE funds that may be spent on items identified in the pre-energy audit for this building is \$52,787.00 (7 Units occupied by an eligible household multiplied by \$7,541.00). When weatherizing the building, all ten units and the common areas will be addressed.

1.12 Client Notification of Eligibility

Every applicant will receive a written notice once the sub-grantee has determined eligibility. If the application is being denied, the applicant must be informed of the reason for denial. A copy of all client notices must be retained in either hard copy or electronically, and be available for review upon request. Notice templates with approved language are located in Chapter 19.

1.13 Appeal Rights

All client notices must include language that notifies the applicant that they have the right to appeal decisions made on their case, and how they may initiate an appeal request. Appeals or complaints received by a subgrantee by current clients due to workmanship, crew damage to the home, or inferior materials are to be handled in an expedient manner. If a resolution cannot be met satisfactorily the subgrantee must contact THDA for assistance.

Sub-grantees are required to have a written appeal procedure. It is important that the appeal/complaint be well documented. Include pertinent information such as client information, job number, stated problem, root cause of the situation, and resolution. Any substantiating evidence should be included such as photos, staff written comments, defective materials, additional costs, etc.

Each sub-grantee will be required to establish written procedures for appeals, and to include these procedures in their operational plan that is submitted to the State for review and approval. The appeal process must be a two-step process, with the initial appeal request submitted to the sub-grantee for consideration. If the applicant is not satisfied with the appeal outcome on the local level, the procedures must allow for submission of appeal to the State. The State Agency that oversees the program has the final authority, and any decision made will be final.

Complaints are costly and doing a job correctly the first time is paramount to a low cost program. Each sub-grantee, as part of their complaint procedure will keep a log which includes, at minimum, the job number, reason for appeal/complaint, associated costs to obtain a resolution. A regular review will be completed to see if trends exist that need to be addressed. Trends may indicate if the complaint points to the same employee, same material failure, same type of damage, etc. The analysis should result in corrective actions being implemented to prevent further occurrence.

1.14 Re-Weatherization

Weatherization is specific to a building, not the applicant. Any home or unit that has received services through the WAP since **September 30, 1994** will not be eligible for re-weatherization unless:

- A federal or state natural disaster was declared for the area in which the unit is located, **and**;
- The building was damaged by fire, flood or act of GOD during this natural disaster, **and**;
- Repair of the damage was not covered by insurance or other forms of compensation, **and**;
- The unit has been deemed salvageable by local authorities.

Homes that were weatherized under WAP prior to September 30, 1994 may be eligible for re-weatherization. The current resident would have to apply for WAP, and meet eligibility requirements. Any building that is re-weatherized must have a new energy audit that identifies the specific measures for the home that met cost saving requirements, or are necessary energy-related health and safety measures.

Maintaining a List of All Weatherized Units

Each sub-grantee must maintain a listing of all units that have been weatherized, adding new units as weatherization work is completed. This list should be by full address, with county, and include the job number and the month and year in which weatherization was performed for each job. The sub-grantee must check each application against their list of previously weatherized homes to see if the home has previously received WAP. The list of weatherized units is not to be purged.

Reporting of Re-Weatherized Units: All units that are re-weatherized must be tracked and reported separately from units that are receiving initial weatherization services.

Priority: Priority is to be provided to homes that have never received WAP over those who are requesting re-weatherization, with the exception of those impacted by a natural disaster. Refer to Chapter 2- for more details.

Cap on Number of Re-Weatherized Units: The re-weatherization of dwelling units is subject to a 10% cap. No sub-grantee will use more than 10% of its funding level for labor, materials and program support to re-weatherize eligible dwelling units.

1.15 Case Closure or Termination

Changes to household circumstances may occur while the household is on the wait list, or during the period of time when weatherization of the home is being performed. If the sub-grantee becomes aware of a change that could impact eligibility, they are to take appropriate action and update the priority points when changes are reported.

If the household or unit circumstances that result in ineligibility occur after Weatherization work has commenced, the sub-grantee must evaluate the situation on a case by case basis to determine the best way to bring the case to closure without leaving work partially done. Although each case is different, typically work on a measure(s) that a contractor has begun will be completed, along with those items related to the initiated measure. THDA may be contacted for additional guidance for individual situations.

Anytime an applicant has his/her case closed, a written notice must be provided. If the current address of the applicant is unknown, the notice will be sent to the last known address of the applicant in hope a forwarding address is on file with the Post Office. The notice must advise of the reason(s) for the action and advise the client of his/her right to appeal the decision.

1.16 Right to Reapply for WAP

**Tennessee Housing Development Agency
WAP Manual**

Any applicant who has a previous application for the WAP denied, or who had their case closed, has the right to reapply for the program during a period of time when the sub-grantee is accepting applications.

CHAPTER 2 - PRIORITY AND WAIT LIST

Once an application for WAP has been approved, the case will be added to a wait list. The sub-grantee sub-grantee is to maintain a separate wait list for each county in their service delivery area. Cases will be removed from the wait list as they are selected for service or their case is terminated or closed for other reasons. Cases are sorted on the list in order of priority.

The WAP System will maintain a priority list for each county. This list will be continuously updated as new applicants are approved and other applicants are either selected for service or have their applications terminated as the household is no longer eligible for the program. Each sub-grantee shall utilize the current priority report from the system when selecting the next applicant to be served.

Priority

The purpose of the Priority Points System is to identify those households most in need of weatherization services, and providing services to those units first. The limited amount of funding prevents all applicants from being served in a timely manner, so it is critical that households most in need are served first. The Priority Points System provides for a fair and consistent means of evaluating and selecting clients for service under WAP while ensuring funds are spent in the counties where they were allocated.

Priority is established at the point the initial application is approved, and valid for 12 months. Households will be served in order of priority unless the case is under deferral or the funds available are not sufficient to serve the unit. If a unit cannot be served due to insufficient funds, the job will remain on the priority list.

Federal program regulations require priority be given to households that include members who are elderly, disabled (per Section 1.7.6) or where there are young children in the home. Additionally, lower income households that pay a higher percentage of their income for energy costs, or who are considered high residential energy users are also given priority. Tennessee has defined households with a child under age 6 at the time of application as a household with young children. Points for an elderly household member are based on the individual's age at the time of application. If the household contains multiple elderly household members, points are only provided once, based on the age of the eldest household resident.

Tennessee highly encourages agencies to leverage funds from other programs. This leveraging of funds allows a home that is in need of both repairs and ECMs to have the issues addressed by utilizing funds from multiple sources at the same time, thereby addressing the home in its entirety.

The maximum number of points a household can have is 100. If more than one household in a county has the same number of points, the application date will serve as the tiebreaker.

Tennessee Housing Development Agency
WAP Manual

In this instance, the household with the oldest application date will be listed before a household with the same number of assigned points. If there is still a tie, the household with the greatest number of elderly individuals will be given priority. In addition, re-weatherization jobs will be served after all new applicants with the same number of priority points.

Priority points are assigned based on four categories:

1. Countable Income (25 Point Max)
2. Vulnerable Household Members (50 Points Max)
3. Households that have a High Energy Burden (15 Points max)
4. Households that are considered to be High Energy Users (10 Points max)

The charts on the following page provide the points assigned to each category. The sub-grantee must utilize this chart when determining the number of priority points assigned to a specific job. The number of points established for each applicant must be entered into the WAP system whenever a new application is approved.

PRIORITY POINT ASSIGNMENT
(Maximum Total Points Possible = 100)

Countable Income (25 Points Max)	
% of Federal Poverty Standards	Points
0 - 50%	25
50.01% - 100%	20
100.01% - 150% *	10
150.01% - 200%	5
<p><i>Note: Do not include any HH member who is an illegal alien when determining the size of the family, but do count their income. *Allow 10 points for a HH where eligibility is established as the result of receipt of TANF (Families First) or SSI within the 12 month period preceding eligibility determination. A HH has the option to provide proof of HH income and have points assigned based on HH's annualized earnings instead.</i></p>	

Vulnerable Household Members (50 Points Max)	
Household Includes a Member with Following Characteristic	Points
Elderly (age 75+)	20
Elderly (age 60-74)	15
Disabled (as defined in Section 1.6.6)	15
Child under age 6 years of age	15

*If multiple elderly members reside in the HH, use the age of the oldest mem to determine countable points

Energy Burden (15 Points Max)	
% of Income Used for Home Energy Costs*	Points
19.01% or higher	15
15.01% - 19%	10
8.01% - 15%	5
8% or less	0

*Calculated by dividing the annual energy costs by the total countable annualized income for household.

**Tennessee Housing Development Agency
WAP Manual**

High Residential Energy User (10 Points Max)	
Household Annual Energy Costs**	Points
\$3,000 or more	10
\$1,900 or more	5
\$1,899 or less	0

*Average annual energy costs for a low-income household in the south region is \$1,858 (LIHEAP Home Energy Notebook for FY09, table A-3b)

**If energy costs are included in the rent, determine the annual energy costs by dividing the total energy costs for the building by the total number of building units.

Priority Points for a Multi-Family building will be calculated as follows:

1. Determine the number of points for each unit occupied by an eligible household
2. Divide that number by the total number of units in the multi-family building
3. The result is the number of priority points for that building

CHAPTER 3 COMPLIANCE WITH SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT

The WAP requires compliance with Section 106 of the National Historic Preservation Act. Such compliance is necessary to protect homes that have historical significance and that may be eligible for inclusion on the National Register of Historic Places. It is critical to ensure that any weatherization measures performed do not adversely impact the historic significance of those homes.

The Tennessee State Historic Preservation Office (SHPO) has reviewed several hundred Weatherization jobs, and has determined that there were no National Register of Historic Places listed or eligible properties affected. As a result, the SHPO has provided the Tennessee WAP with a Categorical No Historic Properties Affected designation. This means that WAP jobs no longer have to be referred to the SHPO office for review prior to performing weatherization work.

Although properties no longer have to be referred, we still must collect the year in which the unit was constructed, and capture this information in the case file and on the WAP database. This information is required in order to comply with federal reporting requirements for the program.

CHAPTER 4 – PRE-ENERGY AUDIT

4.1 Purpose of the Pre-Audit

Every unit must have a pre-energy audit conducted by an approved energy auditor prior to any work taking place that is funded under the DOE WAP. An energy audit is a set of procedures that evaluates a home's existing condition and outlines improvements to the energy efficiency, health, safety, and durability of the home. As part of these procedures, every unit will use the Weatherization Assistant (WA) audit tool to identify those ECMs and related incidental repairs that meet minimum cost effectiveness standards.

Visual inspection, diagnostic testing, and numerical analysis are three types of pre-audit procedures. Although this list is not meant to be all inclusive, an energy audit includes some or all of the following tasks, depending on the specific unit:

- Inspect the building envelope and its mechanical systems to gather the information necessary for decision-making.
- Evaluate of the current energy consumption along with the existing condition of the building.
- Diagnose areas of energy waste, health and safety, and durability problems related to energy conservation.
- Conduct diagnostic tests. If unable to conduct the tests, document the work file with the reason why
- Determine if the occupants have current health conditions that could be exacerbated as a result of the weatherization work to be performed
- Recommend approved ECM and ECM related incidental repairs that meet or exceed minimum SIR
- Project savings expected from ECMs.
- Estimate labor and materials costs for ECMs that are not provided by the audit tool.
- Diagnose current and potential health and safety problems and how they may be affected by proposed changes.
- Provide client education, including a review of the materials provided in the Client Education kit
- Install CFLs provided in the client education kit, with the applicant's permission. Report to sub-grantee the number of CFLs installed in the home.
- Educate residents about their energy usage and your proposed energy retrofits.
- Take pictures of the home to document pre-weatherization status.
- Take pictures of the home and surrounding area for SHPO if the home is age 50 years or older
- Provide written documentation of the energy audit and the recommendations offered.
- Create a detailed work order for the unit

The assessment process should begin with a review of the client application prior to meeting and interviewing the client. The energy auditor must always show respect and understanding for the client. Including the client as part of the auditing process often yields important clues about the home and the living conditions related to health and safety, comfort, and energy efficiency.

Prior to beginning the interior walk through of the building, the energy auditor should sketch the footprint with exterior dimensions. The sketch and case notes should include the following details:

- Northern side of the building for orientation purposes
- Building type and framing
- Foundation type and percent above grade
- Differentiate heated and unheated sections
- Siding type and condition
- Additions, porches, attached or tuck-under garages, cantilevers
- Numbers, types, condition and orientation of windows and doors
- Roof type, covering and condition
- Chimney exhaust vents, and possible safety concerns
- Water management system issues (downspouts, flashing, grading, etc...)
- Notes of anything of interest that needs to be considered when conducting a thorough energy audit.

4.2 Expiration of a Conducted Pre-Energy Audit

Sub-grantees should plan their work so that they are not performing energy audits on homes too far in advance of initiating the weatherization work contract. A lengthy delay between the time the pre-energy audit was conducted and the time the job is posted for bid can result in changes to the needs of the building, thus requiring changes to the original work order. At maximum, no energy audit that was conducted one year or more prior to the posting of the job for solicitation of bids will be considered valid.

4.3 Energy Auditor Assignment

When a unit has been selected from the priority wait list for service, the sub-grantee will assign an auditor to conduct the pre-energy audit. Audits may only be conducted by individuals who have met the minimum auditor qualifications and have been approved by that sub-grantee. Please reference Chapter 10 for specifics.

Sub-Grantees have flexibility in determining how they wish to assign energy audits to their available pool of approved auditors, provided they are complying any related state and federal procurement requirements. Sub-Grantees must consider overall funding for the program and cost effectiveness when considering if they will assign work to staff or contract auditors.

4.4 Timeframe to Complete a Pre-Audit Once Assigned

There is not a specific number of days in which an auditor must complete a pre-energy audit once it has been assigned, per THDA policy. It is the sub-grantee's responsibility to manage the work in a timely and responsible manner. The sub-grantee may set internal policies regarding audit timeliness and subsequent penalties at their own discretion.

4.5 Client Notification of Pre- Audit to be Performed

The applicant who had their home selected for weatherization must be notified of the intention to conduct a pre-energy audit. This notification will include the name of the energy auditor assigned to conduct the audit.

It is preferable to provide this notice in writing, using the *Pre-Audit Notification Notice* template that can be found in Chapter 18. However, advance notice can also be provided verbally. The auditor assigned to the case must carry government issued identification and provide this identification to the client upon request.

4.6 Tennessee Weatherization Field Guide and Standard Work Specifications

The Tennessee Weatherization Field Guide and Standard Work Specifications (SWS) serve as additional resources for energy auditors and contractors, providing technical guidance related to the selection and installation of weatherization activities. This guide may be found online at: <https://thda.org/business-partners/weatherization>.

4.7 Weatherization Assistant (WA) - NEAT/MHEA

The Weatherization Assistant (WA), sometimes referenced as NEAT/MHEA, was developed by Oak Ridge National Laboratory (ORNL). This automated audit tool is designed to assist states and sub-grantees implement the DOE WAP. It serves as the umbrella program for the National Energy Audit Tool (NEAT) and the Manufactured Home Energy Audit (MHEA).

The WA features a Windows graphical user interface. Data input is provided to the program through Microsoft Access® forms which can be used in either “form” view (data are displayed on forms which are filled in) or “datasheet” view (as would be seen in a spreadsheet

application). All input and output data are stored in a relational database, enabling interaction with other management or financial database tools. Context-sensitive help is available for all input fields.

In addition to serving as the umbrella program for NEAT and MHEA, the WA (Version 8.9) provides many optional features that are useful in implementing and administering the WAP. These optional features include:

- Extensive contact information for sub-grantee personnel, clients, contractors, and material suppliers;
- Expanded client application information;
- Recording of health and safety issues, with automatic generation of health and safety retrofit measures if desired;
- Recording of space-heating system, water heater, and blower door diagnostic measurements;
- Detailed work orders which can be generated either automatically from NEAT or MHEA recommendations or from user-defined listings of measures;
- Status tracking of clients, applications, audits, work orders, inspections, and contractor payments;
- Tracking of payments and balances in multiple funding sources;
- An inventory of materials and supplies automatically updated by completed work orders;
- Report generation;
- A Geographic Information System (GIS) which allows mapping of each individual dwelling or any group of dwellings; and
- Ability to attach digital photos to each client, audit, or work order. A best practice may be to provide to sub-grantee with a disc that includes all pictures and is labeled with the job name and number.

Tennessee's WAP requires that all energy audits for single family homes (stick or mobile home) and multi-family units with less than 25 individually heated and cooled units be performed utilizing the WA -NEAT/MHEA tool.

The appropriate audit tool for use on any multi-family building with units that are not individually heated and cooled, or that has 25 or more living units, will be determined on a case by case basis and requires advance consultation with THDA prior to proceeding.

4.8 Weatherization Assistant Library

THDA has created a standardized library that reflects state wide average costs for measures, energy, and health and safety in Tennessee.. **The default libraries that are included in the downloading of WA tool may not be used.** Any exception to use of the state standard library must be approved by THDA.

It is the responsibility of the sub-grantee to ensure that a copy of the TN Standardized Library and the correct version of the WA auditing tool has been provided to every approved auditor (staff and contract) computers, and monitor for correct usage of the tool. The sub-grantee will be responsible for integrity of pre-loaded active measures, the associated costs, and comments in the WA tool to ensure uniformity.

The sub-grantee will periodically review WA libraries to ensure:

- Costs of the measures
- Supply library
- Health and safety measure cost
- Fuel costs
- Whether the measure is active or not

THDA may periodically update WA costs, measures, comments, and fuel cost, at its discretion. Any updates that are performed will require the sub-grantees to provide input regarding not only price trends, but also concerns related to bid prices that are artificially high, and could result in a measure being incorrectly identified or no longer cost effective.

A copy of the current state library may be found in the appendix.

4.9 Allowable Measures

While many homes audited may require work beyond what is permitted under WAP, the energy audit is to only identify measures that meet the following:

- An allowable **ECM** (as defined in DOE's Appendix A to Part 440 of the federal regulations or as permitted under Tennessee's policies and procedures). ECMs must be cost justified by the audit tool, with an individual SIR of 1.0 or greater.
- **Incidental Repairs (IR)** that are related to a specific energy conservation measure and that are necessary for the effective performance or preservation of the energy conservation measure. *Every Incidental Repair must be clearly linked to the ECM it supports in the case file documentation.* Incidental Repairs must be cost justified, with

the cumulative SIR.

- **Low-Cost or No-Cost Measures** as defined later in this manual.

- **Health and Safety** measures are actions necessary to maintain the well-being of the household members and the workers in the home, and the measure is necessary to effectively perform or as a result of the weatherization work. These do not have to be individually cost justified, but there is a limit on the amount of funding that can be used. Health and Safety (H&S) measures can be recommended provided ECMs are also being recommended for the home. Allowed Health and Safety measures are defined in Tennessee's approved Health and Safety Plan, found in Chapter 8.

4.9.1 Savings-to-Investment Ratio (SIR)

The WAP requires that all ECMs and related incidental repairs be cost effective or cost justified. This is established by the ECM achieving a SIR, of 1.0 or greater, as determined by the audit tool. This means that the energy efficiency measures have been determined by the energy audit to have an energy savings or payback greater than the cost to install the measure, as estimated by the cost library in the audit tool.

All individual ECMs must have a SIR greater than or equal to 1.0 (with the exception of Air Sealing see section 4.16.1) before it can be approved to be included on the work order. The individual ECM SIR value is on the Recommended Measures report, which generates from the WA. The SIR value of an ECM is under the heading of "Energy Savings Measures Economics".

Incidental repairs are **not** the same as ECM's or Health and Safety measures. Incidental Repairs (i.e., those associated with the installation of an ECM and needed to maintain the integrity of the ECM) can be included on the work order if the cumulative SIR is greater than or equal to 1.0. Please remember – the audit must identify the specific ECM that requires the Incidental Repair to be performed. The package of measures refers to all the ECMs recommended and all the incidental repairs to be performed in the home. The Cumulative SIR listed on the Recommended Measures report is this calculation of the SIR for the package of measures. It is the responsibility of the sub-grantee to ensure that the estimated cost of the IR as entered into the audit tool is reasonable when calculating the SIR values.

Federal regulations under Title 10, 440.18 (d) (9) states: "The cost of incidental repairs if such repairs are necessary to make installation of weatherization materials effective". Failure to follow these guidelines, or installation of ineligible measures or those that do not meet minimum SIR standards can make the sub-grantee subject to questioned costs. Please refer to DOE WPN 12- 09, and all subsequent program notices for further guidance.

Note: Estimated costs in the audit tool will allow the ECM/IR to be included in the work order if

it meets the minimum SIR values. However, the actual bid amount for each ECM/IR must be reviewed to determine if the SIR is still met based on actual expected cost. If the bid amount is greater than the estimated cost, and the ECM/IR no longer meets the minimum SIR requirements, the ECM and all IRs related to that ECM must be removed from the work order prior to proceeding with weatherization of the unit.

Health and Safety addresses issues to ensure that weatherization activities do not cause or exacerbate health and safety problems for worker and occupants. These expenditures are not required to meet SIR values. Per 10 CRF Part 440, allowable energy related health and safety actions are those actions necessary to maintain the physical well-being of both the occupant and /or weatherization workers. Deferral may be necessary if health and safety issues are not accurately addressed. Please refer to the Tennessee Health and Safety plan for allowable measures, in Chapter 8.

4.10 Weatherization Assistant (WA) User Guide

The WA audit tool, User Guide and associated support files may be obtained from either the WAPTAC website or the ORNL website (Version 8.9 is required):

<http://www.waptac.org/Weatherization-Assistant/Weatherization-Assistant-Manuals.aspx>

http://weatherization.ornl.gov/assistant_obtain.shtml

4.11 Diagnostic Tests

Measurement instruments provide important information about a building's unknowns, such as air leakage and combustion efficiency. Energy auditors are required to perform diagnostic tests on each home, as appropriate for that specific unit. These tests are critical to conducting a thorough audit of the unit, and identifying the appropriate weatherization measures for the home.

4.11.1 Blower Door

Every energy auditor is required to have access to a blower door and to be proficient in its use. A blower door test is a critical component of the pre-energy audit process, as it measures the current CFM value of the unit and assists in the identification of air infiltration opportunities. As appropriate for the unit, a pressure pan test is also required for units with existing duct work to identify any current duct leakage, and to measure existing fan flows (kitchen and bath) to meet the requirements of ASHRAE 62.2-2016.

All blower door equipment is required to be recalibrated every two years to ensure accuracy. No specific brand of door is required.

It is expected that every home will have a pre-energy and post-energy blower door test performed. However, if the auditor is unable to perform a blower door test as part of the pre-

energy audit, the case file must be carefully documented to reflect why the test was unable to be performed. The situation must be further evaluated to determine if the conditions that prevented the blower test from being performed should result in a deferral of the job until the conditions are corrected.

Note: If a blower door test cannot be performed, air sealing measures are not allowed. It is the responsibility of the sub-grantee to ensure that if the work order includes air sealing measures, then a blower test was performed and a pre-weatherization CFM reading is provided by the auditor.

If the blower door test cannot be conducted due to the living conditions of the home (trash, hoarding/clutter, animal feces, insect infestation, etc...), the home should be deferred until the applicant can correct the condition that prohibits the blower door test. When the structural integrity of the house prohibits use of the blower door, deferral may be necessary until the home is stable enough to allow the diagnostic test.

If the blower door test cannot be conducted due to health of the applicant (asthma or other breathing related health conditions, for example) try to arrange to have the applicant leave the home so the test can be conducted. If this is not possible, or the reason the blower door test cannot be conducted is reasonable, the auditor may proceed without performing the test on a case-by-case basis. The case file must be carefully documented to explain why the test was not possible, with the sub-grantee's knowledge and approval to not conduct the test.

The fact that a pre-audit blower door test is not conducted does not exempt the auditor from attempting to conduct a post-audit test.

Note: An advanced duct airtightness test involves pressurizing the ducts with a blower door pressurizing the home, which allows for the duct leakage to the outside to be determined. While this method is not required, auditors and contractors who have this knowledge and skill-set and are able to conduct such diagnostic test.

4.11.2 Manometer Use and Certification

Air leakage from one zone to another requires a hole between zones and pressure to push the air through the hole. Air leaking into a hole is often called infiltration and air leaking out is called exfiltration. A manometer allows the user to see pressure differences and airflow.

Airflow is measured in cubic feet per minute (CFM). Pressure difference is measured in Pascal (Pa) across different zones. In WAP, a manometer is used to identify how much air is infiltrating into a home. It is also used to identify zones where the home is more connected to the outside. By identifying the zones an Auditor or Contractor can direct crews to identify where air sealing will be the most beneficial.

Another use of a manometer is the diagnostic testing of the HVAC ductwork. In conjunction, a manometer is used with a pressure pan to identify leaks in the ductwork. Pressure pan tests can help both auditors and contractors identify leaky or disconnected ducts, located in intermediate zones. A pressure pan test is required on all site-built and mobile homes where ductwork is present and readings must be documented at pre- and post-audit. With the house depressurized by the blower door to -50 Pascals with reference to outdoors, pressure pan readings are taken at each supply and return register. If the ducts are perfectly sealed with no leakage to the outside, no pressure difference (0.0 Pascals) will be measured during a pressure-pan test. The higher the pressure reading, the more connected the duct is to the outdoors. As a result of the pressure pan readings, the following action should be taken:

- If three or more readings are greater than 2.0, examine duct system for leaks and repair, especially if ducts are located outside the conditioned living space.
- Following weatherization work, no more than three registers should have pressure-pan readings greater than 1.0 Pascals. No single reading shall be greater than 3.0 Pascals. Readings for 1.0 Pascal or less is the goal.

4.11.3 Combustion Safety and Efficiency Testing

Any living unit that includes a combustion appliance, or where there is an attached garage or basement, will require the energy auditor to conduct combustion safety and efficiency testing. Combustion analyzers sample combustion by-products to evaluate safety and efficiency. Fuel leaks, fuel input rate, combustion efficiency, carbon monoxide levels, and worst case drafting are some of the tests performed.

4.11.4 Infrared Scanning (Optional)

Although energy auditors are not required to use an infrared camera when conducting the energy audit, it is a valuable diagnostic tool. Viewing building components through an infrared scanner, shows differences in the temperature of building components inside building cavities. The use of this tool is encouraged, but not mandated.

4.11.5 Other Testing Equipment

Energy auditors will utilize additional testing equipment as needed based on the specific needs of the individual unit and as defined in the Tennessee Weatherization Field Guide. Technical assistance and training may also be reference sources for the use of additional equipment when conducting audits.

4.11.6 Calibration of Equipment

Auditors must properly maintain all diagnostic test equipment including calibration according to the manufacturer's recommended schedule. The sub-grantee shall be responsible to ensure that diagnostic equipment has been inspected and recalibrated per the manufacturer's instructions. This applies to not only sub-grantee provided equipment, but also contract auditor equipment.

4.12 Client Health Assessment

An important part of the pre-energy audit process is to conduct an evaluation of any health concerns that a household member may have and that could be impacted by the weatherization work to be performed. Any relevant information shall be documented in the file notes, and shared with the sub-grantee.

4.13 Client Education

Client education is a critical component of the pre-energy audit, and continues throughout the process of weatherizing the home. Client education prolongs the life of the installed measures and equipment. Tips on energy saving activities should be included, along with information on carbon monoxide and other hazards. The applicant shall be advised of any potential health and safety concerns that are identified as part of the pre-energy audit and that require immediate action. In some extreme instances, local authorities may need to be notified so appropriate action can be taken to protect the safety and health of the residents.

A client education checklist should be completed during the pre-energy audit, and reviewed as part of the post-audit. A completed copy is to be retained in the client file.

4.13.1 Client Notification of Health and/or Safety Risks

In extreme circumstances, the current conditions of the home may pose serious risk to household members. It is the responsibility of the auditor to ensure the applicant is aware of these risks. The DOE requires that the client be notified in writing if such hazards are identified. The client is required to sign the notice to acknowledge their receipt. A copy of the signed notification must be retained in the client file.

4.13.2 Client Materials

The client is to be provided the following brochures during or immediately following the pre-energy audit:

- Mold, Moisture and Your Home (all)
- Renovate Right (Provided if home is pre-1978)
- A Citizen's Guide to Radon (all)

- Radon Informed Consent Form (Radon zones 1 and 2)

4.13.3 Client Education Packet

A supply of Client Education Kits will be provided to the sub-grantees, through a partnership with the Tennessee Valley Authority (TVA). These kits are being provided without charge to the WAP. Every home that has a pre-energy audit will receive a client education kit, with assigned auditor delivering the kit and reviewing the contents with the applicant. Included in the kit will be the following items:

- 20 switch and outlet sealers
- Four 13-watt compact fluorescent lights (CFLs)
- Four 23-watt compact fluorescent lights (CLFs)
- Two LED nightlights
- Energy Thermometer Gauge Magnet
- TVA Energy Wheel
- TVA Energy Saving Brochure
- Assorted informational materials related to energy conservation

The auditor conducting the pre-energy audit is to install the CFL bulbs included in the kit in the areas of the home where they will be best utilized. As part of a completed energy audit, the auditor must report to the sub-grantee the number of CFLs installed during the pre-energy audit, which the sub-grantee will enter into the WAP database for purposes of data sharing with TVA.

4.14 Reporting Applicant Changes to the Sub-grantee

When initiating or conducting the energy audit, the auditor may discover that changes have occurred that could have an impact on program eligibility. Although not all inclusive, examples of such changes would be: an applicant who is no longer residing in the home, a home that has been listed for sale or is in the process of foreclosure, units impacted by a natural disaster, etc. It is the responsibility of the energy auditor to contact the sub-grantee and notify them of the current circumstances and obtain guidance on how they are to proceed. Some changes may require the pre-energy audit to be delayed until on-going eligibility concerns can be resolved.

4.15 Deferrals

Unit conditions or other circumstances identified during the pre-energy audit may prohibit weatherization from proceeding. In these circumstances, the pre-energy auditor will notify the sub-grantee of the situation and the unit will be deferred or terminated. Please refer to Chapter 5 for additional guidance.

4.16 Work Order Creation

Information obtained during the pre-energy audit is used to create the work order for the job. The work order must be the version that is created as a result of the information entered into the NEAT/MHEA, and recommended as meeting program guidelines and minimum SIR requirements. It is critical that the work order contains sufficient detail. These specifics provide the contractor with the information necessary to develop their bid. Further, the detail provided also serves to hold the contractor accountable to perform all the work specified and for which the bid was submitted. Insufficient detail in the work order can result in misunderstandings over what work is required.

The work order must include the year the home was built, if a Certified Renovator Firm is required as a result of specific measures included in the work order, and the pre-weatherization CFM reading. If a specific post-weatherization CFM reduction target is requested, that must also be specified in the work order.

Although information submitted by the auditor in the WA creates the work order document, it is the responsibility of the sub-grantee to review every work order and ensure that sufficient detail is present and the work order clearly and correctly outlines the scope of work to be performed. This review includes ensuring that all ECM and related Incidental Repairs on the work order meet minimum SIR values, the correct cost library and estimated costs are present, and that only those items allowed under the WAP are included.

Note: The posted work order cannot include the client's name or address, or other personal identifying information.

4.16.1 Air Infiltration Reduction

The sub-grantee must set an air sealing target on every unit to be completed. The infiltration reduction target formula can be found in THDA Memorandum 17-02.

The sub-grantee has the option to specify air infiltration reduction in one of two ways on the work order. The auditor may list individual items to be performed by the contractor, with the expectation that completion of those measures will result in meeting the post-weatherization CFM50 reduction target **or** the sub-grantee may opt to set the CFM50 post-weatherization target, and allow the contractor to rely on their own expertise in determining the most effective way to tighten up the home.

If the sub-grantee opts to bid air infiltration reduction without listing specific measures, the auditor can determine the maximum amount of funding that can be spent on air infiltration reduction by entering \$1 on the first run in the audit tool. Infiltration Reduction/Air Sealing measure is not required to meet an individual 1.0 SIR as long as the cumulative SIR is 1.0 or higher for the entire project. All other ECMs must provide an individual SIR of 1.0 or higher and the cumulative SIR must be 1.0 or higher. If the contractor's bid amount for Infiltration Reduction/Air Sealing makes the cumulative SIR fall below 1.0 SIR, then the cost for the measure must be negotiated down until the cumulative SIR is 1.0 or higher. This allows the auditor to determine the maximum amount that can be spent for that specific home on air

infiltration reduction.

4.17 Documentation

The sub-grantee will obtain and retain a copy of the pre-energy audit field notes, WA input documentation, Recommended Measures and audit generated work order from the energy auditor assigned to conduct the pre-energy audit. Pictures provided of the unit that is audited will further document the conditions of the home at the time the pre-energy audit was conducted. The sub-grantee may request additional documentation at their discretion.

4.18 Energy Audit Data Submission

Each sub-grantee will be required to obtain and retain energy audit data in an electronic format for every completed unit, identified by job number and address. Upon request, the sub-grantee will provide to THDA the pre-energy audit, including all field notes and diagrams, the recommended measures, the work order, pre and post diagnostic test findings, change orders and post-audit inspection, along with demographic info, including the pre- and post-energy costs for the jobs completed in the specified timeframe.

4.19 Questioned Costs

Although this list is not all inclusive, the following situations will generally result in the energy audit being disallowed, and the cost of the energy audit being a disallowed, or questioned, cost:

- Incorrect energy audits that include disallowed measures may result in a questioned cost for the cost of the audit. The disallowed measure will be a questioned cost.
- Energy audits for any home that has not been approved under WAP and selected for service from the wait list is not an allowable expense.
- An energy audit that is not conducted utilizing the THDA approved energy audit tool is not an allowable expense.
- Duplicated energy audits for the same home are not an allowed expense, unless the Sub-Grantee can justify the need due to a change in household circumstances.
- Incomplete energy audits, including those where required documentation is not provided, are not an allowable expense, unless the reason the audit could not be completed was beyond the control of the auditor.
- Any energy audit performed by an individual who fails to meet energy auditor qualification standards and/or is not approved to perform energy audits for the Sub-Grantee is not an allowable cost.

THDA reserves the right to evaluate and determine questioned costs in the above situations on a case by case basis.

CHAPTER 5 – DEFERRALS

The decision to defer or terminate weatherization services to an eligible low-income household is difficult but necessary in some cases. Many problems encountered in low-income housing are beyond the scope of the WAP. When a project is deferred, work must be postponed until certain problems can be resolved or alternative sources of assistance can be identified and secured. A job that was deferred could be completed at a later date if the deferral conditions identified are remedied. In some circumstances, a home may be beyond repair, or conditions may never be remedied. This home would result in termination of the application. Specific steps must be followed for each situation, as outlined below. Chapter 19 contains notice templates.

All reasonable precautions against performing work on homes that will subject workers or clients to health and safety risks must be performed. Before beginning work on the residence, the sub-grantee must take into consideration the health concerns of each occupant, the condition of the dwelling, and the possible effect of work to be performed on any particular health or medical condition of the occupants. When an occupant's health is fragile and/or the work activities would constitute a health or safety hazard, the occupants at risk will be required to leave the home during these work activities. If the client cannot, or will not, leave the home during the work hours, the job would be deferred.

Deferral:

Existing conditions under which a dwelling unit should be determined as **Deferred** include, but may not be limited to, the following:

- Elevated carbon monoxide levels where abatement is not possible using WAP funds;
- Existing moisture problems that cannot be resolved within program guidelines;
- House with sewage or other sanitary problems that not only endanger the customers but the workers who will perform the weatherization work;
- Occupant's health condition;
- Building structure or its mechanical systems, including electrical and plumbing, are in such a state of disrepair that failure is imminent and these conditions cannot be resolved in a cost effective manner;
- Mechanical systems that have been "red-tagged" and cannot be resolved within the scope and funding restrictions of WAP;
- Any existing condition that could endanger the health and/or safety of the work crew or subcontractor and cannot be safely abated;
- When toxic substances are discovered which cannot be addressed by the WAP, the coordinator should report the problems to the client and indicate that activity must cease until the identified condition has been corrected. This may include the existence of lead-based paint or asbestos containing materials that would have to be disturbed during the installation process.

- Unlawful activities are occurring in the dwelling that could endanger the customers or the crews. **Example:** A home may have housed a methamphetamine lab. For a list of addresses that have been identified by law enforcement for meth activity see the following web address: <http://www.justice.gov/dea/seizures/index.html>
- When structural, wiring or plumbing problems exist which make the project unfeasible, the client should be notified of the problem(s) and no further WAP activities should occur until such time as these conditions have been adequately addressed.
- When a dwelling is infested with insects, rodents, etc., activities should cease until the condition has been remedied.
- Condition of the home, and the contents within, prohibit the ability to weatherize the home.
- Homes using un-vented gas heaters as a primary heating source are not eligible for services until suitable measures have been accomplished to minimize the health and safety risks associated with un-vented heating systems. If the client/landlord refuses the removal of un-vented gas heaters, the job would be terminated without services provided.
- Health and Safety funding has been temporarily exhausted, and weatherization work cannot proceed without addressing the associated health and safety issues that would be necessary in order to effectively perform the work or as a result of the weatherization work to be performed.
- Initiation of eviction or foreclosure proceedings for the property will require deferral of weatherization services. In the event the household is evicted, or foreclosure of the property is completed, the job will be terminated, rather than deferred.

Termination:

In some situations, the issue cannot be resolved even if the job is deferred. In these situations, the WAP case should be terminated. If a case is terminated without weatherization services being provided, the client has the right to reapply in the future. If services were provided prior to termination, any future application would be considered a request for Reweathering of the home.

- The unit is currently listed for sale or under a sale contract,
- The home is condemned or in the process of being condemned.
- The property has been foreclosed, or is in the process of foreclosure.
- The property has been designed for acquisition or clearance by a Federal, State or local program.
- Customer is uncooperative, abusive, or threatening to contractor, subcontractors, auditors, inspectors, or others who must work on or visit the house
- Applicant is deceased, and there is not a spouse remaining in the home who agrees to assume applicant status.
- Applicant is no longer permanently residing in the home. A temporary absence that can

reasonably be expected to last three months or less, and where the applicant expects to return to the home, will not require termination. In the case of an applicant who is no longer residing in the home on a permanent basis, an applicant's spouse who still resides in the home may resign the application and continue to receive services, provided the household continues to meet eligibility requirements.

- The household has been evicted.
- The home is currently unoccupied, other than a temporary absence of the only household member.
- Client/Landlord refuses to allow the removal of the unvented space heater that serves as a primary heating source.
- There is not a reasonable expectation that the conditions that prevent weatherization activities can be alleviated within a reasonable period of time.

Notification:

When *deferral* is necessary, the sub-grantee must take the following actions:

- A Notice of Deferral must be sent to the client. This notice should clearly state the conditions which must be corrected before weatherization work can proceed, and define a reasonable time period by which the corrections must be completed.
- The deferral notice must contain notification of the right to appeal the decision, and how those rights may be initiated.
- Clients must be informed immediately both verbally and in writing of any serious imminent hazards.
- Clients must be informed of any no-cost or low-cost immediate measures that should be taken to mitigate the hazard.
- Sub-grantees shall work with the client to assist in identifying and accessing available resources that can help to address the situation that required deferral
- Clients must be notified that they should contact the sub-grantee once the existing conditions have been remedied. Upon notification, the sub-grantee will return the application status to "active" and place the client back on the list for services. Another pre-energy audit may be necessary before the job can be bid out.

When *termination* is necessary, the sub-grantee must take the following actions:

- A termination notice will be sent to the client that gives the reason for the termination.
- The termination notice will contain notification of appeal rights and how those rights may be initiated.

- If the current address of the applicant is unknown, mail the notice to the last known address.
- In the event of death, send the notice to the next of kin if known. Otherwise, mail the notice

to the address of the deceased.

- Document the client file with verification of death

Documentation of Deferral:

Postponement of services does not mean that the case is closed. The deferral of an eligible dwelling unit must be properly documented so that no confusion exists about why WAP services were postponed. At a minimum, the following information related to the deferral must be documented in the client file:

- Date of deferral
- Clear and concise description of the problems encountered in the home and action required to alleviate the issue before weatherization can proceed
- Documentation of client notification of any condition that could impact the household's health and/or safety. A copy of the notices sent to the applicant should be retained.

The sub-grantee must track all deferrals to determine if timely action has been taken to alleviate the circumstances which prevented the weatherization from occurring. If the client is unable or unwilling to make the necessary repairs, or if other resources are unavailable to assist with the repairs within a reasonable timeframe, the sub-grantee may opt to terminate the application.

Documentation of Termination:

A job that is terminated will be closed and the client will not be placed on a deferral list. The termination of an eligible dwelling unit must be properly documented so that no confusion exists about why WAP services were terminated. At a minimum, the following information must be documented in the client file:

- Date of the decision to terminate the case
- Clear and concise description of the reason for termination
- Documentation of notification to Client

Additional Resources:

All sub-grantees should aggressively pursue alternative funding to reduce the occurrences of deferral. Sub-grantees should establish open lines of communication with as many other funding sources as possible so that referrals can occur in an efficient manner.

The following is a list of potential funding sources to help remedy situations in the home:

- LIHEAP Wx
- U.S. Department of Housing and Urban Development (HUD) - HOME Program
- HUD – Community Development Block Grant
- U.S. Department of Health and Human Services – Community Services Block Grant

- U.S. Department of Agriculture - Rural Economic Community Development
- State-funded housing and rehabilitation programs
- Low-income program funds provided by local utilities
- City-funded housing and rehabilitation programs
- Donations or financial participation from landlords
- Donations from local churches or community groups
- Donations from local businesses, non-profit organizations, or local associations

Deferred Applications and the WAP Database:

When a home is deferred, the application status for the job will be changed to “Deferred”, and the reason for deferral selected. If the deferral reason is resolved, the application status will be changed to “Approved-Wait List”, or may be changed to “In Process”, if the job had begun the weatherization process prior to deferral.

Terminated Applications and the WAP Database:

When the job is “terminated”, the application status will be changed to “Terminated”, with the reason for termination selected. The sub-grantee will not be able to change the application status once it has been identified as terminated.

Energy Audit Payments:

If it is determined that a home is a deferral, the auditor can be paid if the audit is completed. Sub-grantees are encouraged to pay a reduced fee to cover travel time and mileage rather than for the cost of a completed audit if it is determined at the time of audit that the home will be terminated or deferred with no audit activities taking place.

Example: The auditor goes to the home and sees a for sale sign in the front yard. Auditors and/or contractors should communicate with sub-grantees to seek guidance regarding potential deferral situations. The sub-grantee will assist to secure resources outside of the WAP when possible.

CHAPTER 6 –PROCUREMENT OF WEATHERIZATION WORK

WAP services are provided through a network of sub-grantees. Sub-grantees do not employ weatherization crews to install the measures in the home, but rather procure these services through a network of contractors.

6.1 Contractor Approval

Weatherization work may only be awarded to licensed contractors who meet minimum program requirements and have been approved by the specific sub-grantee to bid on units under the WAP. Sub-grantees are not required to approve any contractor who meets these requirements, but should carefully consider the contractor's past work record both in terms of quality and timeliness when making a decision to add them to their approval list. Each sub-grantee is required to maintain a sufficient pool of approved contractors throughout their service area to ensure competition when soliciting bids for work to be performed. Additional information regarding contractor eligibility and certification requirements may be found in Chapter 11.

6.2 Single Bid Requirement

All units must be individually bid. "Package" bids that include one or more buildings to be weatherized included in a single bid are not allowed.

6.3 Multi-Family Buildings

Each multi-family building will have a single work order, and be considered to be a single-bid, regardless of the number of units included within the multi-family building. Different units within the same multi-family building cannot be posted separately, and may not be bid individually.

Refer to Chapter 11 for multi-family contractor requirements.

6.4 Work Order

A detailed work order that identifies all the required and allowable measures for the specific unit is required when posting the job for bid. The work order is the direct result of the pre-energy audit conducted utilizing the WA audit tool.

6.5 Walk-Through Inspection Prior to Bid Submissions

The sub-grantee may opt to schedule a walk-through of the property for all potential bidders as part of the competitive bid process. If a walk-through is provided, it must be offered to all potential bidders, and scheduled in advance with the applicant.

Any walk-through of the property must be performed after the job is posted for bid, yet scheduled to allow sufficient time for the potential bidder to complete and submit a bid prior to the deadline.

A sign-in sheet for every walk-through must be completed and retained that documents who attended the walk-through for the property.

6.6 Competitive Bid Process

The sub-grantee will award all jobs based on the competitive bid process. All competitive bid processes must comply with applicable state and federal procurement requirements. In addition, each sub-grantee's competitive bid process for awarding of weatherization work must include the following:

- The job must be posted a minimum of ten (10) business days prior to being awarded unless THDA approves a reduction in timeframe due to specific circumstances.
- The posting must include the deadline for submission of bids for that specific job.
- The client's name, address or other personal identifying information may not be included on the posting. It is encouraged that all job postings include the assigned job number for that unit. The address may be provided to qualified, and sub-grantee approved, contractors upon their request.
- Only contractors who meet program qualifications and have been approved by the Sub-Grantee can submit bids.
- The job posting notification must be sent to all approved contractors in the sub-grantee's pool. The sub-grantee cannot opt to send notification to only a subset of the approved contractor's for their sub-grantee.
- The received bid must be broken down by individual measure on the work order, with labor and materials for the measure bid separately, and include a final total.
- A record of when the bid was submitted is required.
- Bids received prior to the published submission deadline are to remain sealed, and will not be shared.
- Once opened, the bid cannot be modified in any way, by a sub-grantee representative or the contractor who submitted the bid.
- A contractor may withdraw his bid prior to award, or if he is the low bid, he may opt to not accept the job up to the point they have signed a contract.
- The job is to be awarded to the lowest valid bid. If unable to award to the lowest bid, the file must provide documentation that supports the decision that was made, or questioned cost will be assessed.
- All bid openings must be open to the public, with the date and location of each bid opening provided. Contractors who submitted a bid are encouraged to attend.
- A minimum of two sub-grantee representatives must be present at each bid opening when opening and awarding jobs.
- A bid tabulation sheet must be completed for each job that was posted, and scheduled to

be awarded. This record must list all bids submitted for the specific job, by contractor name, date received and total bid amount. The “winning” contractor must be annotated. The bid sheet shall also include the date the job was posted, the date of the bid opening and the name of the sub-grantee representatives who conducted the bid opening. The sub-grantee must retain copies of all submitted bids for each job.

6.6.1 Awarding a Bid in the Event of a Tie

In rare instances during a bid opening, a sub-grantee may find identical bid amounts from separate contractors.

THDA recommends the sub-grantee inform the contractors who submitted the same bid that there is a tie.

The sub-grantee will request each contractor to submit a new bid, labeled Best and Final Offer (BAFO) and determine a time frame best suited to award the tiebreaker.

The contractors’ BAFO will be awarded as normal at the end of the agreed timeframe.

In the event of another tie, the sub-grantee will award the bid randomly, i.e., a coin flip.

If only one tiebreaking bid is received, that bid will receive the award.

6.6.2 Bid Calculation Error

Contractors who make an error in the submission of their bid have the option to honor the price as quoted, or to withdraw their bid. Under no circumstances will the bid error be corrected and the cost of the work to be performed increased as a result of the contractor’s error when preparing their submitted bid.

The sub-grantee shall notify THDA of the bid miscalculation and receive approval of the lower bid amount before awarding the contract to provide services

6.7 Insufficient Number of Bids Submitted

In the event a job is posted for bid and the sub-grantee does **not** have a minimum of three approved contractors in their pool of approved contractors they have notified of the job posting for purposes of solicitation of bids, the job must be reposted. If the job has to be reposted due to an insufficient approved contractor pool, or no valid bid submitted, a walk-through of the property is strongly encouraged upon reposting.

If a sub-grantee is unable to obtain a minimum of three qualified contractors for their pool of THDA reserves the right to grant an exception to this policy, on a case by case basis, provided the sub-grantee petitions THDA for relief prior to posting the job.

6.8 Jobs over Maximum Allowable Amount

If the total winning bid is greater than the maximum cap per unit, there are three options that the sub-grantee can follow. These options are:

1. Remove measures from the work order/bid in order of priority (refer to 6.8.1 for guidance) until the cost of the job is under the cap, or;
2. Negotiate with the contractor who had the lowest bid in an effort to get him to reduce his bid until it is below the cap, or;
3. Request permission from THDA to exceed the maximum cap for that specific job.

If the sub-grantee is unable to get the winning contractor's bid for the specific job below the cap using either one or a combination of the three options above, the bid must be discarded, and the job will not awarded. The job will have to be rebid in an attempt to receive a bid that is below the maximum permitted.

***Note:** The sub-grantee may only negotiate with the contractor who submitted the winning bid, even if the winning bid was originally greater than the maximum allowed. Other contractors who submitted a bid for that job will not be allowed to revise and resubmit their bid.*

6.8.1 Removal of Measures

If the lowest valid bid submitted for a specific job exceeds the cap per unit, the sub-grantee may choose to remove individual measures from the submitted bid until the total bid is below the maximum allowed for that job. When removing measures, the following steps shall be followed:

- Review the NEAT/MHEA recommended measures list.
- Items must be removed in order from the lowest recommended (lowest SIR value) energy measure first with the exception of air infiltration reduction or duct sealing measures. Air sealing measures may only be removed if the initial blower door reading at the time of the pre-energy audit was such that additional air leakage reduction measures could be considered optional. These measures are typically calculated to reflect a SIR of 1.0 in order to allow the greatest amount of sealing work to be performed possible. Since tightening up a home is a primary goal in weatherization, these measures should remain, even if they have the lowest SIR.² when removing a measure, if there is a related User Defined / Incidental Repair, it will also be removed. **Note:** The cumulative SIR for the package of measures following removal of items must still be at 1.0 or greater.
- Continue to remove measures until the bid is at or below the cap. This reduced bid amount is the amount that will be reflected on the job contract when executed.
- The contractor has the right to decline the job if he does not agree to the reduction in measures.
- The original bid and the reduced bid must be kept on file.
- Health and Safety Measures may not be removed.

6.8.2 Negotiating the Bid

If the winning bid exceeds the maximum amount permitted, the sub-grantee can negotiate with the Contractor in an attempt to get it below the cap. When negotiating, any revisions must be

performed at the individual measure level, while retaining the breakdown per measure between labor and material cost. It is not sufficient to simply reduce the total amount of the bid without making the related specific adjustment at the individual measure level.

6.8.3 Request to Exceed Maximum Cap

The sub-grantee may request permission from THDA to exceed the maximum cap per unit. This request must be submitted and approved prior to awarding the contract. Each request will be evaluated on a case by case basis. The *Request to Exceed ACPU Form* is located in Chapter 18.

6.9 Validation of SIR Based on Actual Expenditures

The sub-grantee is required to validate that the measures being performed for the unit still meet the minimal SIR standards, when considering the winning bid for the work. The actual amount to be paid for each total job, as provided on the contractor's final bid amount, must be entered into the WA (NEAT/MHEA) audit tool to determine if each measure still meets the minimum SIR values necessary in order to proceed. Any ECM, along with any related IRs, that fail to meet the minimum SIR values (individual and cumulative) must be removed from the work order prior to executing a contract to perform the work.

This may be accomplished by accessing the NEAT/MHEA work order tab for the specific job number. The user will select the Measures tab for that job, which will display the previously entered data, and recommended measures based on the estimated costs for that item. The user will enter the cost for the ECM and/or IR, taken from the final bid from the contractor to be awarded the job, in the Actual Cost column of the tool. Once entered, the tool automatically recalculates the SIR values, utilizing the actual costs, and compares the SIR based on estimated cost to the actual costs. Any ECM/IR that does not meet the minimum SIR requirements, when calculated using actual costs as bid, must be removed from the work order unless the Contractor agrees to perform the work for a lesser amount, and the reduction in cost results in the required SIR values being obtained.

6.10 Awarding of Jobs

The job is to be awarded to the lowest qualified bidder, in accordance with the sub-grantee procurement methods, and in compliance with state and federal requirements.

6.10.1 Contractor Declines Award

If the winning contractor declines to accept the job, as based on his/her submitted bid and any subsequent revisions, if applicable, the sub-grantee may award the contract to the contractor with the next lowest, valid bid and who agrees to accept the job, subject to all the same conditions and SIR validations as the original contractor.

6.10.2 Job Contract

Every job awarded will require a fully executed contract to be completed between the sub-grantee and the contractor who will be performing the work. The amount on the contract will reflect the bid amount submitted by the winning contractor, and as accepted by the sub-grantee. If the submitted bid was renegotiated in accordance with manual guidance, the contract will be for the revised amount.

6.10.2.1 Contract Template

The sub-grantee must utilize the Contract Template provided by THDA for this purpose, a copy of which is provided in Chapter 18. This template includes DOE specific language requirements. Additionally, there are sections in the template that allows for local sub-grantee customization, specifically around timeframes and penalties. A sub-grantee may opt to add additional requirements to the template, but may not make any changes or deletions to the existing language in the template without prior approval by THDA. Any change to this template must be approved by THDA.

6.10.2.2 Contract Penalty Clauses

The sub-grantee has the option to include and/or apply penalty clauses in the job contract. These penalty clauses can result in a monetary penalty for the contractor if he/she fails to complete the work on time, workmanship concerns, or if the work fails to pass the post-inspection.

6.10.2.3 Job Contract Attachments

A copy of the work order, the itemized submitted and accepted bid, including any renegotiations and modifications, must be attached to the executed contract for the specific job. A copy of the contractor's current license and any required certifications will also be attached.

6.10.2.4 Contract Start Date

The contract start date is the date the contract has been signed by both parties and considered to be fully executed.

6.11 Work Completion Timeframes

The work is considered to be finished when all measures included on the final work order have been completed by the Contractor, have passed inspection by the sub-grantee auditor, and a final itemized invoice has been submitted by the contractor to the sub-grantee.

THDA does not require, but encourages, sub-grantees to include work completion timeframes for purposes of managing the workload and meeting production benchmarks. The sub-grantee has the option to incorporate timeframes for a job at their discretion. Such timeframes should be a part of the executed contract, and may specify the length of time a Contractor has to complete their work on the job and have it ready for inspection, how long they have to make corrections if needed, and a deadline for submission of the final invoice for payment.

6.12 Change Orders

On occasion, additional or expanded work necessary to perform weatherization or address health and safety issues is not discovered until the original work has begun on the home. In these situations, a change order may be necessary. Under no circumstances will a change order be allowed to address an error that a Contractor made on their submitted and accepted bid where he/she under-estimated the cost of performing the measure as requested, or made some other error on the submitted and accepted bid for work.

Change orders should be an exception rather than a common occurrence. If a sub-grantee has multiple change order requests, they should explore the cause to determine if they are the result of a poor pre-energy audit or if there are specific contractors who continuously request change orders in an attempt to improve the profit margin from their original bid that was accepted. In either situation, the sub-grantee must carefully review each request, and if trends are determined to exist, address the situation as appropriate, up to and including suspension and termination.

6.12.1 Change Order Request

All change orders must be requested and approved prior to the work being performed. All ECM and related Incidental Repair work requested through a change order must meet the same SIR requirements as work originally included on the work order. This must be done through the use of the WA audit tool, considering the impact of the change on the entire list of measures and utilizing the actual cost of the change when calculating SIR.

Any change order that was not approved in advance of the work being performed will be a disallowed cost, and cannot be paid nor reimbursed. An approval requires a signature by the

sub-grantee representative that authorizes the change. No change order can be approved without first determining if it is cost justified, unless it is a health and safety expenditure.

6.12.2 Site Inspections for Requested Change Orders

The sub-grantee is not required to perform an on-site visit and inspection as part of the change order process, however they may do so at their discretion.

6.12.3 Establishing the Cost of the Change Order

The Contractor is required to submit an estimate of the cost of the change order, with the amount of materials and labor reported separately for each item. The sub-grantee should negotiate the best possible price, but the amount paid per measure cannot exceed what is allowed under the sub-grantee's current WA Cost Library by more than 10%. Any change order that exceeds this amount must be submitted to THDA, along with justification for the costs, and documentation that the measure – based on requested, actual costs – meets SIR requirements if approved. A copy of the NEAT/MHEA work order recommended measures document, with the change order item added and actual costs entered, must accompany any such request.

6.12.4 Removal of Measures from Contract Work Order

There may be occasion where an awarded measure cannot be performed, despite the fact it is included in the agreed upon scope of work. Before removing the measure, the sub-grantee must carefully evaluate the entire scope of work to evaluate the impact of granting the change request to eliminate the measure. When removing a measure, the sub-grantee must consider the following:

- What impact will the removal of the measure have on the weatherization of the home and/or health and safety concerns?
- If removed, are there other related items that need to be eliminated?
- Is the contractor asking to remove the measure because it is difficult to do, or because they under-estimated the work as described in the original work order, and under-bid? If so, the item will not be removed, and the contractor will be required to complete the measure for the amount as bid.

If the sub-grantee approved the contractor's request to remove a measure, the amount paid to the contractor will be reduced by the amount included in the contract for the measure(s) impacted.

6.12.5 Change Order Documentation

Every change order will require the contractor to submit a change order request to the sub-grantee. The sub-grantee has the flexibility to create their own change order form. The change request must be signed by the contractor or his representative and the sub-grantee representative, approving the request prior to the work being performed. Documentation must be attached that supports the request, and that verifies that minimum SIR values will be met.

The sub-grantee may also opt to require the contractor to submit pictures to support the change order request.

6.12.6 Change Orders that Result in Job Exceeding Maximum Cap

The same maximum cost caps per unit apply when the job has a change order. Please refer to Section 6.8 for guidance.

6.13 Payment for Work

Work must be completed and pass final inspection prior to payment being made to the Contractor. Chapter 9 provides guidance regarding the post-inspection process for completed work.

6.13.1 Contractor's Invoice

The contractor's invoice must be submitted for work that has been completed on a specific job. The invoice must include the Client Name and Address, and the Job Number. The invoice must list each measure performed, broken down into a category for labor and materials for that measure with a final total. The sub-grantee must review the invoice and compare it to the original work order and contract, and any approved change orders for that job if applicable. It is the sub-grantee responsibility to ensure they are not paying for measures that were not authorized, not paying for measures that are not allowed, not paying more for a measure than agreed, not paying for measures that were not completed or that failed inspection, and not duplicating payments for the same measure.

6.13.2 Partial Payment Request

There may be instances, where through no fault of the contractor, the job may require deferral or be delayed for a significant period of time - yet the contractor has completed some of the work requested. Examples of such situations would be an elderly client who has been hospitalized, weather that prohibits installation of a measure, or a home that has been temporarily deferred

until the homeowner can make necessary corrections that will permit the weatherization work to proceed. In this instance, the Contractor may request that a partial payment be made to off-set his expenses for the work that has been done until the job can be completed. It is up to the sub-grantee's discretion to decide if they wish to make a partial payment to the contractor, but if a partial payment is made, the sub-grantee cannot invoice THDA for reimbursement until the entire job has been completed, passed inspection, invoiced and paid in full, and reported as a completed unit.

If the sub-grantee decides to allow the contractor to invoice for a partial payment, the following restrictions apply:

- The contractor must make the request for the partial payment in writing, specifying which measures have been completed and which remain unfinished. An invoice for the completed measures is requested, and;
- Partial payment may only be made for those measures that have been completely installed, and passed inspection through a post-audit, and;
- The maximum amount of the partial payment can be no more than the contracted amount of the installed measures or fifty (50%) of the total agreed upon job costs, whichever is less, and;
- No more than one partial payment per job is permitted, and;
- The contractor must agree, in writing, to return to the job within three business days from date notified, to complete any unfinished measures for the job.

The sub-grantee may choose to require additional restrictions. The sub-grantee will be responsible for tracking the job to ensure it is completed, and that the same measures is not invoiced multiple times.

6.13.3 Collection of Contractor Penalties

If the sub-grantee assesses penalties against the contractor, the amount of any penalties will be deducted from the submitted invoice prior to making a payment to the contractor. The case file will be documented to reflect the adjustment to the final invoice, including the reason and amount of any applied penalties.

The amount of the penalty will be documented in the WAP database, under the Job Costs tab.

6.14 Contractor Default and Re-Bidding of Job

On occasion, a contractor may have to be released from the awarded job they have contracted to

perform, but which they have not yet begun or have failed to complete.

6.14.1 Contractor Default – Job Not Begun

In such an event, the sub-grantee may opt to award the job to the next lowest bid that was originally received, provided no more than 60 days have passed since the job was awarded to the contract who defaulted. The sub-grantee must apply the same requirements related to justification of cost and capped amounts as were required for the initial contractor.

If a contractor who has not yet begun work on a job which was awarded to them, and the contractor has either requested to be released from their contract, has failed to begin working on the home within a reasonable period of time, or there are other extenuating circumstances that prohibit continuing with the contract arrangement, the sub-grantee may decide to consider terminating the contract. If the job was awarded within the last 60 days, the sub-grantee has the option to re-post the job for bid, or can offer the job to the contractor who was the next lowest bidder on the initial job posting, at the amount of their original bid, provided it does not exceed maximum caps or limits. If that Contractor does not wish to accept the contract, the sub-grantee can continue through the list of Contractors who submitted a valid bid for that specific job. If none of the original Contractors who submitted bids are interested, then the job must be re-posted.

6.14.2 Contractor Default – Job Begun

If the contractor that was awarded the work defaults on the job and/or terms of the contract, it may be necessary to obtain another contractor to complete the work. Since the job was begun, it will be necessary for the sub-grantee auditor to evaluate the status of the job. This will include inspecting any measures that have been completed to determine if they have been completely and correctly installed as well as determining the current status of the home, and updating the original work order.

Since the job had been begun, the original contractor will be paid for any work that has been completed and passed inspection. The Contractor will be paid for any completed and passed measure in accordance with the terms of their contract, less any applicable and applied penalties assessed by the sub-grantee. If there are measures that were initiated, but that failed post-inspection, the original contractor will be provided a reasonable time period to make necessary corrections. Failure to make corrections or continued failure of the measure will result in the original Contractor being paid the balance of the measure as bid less any amount that had to be paid to a subsequent Contractor to complete the work.

The balance of the work will require a new work order to be generated and the job re-posted for bid. Regular procurement procedures will be followed when re-posting and awarding the job again.

6.15 Job Cannot be Completed

When the Contractor is unable to complete a job due to circumstances beyond his control that cannot be rectified, the job will be Discontinued. A Discontinued job is one where some funds have been spent, but all work was not able to be completed. This typically happens when either the unit becomes ineligible or destroyed during the time work is being performed, or when the applicant is no longer eligible or living in the home, or no longer wants services during the this same time.

If the contractor is in the middle of the job when it is determined it should be discontinued, the sub-grantee must evaluate the work performed to date, and establish what work must be completed and what will no longer be performed. When making this evaluation, the rule of thumb will be to do no harm and to not leave the unit in worse condition than it was when weatherization was initiated. For example, if insulation installation had begun, it would be completed.

If the contractor is no longer able to complete all work due to no fault of his own, the sub-grantee will inspect the work performed to date. The Contractor will be paid for measures installed, and passed. If access to the building is prohibited and the work cannot be inspected, or if required, corrected, then the contractor will provide a detailed invoice of all work performed, and/or non-returnable materials purchased for that specific job in anticipation of completing the work. The sub-grantee may reimburse the contractor for work performed and materials that cannot be returned.

Note: If the job cannot be completed and the measures inspected and passed through a post-audit, then the job cannot be considered and reported to DOE as a completed unit.

CHAPTER 7 – WEATHERIZATION WORK

7.1 Energy Measures

Only those ECMs as allowed under the DOE federal regulations are permitted. Please reference federal regulations Title 10, Part 440 and Appendix A to Part 440 for additional guidance. Additionally, those ECMs that have been “turned off” in the NEAT/MHEA state standard library for Tennessee are not allowable measures.

Refer to the Tennessee Weatherization Field Guide and SWS for additional information and guidance specific to the Tennessee WAP. The website [WAPTAC](#) also serves as an excellent resource, providing links to federal program regulations, guidance, technical assistance and training videos.

7.2 Incidental Repairs

Per federal regulations, Incidental Repairs (IR) means those repairs necessary for the effective performance or preservation of weatherization materials. Such repairs include, but are not limited to: minimal roof repair or mobile home roof membranes, minimal floor and wall repair, attic access and stairs, mobile home skirting, limited electrical repair, leaking pipes, etc. These repairs must be necessary to preserve the integrity of the weatherization materials. Items such as porch steps, landings, decks, handrails, ramps or any other repair item that is not associated with the effective performance or preservation of the weatherization materials is **not** an allowable cost under the WAP.

When recommending IRs for a specific job, the work order/case file must clearly document the specific ECM that requires the installation of the related Incidental Repair. Homes that require repairs that are more than minimal may be beyond the scope of the program and require deferral until the home can be repaired to the point that effective weatherization can occur. **The WAP is not a home rehabilitation program.**

7.3 Health and Safety

Health and Safety funding allocated for the program may only be utilized to eliminate those health and safety hazards which must be addressed before, or as the result of, installation of weatherization materials. Per 10 CFR Part 10 of the WAP federal regulations, allowable energy related health and safety actions are those actions necessary to maintain the physical wellbeing of both the occupants and/or weatherization workers where:

- Costs are reasonable, in accordance with the State’s approved Health and Safety Plan; **and**
- The actions must be taken to effectively perform weatherization work; **or**
- The actions are necessary as a result of the weatherization work.

Please refer to Chapter 8 for additional information regarding the Tennessee Health and Safety Plan.

7.4 SIR Values

The WAP requires that all ECMs and related incidental repairs be cost effective. Cost effectiveness is determined by the Weatherization Assistant audit tool. Every ECM/IR must be ran through the audit tool (whether part of the initial audit or a subsequent change) to determine if it meets minimum cost effectiveness standard. Additionally, while the original work order is based on the SIR value as calculated with estimated costs, the actual costs for each ECM/IR must be considered for recalculation, and the SIR values still met, prior to contracting/approving any work to be performed.

All individual ECMs (Energy Conservation Measures) must have a SIR greater than or equal to 1.0. The individual ECM SIR value can be found on the Recommended Measures report, which is generated, from the WA. The SIR value of an ECM can be found under the heading of “Energy Savings Measures Economics”.

Incidental repairs are **not** the same as Health and Safety measures. Incidental Repairs (i.e., those associated with the installation of an ECM and needed to maintain the integrity of the ECM) can be performed provided the package of measures installed in the home has a cumulative SIR greater than or equal to 1.0. The package of measures refers to all the ECMs to be installed and all the incidental repairs performed in the home. The “Cumulative SIR” listed on the Recommended Measures report is this calculation of the SIR for the package of measures.

Health and Safety (H&S) measures can be installed in a home if associated with the ECM package. H&S address issues to ensure that weatherization activities do not cause or exacerbate health and safety problems for worker and occupants. Per 10 CRF Part 440, allowable energy related health and safety actions are those actions necessary to maintain the physical wellbeing of both the occupant and/or weatherization workers. Deferral may be necessary if health and safety issues cannot be accurately addressed. Please refer to the Tennessee Health and Safety plan in Chapter 8 for allowable measures.

7.5 Typical Energy Conservation Measures

All ECMs and related incidental repairs for a specific unit will be established through the use of

the WA audit tool (NEAT-MHEA) with the exception of the measures that have been identified as low-cost or no-cost. All work will be performed in accordance with guidance established in the Tennessee Weatherization Field Guide. As needed, updates may be provided in the form of technical assistance memorandums or through reference to DOE established guidance. The measures identified are the more common measures, but this list is not meant to be all-inclusive.

7.5.1 Air Sealing

Air sealing work will be guided by the use of a blower door and digital manometer. The most effective infiltration reduction efforts typically involve sealing leaks between the conditioned space and the unconditioned areas found in the attic or crawl space. The contractor performing the weatherization work will be required to perform necessary air infiltration measures until the minimum air reduction targets have been met, as identified for that particular unit by the pre-energy auditor. While it is a best practice and encouraged that contractors utilize blower-doors to identify air sealing opportunities, the sub-grantee has the flexibility to determine how they will specify it on the work order. The work order can specify specific air sealing measures or it can allow the contractor the flexibility in how to conduct the air sealing necessary to achieve the target CFM identified by the auditor. However, even if an sub-grantee opts to list items to be sealed, rather than allowing the contractor to perform air sealing as necessary in order to achieve target – all homes with air infiltration reduction as an ECM must identify a pre-weatherization CFM reading, and must identify a target the contractor must meet in order for the measure to pass inspection. Simply sealing the items identified is not sufficient if the reduction target is not met. If the items identified to be sealed fail to result in the target being met, and additional sealing is needed in order to meet target, then the sub-grantee must still ensure SIR requirements are being met.

American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) 62.2-2016 standards will be followed when performing air sealing. If the structural integrity of the unit prohibits the use of the blower door, it may be that the unit is a walk-away. Living conditions that prohibit the use of the blower door may require deferral until such conditions can be remedied.

7.5.2 Insulation

7.5.2.1 Attic Insulation

Install attic insulation to R38, depending upon existing insulation level. Air sealing attics should precede attic insulation and this may require removing existing insulation and debris that currently prevents effective air sealing. Attic by-passes should be sealed prior to the installation

of attic insulation. The amount of attic insulation that can be cost effectively added depends on the level of existing insulation and type of space heating fuel. Attics with structural issues that are beyond the scope of the WAP to address may not be able to be insulated in full or at all

Blown insulation is usually preferable to batt insulation because blown insulation forms a seamless blanket. Attic insulation always settles: cellulose usually settles 10% to 20% and fiberglass settles 3% to 10%. Blowing attic insulation at the highest achievable density helps minimize settling while minimizing air movement within the insulation.

In addition to attic ventilation, costs for attic insulation may include limited incidental repairs that are necessary for the installation and effectiveness of the measure. Such repairs can include, but are not limited to: repairing roof leaks, , patching ceilings and installing attic access. The Tennessee Weatherization Field Guide contains information regarding the proper procedures to follow for attic preparation and installation standards.

7.5.2.2 Floor Insulation

The WA audit tool determines the appropriate R value and need for insulation for a specific unit. The Tennessee Weatherization Field Guide defines standards and procedures for floor insulation.

The amount of floor insulation that can be cost-effectively added varies with existing levels of insulation, space heating fuel, and foundation type. The recommendations for floor insulation are based on the two most common foundation types in Tennessee: vented crawl spaces and exposed floor (houses whose floor joists rest on pilings and have little or no skirting).

Excessive moisture from frequent rain or high water tables can enter a house through the crawl space and cause mold, mildew and/or structural damage. Plastic sheeting may be installed as ground cover as an Incidental Repair to the installed floor insulation, following the guidance provided in the Tennessee Weatherization Field Guide. It is not recommended to install plastic sheeting (vapor barrier) when bulk water issues are observed unless the vapor barrier can remain sealed and intact above any bulk water intrusion.

7.5.2.3 Wall Insulation

If walls are not currently insulated, blowing wall cavities with densely packed cellulose is typically a cost effective measure, regardless of the heating fuel. Walls shall be insulated if the cost to insulate is justified. Walls that are already fully insulated or solid masonry, concrete, concrete block or wood will not be insulated.

Exceptions: If any of the following conditions exist, then the wall cavity should not be insulated:

- Active knob and tube wiring is present in the wall cavity
- Wall cavity contains HVAC duct, wall furnace or heater
- Wall cavity is next to a fireplace or chimney without sufficient clearance
- Wall cavity space is connected to an unprotected pocket door cavity
- Wall repairs are needed and not able to be performed as part of the weatherization package
- Other situations that may result in a hazardous situation or where the wall cannot be properly prepared due to unique structure of the home.

7.5.2.4 Other Insulation

Insulation of water heaters, HVAC duct work sealing and insulation, and the insulation of hot water pipes in unconditioned spaces are allowable weatherization measures.

7.5.2.5 Insulation Certification

The addition of insulation in an existing home is a common weatherization measure. Whenever there is installation of any type of floor, wall, or attic insulation, the Contractor must provide a certificate. This certificate is referred to as a “receipt” in the Federal Trade Commission’s (FTC) guidance. This certificate should be given to the Client and/or Owner of the property. In addition, a copy of the certificate must be posted at the property and a copy of the certificate should be retained in the Client’s file.

Points to remember about the Insulation Certificate:

- The copied certificate posted at the property should be secured to a rafter, stud, or joist. It must be in plain view and placed close to an opening of the crawl space or attic for accessibility.
- For wall insulation a certificate should be secured on a wall in the attic if possible.
- A certificate can combine areas where insulation was installed as long as the certificate reflects all information for each area.
- For roll insulation the certificate must clearly show all the coverage area(s) where the insulation was installed, thickness of the insulation, and the R-value of the insulation installed. The certificate must be dated and signed by the Insulation Contractor.

- For loose-fill insulation, the certificate must be dated and signed by the Contractor, show all the coverage area(s), initial installed thickness, minimum settled thickness, R-value, and the number of bags used.
- For aluminum foil, the receipt must show all the coverage area(s), the number and thickness of the air spaces, the direction of heat flow, and the R-value.

When providing the insulation certificate, Contractors who install insulation must comply with federal regulation 460.17.

§ 460.17 What installers must tell their customers.

If you are an installer, you must give your customers a contract or receipt for the insulation you install. For all insulation except loose-fill and aluminum foil, the receipt must show the coverage area, thickness, and R-value of the insulation you installed. The receipt must be dated and signed by the installer. To figure out the R-value of the insulation, use the data that the manufacturer gives you. If you put insulation in more than one part of the house, put the data for each part on the receipt. You can do this on one receipt, as long as you do not add up the coverage areas or R-values for different parts of the house. Do not multiply the R-value for one inch by the number of inches you installed. For loose-fill, the receipt must show the coverage area, initial installed thickness, minimum settled thickness, R-value, and the number of bags used. For aluminum foil, the receipt must show the number and thickness of the air spaces, the direction of heat flow, and the R-value.

The Electronic Code of Federal Regulations (e-CFR) can be viewed at:

http://ecfr.gpoaccess.gov/cgi/t/text/text-dx?c=ecfr&tpl=/ecfrbrowse/Title16/16cfr460_main_02.tpl

7.5.3 Domestic Water Heater (DWH)

Replacement and/or Repair of the water heater is permitted. Replacement units must have an insulation blanket installed unless prohibited by the manufacturer or the insulation fails to meet minimum SIR values.

The replacement water heater shall be:

- Either a storage tank, or tank-less (aka on-demand) water heater.
- All replacement units must be similarly sized as the original unit that is being replaced.
- Must be Energy Star rated
- Water heater replacements are generally not cost effective unless savings accrue for at least 10 years. Therefore, sub-grantees should require the replacement of domestic

water heaters with at least a 10-year guarantee

Solar water heaters are not approved as replacement units in Tennessee at this time.

7.5.4 Furnace Maintenance, Repair and Replacement

As part of the pre-energy audit, all heating furnaces will be evaluated, including any duct work present. A furnace may be solid fuel (wood or pellet stove heaters), electric or combustible fuel, such as natural gas, propane or kerosene. If the heating source is wood or pellet, the related chimney must also be evaluated. Maintenance and repair will always be preferable to replacement of an existing unit, whenever possible. If the WA audit tool determines that replacement is recommended, a Manual J/S calculation must be performed and retained in the client file.

Replacement furnaces must be Energy Star certified, or equivalent.

7.5.5 Cooling System Maintenance, Repair and Replacement

Tennessee's hot, humid climate makes the use of air conditioning vital for many of our clients. As an ECM, maintenance, limited repairs or replacement is an allowable measure. If the WA audit tool determines that replacement is recommended, a Manual J/S calculation must be performed and retained in the client file.

Replacement cooling systems must be Energy Star certified, or equivalent.

If the cooling system is replaced, the original unit must be removed from the home, and properly disposed of in accordance with The Clean Air Act, USC Title 42, Section 7671g. This Act makes it unlawful for any person to dispose of refrigerants in a manner in which they will be allowed to enter the environment.

7.5.6 Ductwork

Duct leakage should be evaluated for both heating and cooling systems during visual inspecting and testing. Duct sealing must be based on testing.

7.5.7 Windows

A window replacement cannot be replaced as an Incidental Repair (reference DOE WPN 12-09) or as a Health & Safety measure (reference DOE WPN 11-06). It must be cost effective to replace a window as an ECM and in rare instances, a window may be replaced as part of the air sealing ECM (still not as an IR). An example is an irreparable aluminum framed awning window that has a frame bent so badly it cannot be closed and presents a very significant infiltration hole.

Reasoning for any such window replacement under the air sealing ECM must be well documented in the client file with written explanation and photos. If repairable to reduce the size of the air leak, it must be repaired as part of air sealing. Infiltration reduction savings for window repair or replacement is counted in the analysis of CFM50 reduction calculations.

7.5.8 Doors

A door replacement cannot be replaced as an Incidental Repair measure (reference DOE-WPN 12-09) or as a Health & Safety measure (reference DOE-WPN 11-06). It must be cost effective to replace a door as an ECM and in rare instances, a door may be replaced as part of the air sealing ECM (still not as an IRM). An example is an irreparable door that is in such poor condition it cannot be closed and presents a very significant infiltration hole. Reasoning for any such door replacement under the air sealing ECM must be well documented in the client file with written explanation and photos. If repairable to reduce the size of the air leak, it must be repaired as part of air sealing. Infiltration reduction savings for door repair or replacement is counted in the analysis of CFM50 reduction calculations.

7.6 Refrigerators

When entering refrigerator data into NEAT/MHEA, WAP energy auditors must use the manufacturer's name and model number to search one of the following online databases:

<http://www.kouba-cavallo.com/refmods.htm>

<http://rfdirectory.aham.org/AdvancedSearch.aspx>

When possible, auditors must use the online databases or manufacturer's information and carefully document the information in the job documents. It is required to use a power meter when refrigerator energy usage information is unobtainable. The NEAT/MHEA energy audit will decide if a refrigerator is allowed to be replaced as an ECM. Replacement refrigerators must be Energy Star rated or equivalent and the correct KWH must be entered in to NEAT/MHEA.

7.7 Unvented Space Heaters

If the unit targeted for weatherization services has an unvented gas or liquid fuel space heater that serves as the primary heat source for the home, this unit must be replaced as part of the weatherization services provided. The home **cannot** be weatherized under the WAP if the client refuses the removal of the primary unvented space heating source or if funding is not available to remove and replace the unit. The unit is to be replaced with a vented, code-compliant heating system that is appropriately sized for the home.

If the unvented gas or liquid fueled space heater is a secondary heat source, it may remain in the home provided it complies with the International Residential Code (IRC) and the International Fuel Gas Code (IFGC). Removal is required, except as secondary heat, unless the unit conforms to ANSI Z21.11.2. Units that do not meet ANSI Z21.11.2 must be removed prior to weatherization, but may remain; until a replacement heating system is in place. DOE funds may not be used to replace any unvented space heater that serve as a secondary heat source.

7.8 Low-Cost or No-Cost Energy Measures

The Tennessee WAP will allow the installation of the following measures that are typically acknowledged to be cost effective.

- Water Flow Controllers, including low-flow shower heads
- Furnace or Cooling Filters, up to a one-year supply
- Weather stripping, caulking, plugging, glass patching and other similar measures primarily used to address air infiltration

Low cost-no cost measures are limited to \$50 per unit. Such measures may be installed by the pre-energy auditor or the contractor, but only the cost of the materials will be allowed. No additional labor costs will be permitted. It is not necessary to have these measures recommended by the WA audit tool, nor is a SIR of 1.0 or more required.

7.9 Fuel Switching

The same non-renewable fuel (electric, natural gas, propane) should be used when replacing furnaces, cooling units or domestic water heaters. On a limited basis, the changing or converting from one fuel source to another is only allowed on a case by case situation.

7.10 Permit and Code Compliance

It is the responsibility of the sub-grantee to ensure the contractor obtains all necessary permits and is in compliance with code for the area in which the work is being performed.

7.11 Mold and Moisture

Auditors and contractors should be able to identify potential mold and moisture issues and have the ability to determine whether the issue is beyond the scope of the WAP. The WAP is not a mold abatement and alleviation program.

7.11.1 Moisture Source-Reduction

Observe the following specifications for avoiding the deteriorating effects of crawl-space and basement moisture on insulation and other building materials.

- Solve all drainage problems, ground-water problems, wood-deterioration, and structural problems before installing floor or foundation insulation.
- Slope the ground outside the home away from the foundation.
- Install gutters and downspouts in wet locations and direct roof water away from the home.
- Install a ground barrier in all dirt-floored crawl spaces. Note: Ground barriers can only be replaced as Incidental Repairs, not Health and Safety.
- Confirm that all combustion vents (chimneys), clothes dryer vents, and exhaust fan vents are vented to outdoors.
- Suggest a sump pump for crawl spaces or basements with a history of flooding. The sump pump should be located in an area where it will collect water from the entire below grade area and pump it to a drain or swale outdoors away from the foundation.

CHAPTER 8 – HEALTH AND SAFETY

Tennessee allocates a certain percentage of funding (as approved by the U.S. DOE in the annual federal application) to be used to address health and safety concerns. It is important to remember that the primary goal of the WAP remains energy efficiency. Only those energy related health and safety measures that are necessary to maintain the physical well-being of both the occupants and/or weatherization workers are permitted where:

- Costs are reasonable as determined by DOE in accordance with the State's approved Health and Safety Plan, **and**;
- The actions must be taken to effectively perform weatherization work, **or**;
- The actions are necessary as a result of weatherization work.

8.1 Funding Allocations

Each program year, every sub-grantee will be provided a maximum amount that they can use for health and safety expenditures when weatherizing homes. The sub-grantee may only use these funds for allowable health and safety measures, as required by the specific home and in accordance with DOE guidelines and the Tennessee Health and Safety Plan found in Chapter 20.

If a unit requires health and safety measures in order to perform weatherization, and the sub-grantee has spent their annual allocation, the job will have to be deferred unless the sub-grantee has other funding sources that can be used to address the issue. It is the responsibility of the sub-grantee to ensure they manage their health and safety funding in such a way as to ensure the maximum number of homes may be weatherized. Jobs that require extensive health and safety measures may require deferral until the issues can be addressed through other sources, or may not be a candidate for weatherization.

Any health and safety funds that are not required will revert to program operations and are to be used for the weatherization of homes.

8.2 Maximum amount of Health and Safety Funds Per Unit

The maximum cap includes all ECMs, incidental repairs (IR) and health and safety measures for that unit. This cap may only be exceeded with prior approval by THDA, on a case by case basis. See Chapter 1.4.1 Benefit Caps for additional information.

Under no circumstances will health and safety funds be spent on any home where ECMs are not being performed.

8.3 Savings-to-Investment (SIR) Requirements

Tennessee does not require that health and safety measures meet minimum SIR requirements.

8.4 Determining Cost for Health and Safety Measures

All health and safety measures must be included in the work order, and bid with the ECM/IR package of measures for the specific job. Health and Safety measures are subject to the same procurement requirements as ECM and incidental repairs, with the exception of meeting SIR requirements.

8.5 Allowable Health and Safety Measures

Only those measures as defined in the DOE approved Tennessee Health and Safety Plan are allowed.

CHAPTER 9 – Quality Control Inspection

Every unit weatherized must have a quality control inspection, performed by a certified Quality Control Inspection (QCI) inspector (staff or contractor). The federal regulation that supports this is 440.15 (g) Minimum Program Requirements:

“No dwelling unit may be reported to DOE as completed until all weatherization materials have been installed and the subgrantee, or its authorized representative, has performed a final inspection(s) including any mechanical work performed and certified that the work has been completed in a workmanlike manner and in accordance with the priority determined by the audit procedures required by 440.21.”

9.1 Purpose of the QCI

The purpose of the QCI process is to ensure that the weatherization measures for a specific job were all performed accurately and completely prior to the job being reported as completed and the contractor receiving payment. Quality control inspections ensure that weatherization services have been provided in a quality manner and that the home is left in a safe condition. The sub-grantee is required to perform a QCI on 100% of all units prior to reporting them to THDA as completed.

Each sub-grantee performs these mandatory QCIs utilizing qualified energy auditors that are either sub-grantee staff members or who have been approved by the sub-grantee to perform audits on their behalf as contractors. It is the responsibility of the sub-grantee to make sure their auditors do quality work and do not pass jobs where measures are missing or where quality workmanship has not been achieved. A sub-grantee’s failure to ensure that a quality QCI has been performed often results in questioned costs for the sub-grantee and results in the sub-grantee not meeting performance standards.

Quality control inspections are required after all work is complete. The sub-grantee must perform a QCI before counting the home as a completion.

9.2 Energy Auditor Assignment

Only those energy auditors who have met minimum qualifications (refer to Chapter 10) may perform the QCI. The auditor may be a staff, or approved by the sub-grantee to perform audits on a contract basis.

9.3 Scheduling the QCI

A job is not considered to have been reported as completed and ready for quality control

inspection until the contractor submits the following to the sub-grantee:

- the final, itemized invoice, and;
- proof of permits and passed code inspections as applicable for the specific unit, and;
- all certificates and/or warranties for installed items.

Once the contractor has submitted the documentation as described above, the sub-grantee can schedule the QCI.

9.3.1 Timeframe for Completion

Program policy does not define a specific number of days in which the QCI must be assigned and/or completed once the job has been reported by the weatherization contractor as completed. The sub-grantee has the flexibility to assign a specific number of days for completion of an audit, if they wish to do so. It is the responsibility of the sub-grantee to manage the work in such a way as to ensure that all funds are fully expended within the program year and jobs are moved timely through the weatherization process.

9.3.2 Client Notification

The client is to be notified of the QCI prior to it being conducted either in writing or verbally.

9.4 Conducting the QCI

9.4.1 Preparation

Prior to conducting the quality control inspection, the auditor must be provided a copy of the contract with attached scope of work and all subsequent approved change orders. Information related to pre-energy audit diagnostic tests, field notes, material certifications provided by the contractor for items installed, and all relevant materials must also be provided. It is the responsibility of the sub-grantee to ensure that the auditor is provided these materials when assigned the job for inspection. Further, it is the responsibility of the QCI inspector to review all materials prior to and while conducting the inspection, in order to obtain a full picture of the unit's condition pre-weatherization and the scope of the work to be performed.

9.4.2 Validity of Pre-Energy Audit

If the QCI inspector observes recommended measures that are:

1. Not permitted under the program or for some other reason were not appropriate for that specific job,
2. A measure that should have been installed but was not included in the work order,
3. Or a measure that was deleted as a result of a change order,

the inspector shall report their finding to the sub-grantee immediately. The QCI inspector must clearly identify the measure in question and why it is of concern.

The sub-grantee, upon receipt of such a report, shall carefully review the issue. If the concern is considered to be valid, the sub-grantee is responsible for making sure the unit being weatherized had only those measures allowed and required under the program installed. Any missing measures are reconsidered prior to the job being marked as complete. Further, the sub-grantee must address deficiencies in the audit with the individual who conducted the audit and take appropriate steps to prevent such occurrences in the future.

9.4.3 Diagnostic Testing

The QCI inspector must conduct all diagnostic tests, as appropriate for the specific unit, and as based on the measures installed. Such test results must be compared to the pre-energy audit test results, and documented as part of the post-audit.

A blower door test is to be performed on every unit post-weatherization, even if air infiltration reduction measures were not included as part of the work order. The results of the post-audit blower door test must be documented. If for some reason the auditor is unable to conduct the test, the auditor must clearly document why it could not be performed. The sub-grantee should expect the blower door test to be performed, with very rare exception. If an auditor reports multiple instances of failure to perform blower door and other diagnostic tests, the sub-grantee must explore why and take appropriate action.

A blower door test must be conducted on every home that included air sealing as a measure. A critical part of the post-weatherization inspection is to ensure that the target CFM was achieved as a result of air sealing measures. Not reaching the air sealing target should be an exception, rather than the norm, with the post-weatherization blower door reading falling at or below the target as identified in the pre-audit. If the job fails to meet the target and the contractor has installed all sealing methods within reasons, a detailed explanation via change order must be provided on the job report.. The sub-grantee will submit the change order to the state for approval. The sub-grantee may compensate the contractor for what infiltration reduction was achieved. It will be at the State's discretion to accept the job, or to question the cost of the air sealing measure that failed to achieve the target.

9.4.4 QCI Documentation

The auditor must inspect every item on the work order/change order to ensure all measures have been fully and correctly installed, in accordance with program guidelines. Failure to meet this standard will result in a failed quality control inspection.

When conducting a QCI, the sub-grantee inspector shall do the following:

- Confirm that the specified measures are installed. Inspect the work to ensure that workmanship and materials standards are met.
- Make sure all required permits have been obtained, and inspections performed by local codes.
- Use an infrared scanner or chemical smoke to inspect dense pack insulation and air sealing quality.
- Test combustion appliances to confirm that they currently operate in a safe and dependable manner. Perform worst-case draft tests and CO tests.
- Perform final blower door tests.
- Take digital pictures of every completed measure for the case file to be provided to the sub-grantee with the completed ***Quality Control Inspection Form***.
- Make sure that the job site is cleaned up.
- Specify corrective actions where initial work doesn't meet standards. ***The job is not considered to have "passed" until all measures have passed inspection***
- Review operation of the customer's programmable thermostat, if installed.
- Review all completed work with the customer.
- Review and provide all manufacturer warranties and certificates to the client
- Completed, signed and dated ***Quality Control Inspection Form***
- Confirm that the customer is satisfied with the work and obtain the client's signature on the inspection form.

The ***Quality Control Inspection Form*** is to be used when completing the QCI. This form shall include each measure from the work order/change order for the specific job, and a finding for the inspection of that measure. Pictures should be clearly marked with the assigned job number and date stamped. These pictures will allow the sub-grantee to show the condition of the home and subsequent weatherization work at the time of the passed post- energy audit. This documentation will be especially helpful if a subsequent QCI is performed and conditions have changed.

Upon completion of the QCI, the auditor must sign and date the form, indicating that they have inspected the measures as documented. Upon a determination of "pass", the auditor will review the completed work with the client, and the client will be asked to sign the form- accepting the work. Failure to comply with the above requirements and/or provide documentation of the conducted QCI will result in the audit not being considered as completed.

9.4.5 Client Refusal to Sign Passed QCI Form

Occasionally, a client will refuse to sign a completed and passed ***QCI form***. The reason may be that the client did not agree with the work to be performed, wanted a different type of measure, or additional work that was not appropriate for the home, or work that was beyond the scope of the program.

If a client refuses to sign the form accepting the work, the auditor must report this refusal to the sub-grantee with an explanation for the client's refusal. The explanation of client's refusal must be submitted to THDA with the job documentation for determination as to whether the unit will be considered a completed WAP job.

9.5 Failure of the QCI

A QCI will require inspection of all measures. The failure of any measure will result in the failure of the inspection and the unit not being considered as completed.

If the client refuses to sign, then the Auditor/Inspector would communicate to the sub-grantee.

If any measure fails, the measure must be documented in writing with pictures, relevant SWS code, and justification.

The contractor will be notified of the failed measure(s) and required to correct the item. The contractor will not receive any reimbursement for correcting the failed measure(s). The sub-grantee has the option to set a timeframe for completion of corrections by the contractor. Upon completion of all corrections, the contractor will notify the sub-grantee that the unit is ready for re-inspection. The sub-grantee has the option to set and apply contractor penalties for failed quality control inspections.

9.5.1 Re-Inspections

All QCIs that failed one or more measures must be re-inspected. The re-inspected must be performed on-site, with only those measures that had failed and have been corrected to be inspected, following guidance provided in section 9.4. The original *QCI Form* may be updated with the results from the re-inspection, or a new form may be completed and attached to the original inspection form.

Once all measures have passed inspection, the client will be asked to sign the *QCI Form*, indicating their acceptance of the completed work. However, if one or more of the measures continues to fail inspection, the job will again be failed. The job must continue to follow the process outlined in this chapter until all measures have passed inspection.

9.5.2 Reporting Jobs as Completed that Failed QCI

A job that failed the QCI cannot be reported as a completed unit to DOE. The sub-grantee cannot pay the contractor for any job/measure that did not pass the post-audit inspection.

9.6 Exceptions to QCI Requirement

There may be instances where it is not possible to conduct a post-audit inspection of a home that has been reported as completed by the Contractor. Examples of such instances include, but are not limited to:

- Clients who refuse to allow the QCI inspector into the home, or who fail to respond

to multiple attempts to schedule a QCI.

- Homes that have been destroyed or otherwise damaged to such an extent that inspection of installed measures is not possible.
- Homes that are no longer occupied by the applicant household and/or no longer owned by the property owner at time of weatherization, and the new resident/owner will not allow entry.

9.6.1 Client Refusal

The auditor must make a good faith effort to schedule the quality control inspection before concluding that the client is refusing to cooperate with the QCI. Such efforts shall include, at minimum:

- A minimum of one phone contact attempt at the last known phone number(s)
- A written notice to the client of a scheduled QCI appointment. This notice shall include the date and time the visit will occur. Unless the client contacts the auditor to cancel the appointment, the auditor must make a visit to the property and attempt access to conduct the inspection.
- A certified letter that includes a second appointment for a QCI to be conducted. This letter shall remind the client that they agreed to comply and allow access to their property as a condition of eligibility.
- One un-announced visit to the property site in an attempt to gain access.
- If the auditor is unable to gain access after the above steps, determine if the home is rented. If rented, contact the landlord and request access, scheduling the QCI appointment to be conducted with the presence of the landlord or his representative.
- Document the case file to reflect all attempts and outcomes of each attempt made to conduct the audit.

If the auditor is unable to gain access to the property, after making their best good-faith effort, the auditor may mark the inspection form to indicate they were unable to conduct the inspection.

9.6.2 Property Destroyed or Damaged

If the inspector verifies that the property has been damaged and/or destroyed to such an extent that a QCI of the installed measures is not possible, the case file shall be documented with proof of how it was verified. The contractor will be required to submit an invoice, and attest to the specific measures on the invoice (all or partial) that were fully and completely installed. If not all measures were installed prior to damage occurring, the invoice is to be revised to reflect only that work which was performed, per the contractor attestation. Only those installed measures may be reimbursed.

Please refer to Chapter 12 for additional guidance that may be found in the Energy Crisis Plan.

9.6.3 Property No Longer Occupied by Household

Applicants who move from the home while weatherization is being performed are to be reported by the Contractor to the sub-grantee for action. In some rare instances, the household may move between the time the weatherization was completed and the QCI was scheduled. If the inspector determines the applicant no longer resides in the household, every attempt should be made to gain access to the household through the new resident and/or property owner. If access is not possible, despite the inspector's best efforts, the case file shall be documented to reflect the steps taken to obtain access, and the outcomes. The QCI will be cancelled.

9.6.4 Completed Units with No Final QCI

If the QCI cannot be performed, the sub-grantee may close the case with an application status of "No Final" in the WAP database. The property will not be reported as a completed unit for purposes of DOE or for purposes of meeting the sub-grantee's production benchmarks. However, the funds spent on the property will be considered when calculating the average cost per unit for the sub-grantee.

The contractor can be paid for work performed once all avenues have been exhausted in an attempt to complete a post audit on the job, and THDA may be invoiced for the expenditures.

The case file shall be carefully documented to reflect that no final audit could be performed on the job, and the steps that had been taken to attempt to conduct the audit. The WAP Database will be updated to reflect the QCI information and all job costs prior to selecting a status of "No Final".

9.7 State Inspections

Federal regulations require THDA to conduct inspections on units that have been had a passed quality control inspection, and which have been reported by the sub-grantee as completed. Per federal requirements, each sub-grantee must have a minimum of five percent (5%) of all reported units inspected. Sub-grantees that are considered to be "at risk", or with a history of poor performance or areas of concerns, may have a higher percentage of completed units inspected by THDA. The state has the right to inspect beyond 5% of an agency's reported units at its sole discretion.

THDA will conduct these inspections, utilizing qualified contractors. Units to be inspected will be randomly selected by THDA.

The sub-grantee, upon notification of the job being selected for state inspection, must fully cooperate with THDA, or THDA's representative, providing access to the client file and copies of relevant information for the auditor assigned to conduct the state inspection. The auditor will provide a written report and documentation of the conducted state inspection. This report will identify best practices, missed opportunities, areas of concern, or if the job was passed by the sub-grantee QCI inspector in error. State inspections may also provide opportunities to provide technical assistance to the sub-grantee and their staff/contractors.

In the event of the state inspection identifying concerns with the job, the sub-grantee will be notified of the issues in writing. The sub-grantee will be responsible for working with the contractor who performed the work, and the client, to correct any issues. The contractor may not be paid any additional funds for correcting poor workmanship. Once the issues have been corrected, the sub-grantee will notify THDA and the assigned state inspector and provide documentation of the corrections made. If the sub-grantee does not agree with the finding of the state inspection, they may rebut the finding, providing documentation to support their claim. All rebuttals must be provided in writing to THDA. The state inspection may or may not conduct another site visit to re-inspect the corrections, depending on the documentation provided and the original issues identified. If the job that was originally passed by the sub-grantee was failed upon re-inspection, the sub-grantee must take action to address the issue with the inspector who performed the original quality control inspection and the contractor who performed the work. Continued poor performance can result in THDA taking corrective action against the sub-grantee.

THDA will maintain statistics related to the outcome of all state inspections. These statistics will track the number of state inspections conducted, statewide and per sub-grantee, the outcome of the state inspection, and pass/fail rates for the program, sub-grantee, auditors and contractors. This information will be used to identify training and technical assistance needs, poor performers, and entities that are not meeting performance standards.

CHAPTER 10 - ENERGY AUDITOR REQUIREMENTS

Every home must have an initial inspection (Pre-Audit) performed by an energy auditor before any weatherization work is performed. Once the work has been completed the home must have a quality control inspection (Post-Audit) performed. The sub-grantee will be responsible for ensuring that both of these audits are performed, following state mandated policies and procedures and utilizing the state approved audit tool.

The energy auditor may be an employee of the sub-grantee or may be performing services as a contract employee. The energy auditor will also be required, as part of their regular job duties, to provide client education and to install low-cost and/or no-cost energy measures for the unit.

10.1 Minimum Energy Auditor Qualifications

Every energy auditor conducting initial inspections (Pre-Audits) must have an Energy Auditor (EA) certification from the Building Performance Institute (BPI).

Every energy auditor conducting quality control inspections (Post-Audits) must have a Quality Control Inspector (QCI) certification from the Building Performance Institute (BPI).

Every auditor must exhibit expertise with the approved energy audit tool and participate in all THDA mandatory energy auditor training.

The following courses are offered by Community Housing Partners (CHP) as prerequisites for potential energy auditors: <https://www.communityhousingpartners.org/1856/online-courses.html>

- Client Education (online)
- Crew Leader (online)
- Weatherization Management (online)
- Energy Auditor (online)
- Retrofit Installer Technician (online)
- HVAC Fundamentals (online)
- Manufactured Housing Fundamentals (online)
- Quality Control Inspector (online)

Additional training curriculums for new or current auditor certification may be approved on a case-by-case basis by THDA.

Energy auditors are required to attend all training that are listed as mandatory by THDA. Training will be provided via online, in the field, and in the classroom.

Sub-grantees can pay for the training and BPI exams for contracted energy auditors with prior THDA approval. See Chapter 13.5 in this manual for additional information.

If an energy auditor is unable to pass the BPI exams on the first attempt, the sub-grantee can request to pay for the auditor's second attempt. Sub-grantees can also request for the auditor to attend additional training. If the auditor is unable to pass the BPI exam after the additional training and the second exam attempt, then the sub-grantee will be responsible to pay for the exam using non-WAP funding sources.

All energy auditors are expected to have access to all required diagnostic equipment, including a blower door, combustion analyzer, combustion gas detector and personal CO monitor, and have expertise in the use of the equipment.

10.2 OSHA Training for Auditors

It is the responsibility of the contractor to obtain the Occupational Safety and Health Administration (OSHA) training necessary for his crew lead and staff. DOE funds may be used as needed to provide training for Grantee and sub-grantee staff as appropriate.

This training may be provided in a classroom setting or on-line. Only those training providers approved by the U.S. Department of Labor – OSHA are allowed. Approved training providers and verification of approved on-line courses may be obtained on the US DOL-OSHA website at: <http://www.osha.gov/dte/outreach/courses.html>

10.3 Certified Renovator and Lead Safe Weatherization (LSW)

All energy auditors must be RRP (Renovation, Repair, and Painting) Certified. Documentation of the energy auditor's RRP certification must be on file at each sub-grantee. Although not required, it is encouraged by THDA to have energy auditors obtain Lead Safe Weatherization (LSW) training.

10.4 Suspension and Debarment

The sub-grantee must check the federal Excluded Parties List System (EPLS) prior to entering into a contract with the potential energy auditor. Any contractor on this list is prohibited from providing services, and the sub-grantee cannot award a contract for provision of WAP services to the entity.

The EPLS may be found at on the federal SAM (System for Award Management) website: <https://www.sam.gov>

10.5 Sub-Grantee Additional Requirements for Energy Auditors

Sub-grantee may require additional qualifications for energy auditors.

10.6 Contracted Energy Auditors

Energy auditors who have been approved to work in WAP must also be approved by the specific sub-grantee that they are contracted. Sub-grantees have the option to determine if they wish to use only staff auditors, only contracted energy auditors, or a combination of the two. Limited program funding may result in staff auditors not being financially feasible.

If an energy auditor who meets the minimum requirements applies with a sub-grantee to work as a contracted auditor, it is the decision of the sub-grantee to contract with the individual or not. A sub-grantee is not required to contract with all certified energy auditors who apply to work with their sub-grantee.

Every auditor who contracts to perform energy audits for the WAP must sign an agreement with the sub-grantee. A template is provided in Chapter 18 for this purpose.

10.7 Maximum Payment Amounts for Energy Audits

Sub-grantees are expected to negotiate the best possible price for an energy audit when procuring these services. However, the maximum amount that may be paid for any single-family energy audit is capped as follows:

- Initial Inspection (Pre-Audit) : \$450
- Quality Control Inspection (Post-Audit) : \$250
- Quality Control Inspection (Subsequent inspections): \$100

The maximum payment amount for energy audits for multi-family buildings over 5 units but less than 24 individually heated and cooled units is capped as follows:

- Initial Inspection (Pre-Audit): \$250 multiplied by the total number of units in the building
- Quality Control Inspection (Post-Audit) : \$150 multiplied by total number of units
- Quality Control Inspection (Subsequent inspections): \$50 multiplied by total number of units

Payment for an energy audit for any multi-family building other than described above will be

negotiated on a case by case basis, and payment amount determined in consultation with THDA.

10.8 Energy Auditor Restrictions

An individual who has contracted to work with a sub-grantee as an energy auditor **cannot** also be approved to work as a weatherization contractor for that same sub-grantee. Any individual who is a certified energy auditor and weatherization contractor may only contract to perform one of the functions with the sub-grantee.

10.9 Energy Auditor Probation, Suspension and Termination

Sub-grantees have the flexibility to set their own policies for energy auditor probation, suspension and termination, and are strongly encouraged to do so. The provided Energy Auditor Contract Template in Chapter 19 can be modified to include any sub-grantee specific penalty situations and fiscal penalties. Any contracted energy auditor that is suspended or terminated by a sub-grantee due to poor performance, fraud or abuse will be reported to State Office.

10.10 Communication and Program Updates

It is the responsibility of the sub-grantee to keep all approved energy auditors notified of all program updates and mandatory trainings.

10.11 Disallowed Cost for Energy Audits

Any energy audit performed by an auditor who fails to meet minimum qualifications and/or was not authorized to perform energy audits for the sub-grantee at the time the audit was conducted will be considered a disallowed cost.

If the sub-grantee exceeds the maximum cap for an energy audit, the amount exceeding the cap will be disallowed. If the contract between the sub-grantee and the energy audit specifies an amount less than the amount paid, that difference will also be disallowed.

If the energy auditor performs a final energy audit on a job where weatherization work has been performed and passes the job, **and** the job subsequently fails upon inspection by the Grantee after consultation with the sub-grantee, the sub-grantee will not be reimbursed for the cost of their final energy audit. The amount disallowed will be equal to the amount paid if the auditor was contracted, or \$200 if the auditor was a sub-grantee employee.

CHAPTER 11 – CONTRACTOR REQUIREMENTS

Weatherization work may only be awarded to those licensed contractors who have met minimum program requirements and have been approved by the specific sub-grantee. Sub-Grantees have the option to impose further contractor requirements in addition to the program's minimum requirements.

11.1 Licensure

All weatherization contractors must have a current Tennessee General Contractor or Home Improvement license issued by the State of Tennessee. If the building to be weatherized is 4 or more stories, or a multi-family building with 5 or more units, the contractor must have an active Tennessee Commercial Contractor's license.

The sub-grantee must verify that the license is current at the time the job is awarded and the license not scheduled to expire prior to anticipated completion date of all work. If the contractor is not licensed or the license is not active at the time the bid was submitted and the contract awarded, the submitted bid is invalid. Tennessee contractor licenses may be verified at <http://verify.tn.gov/>

11.2 Contractor Certification Training

Contractors who wish to be eligible to bid must have successfully completed a THDA recognized training certification program on the proper way to install weatherization measures. All other contractor certification programs for weatherization will be evaluated on a case-by-case basis by THDA as an allowable substitution or for inclusion on the list of approved weatherization contractor training certification programs.

WAP specific contractor training can be paid for using sub-grantee T&TA funds with prior THDA approval and use of the T&TA Retention Agreement (Chapter 19 of WAP Manual). See Chapter 13.5 in this manual for additional information.

11.3 Documented Contractor Experience

Any contractor with a minimum of 3 years of documented experience in the installation of weatherization and related measures may be permitted to work in WAP in lieu of completing the training. The decision to permit a contractor with documented experience is left to the discretion of the sub-grantee.

Each sub-grantee must make their own determination regarding experience evaluation. The documented experience does not transfer between sub-grantees and does not remove the requirement to be licensed. The documentation must include the date of the review, the sub-grantee staff person reviewer, and proof of experience.

11.4 OSHA Training for Contractors

Weatherization installers on a job site should have successfully completed and be prepared to provide certification of the mandatory OSHA Construction Industry Outreach training. The crew leader for the job must have completed the 30 hour OSHA Construction Industry Outreach training. All weatherization workers on the job site must have completed the 10 hour course, at minimum.

Sub-grantees are encouraged to conduct visits to job sites where work is in process. During such visits, sub-grantees should verify that safe work practices are being followed.

All workers must follow OSHA standards and HAZCOM and take precautions to ensure the health and safety of themselves and other workers. HAZCOM must be posted wherever workers may be exposed to hazardous materials.

This training may be provided in a classroom setting or on-line. Only those training providers approved by the U.S. Department of Labor – Occupational Safety and Health Administration are allowed. Approved training providers and verification of approved on-line courses may be obtained on the US DOL-OSHA website at: <http://www.osha.gov/dte/outreach/courses.html>

DOE WAP funds may not be used to pay for the cost of this training for weatherization Contractors or their staff. The weatherization Contractor will be responsible for obtaining and paying for the training certification for his/herself, the crew leader assigned to the job, and their employees.

11.5 Lead Safe Weatherization Training

THDA encourages all weatherization crews working on pre-1978 homes to receive Lead Safe Weatherization (LSW) training. This is not a requirement but a highly beneficial training certificate.

11.6 Certified Firm Status - EPA's Lead-Based Paint Renovation, Repair and Painting

Only EPA RRP Certified Firms may offer to perform renovations (weatherization measures) in any home built prior to 1978 where lead-based paint will be disturbed. For more information regarding this rule (40 CFR Part 745), please refer to the EPA website at <http://www.epa.gov/lead/pubs/renovation.htm> . This link provides details regarding the rule, publications, and a list of FAQs regarding the rule requirements, which was finalized on July 6, 2010. When reviewing this information it is important to remember that compliance requirements as they apply to the WAP are not the same as required under the HUD program.

The contractor must provide documentation of RRP Certified Firm status when submitting a bid to perform work that requires Certified Firm status. All weatherization crews working on pre-1978 homes must also receive LSW training and be accompanied by an EPA Certified Renovator on the job. Documentation of the contractor's on-site EPA Certified Renovator status must be provided.

11.6.1 How to Determine if Requirements Apply

Prior to performing renovations, the sub-grantee or their designee must determine if the home being weatherized requires a Certified Renovator/Firm and if the lead pamphlet must be distributed. The brochure that is required for distribution is "*Renovate Right – Important Lead Hazard Information for Families, Child Care Providers and Schools*". This brochure is available in both English and Spanish versions. A copy of this brochure may be found on the EPA website at: <http://www.epa.gov/lead/pubs/renovaterightbrochure.pdf> In addition, a supply may be obtained through the National Lead Information Center at 1-800-424 LEAD (5323).

Step #1: Does the job involve activities that disturb painted surfaces in a home or child-occupied facility built before 1978? (Owner statement is considered acceptable documentation, unless the statement provided is considered questionable by the sub-grantee.)

If **No:** EPA RRP requirements **do not** apply, and you may continue without requiring a Certified Renovator/Firm. No pamphlet is required.

If **YES:** Go to Step 2

Step #2: Are any of the following conditions present?

- Work consists of only minor repairs or maintenance that disturbs less than 6 square feet of painted surface per interior room or less than 20 square feet of painted surface on the exterior of the home. **Note:** If windows are being replaced, demolition is involved or activities are performed using prohibited practices then a Certified Renovator/Firm must be used and the requirements of the rule must be followed.
- Housing is for the elderly or disabled and no children under 6 years of age are expected to reside in the home
- Housing has been determined to be free of lead-based paint, in accordance with EPA guidelines

If **YES:** EPA RRP requirements **do not** apply, and you may continue without requiring a Certified Renovator/Firm. No pamphlet is required.

If **NO:** RRP Rule requirements may apply. You will need to provide the lead pamphlet to the owner of the home, and the tenant if not owner-occupied, with confirmation of receipt. Please use the Pre-Renovation Form (provided in Chapter 18) to document this confirmation of receipt. Continue to Step 3.

Step #3: Is the home being renovated owner-occupied?

If **YES:** go to Step #4.

If **NO:** RRP rule requirements apply and a Certified Firm/Renovator is required.

11.6.2 Identifying the Need for a Certified Firm/Renovator

Once it has been determined that a Certified Firm/Renovator is required, the requirement will be reflected on the Job Posting form. The Contractor must carefully review the job posting to determine if Certified Firm status is a requirement for the bid. By reviewing the job posting, contractors will be able to determine if they must have Certified Firm status and a Certified Renovator on staff in order to bid on and be awarded the job. For all jobs which do require a Certified Firm, documentation of this certification from the contractor who wins the bid must be provided and maintained in the contractor file. If the contractor is unable to provide this certification, the submitted bid will be disqualified and the contractor cannot be awarded the job. Having applied for Certified Firm status will not meet this requirement – the contractor must have proof they are an EPA Certified Firm at the time the job is awarded.

11.7 Liability Insurance

All contractors must provide proof of liability insurance, in an amount equal to or greater than the minimum amount as required by the sub-grantee.

11.8 Prohibition of Illegal Immigrants

The Contractor shall not knowingly utilize the services of an illegal immigrant on any WAP work site, and shall not knowingly utilize the services of any subcontractor who will utilize the services of an illegal immigrant when performing services for WAP.

The Contractor shall maintain records for all personnel used in the providing services for any job. The personnel records shall be made available for review and random inspection at any reasonable time upon reasonable notice by THDA, the sub-grantee, the State, DOE, or any representatives of the same.

If the contractor fails to comply with these requirements, the contractor will be delisted, and prohibited from contracting with, or submitting an offer, proposal, or bid to contract with the State of Tennessee to supply goods or services for a period of one year after a contractor is discovered to have knowingly used the services of illegal immigrants while providing services for the WAP.

For purposes of this section, "illegal immigrant" shall be defined as any person who is not either a U.S. citizen, a Lawful Permanent Resident, or a person whose physical presence in the U. S. is authorized or allowed by the federal Dept. Of Homeland Security and who, under federal immigration laws and/or regulations, is authorized to be employed in the U.S. or is otherwise authorized to provide services under the contract.

11.9 Suspension and Debarment

The sub-grantee must check the federal Excluded Parties List System (EPLS) prior to entering into a contract to provide services. Any contractor on this list is prohibited from providing services, and the sub-grantee cannot award a contract for provision of WAP services to the entity.

The EPLS may be found at on the federal SAM (System for Award Management) website at: www.sam.gov.

11.10 Contractor Use of Blower Doors

The sub-grantee has the option to require their approved contractors to utilize a blower door when performing air infiltration measures. The blower door may also be used by the contractor in determining if they have achieved the target CFM for the specific unit.

11.11 Warranty of Work

The contractor must warranty all work provided under the job contract for a period of one year. If any issues arise as a result of work performed by either the contractor, or any of the contractor's sub-contractors, the contractor must return to the job site and correct the issue without further cost to the program or the client. The contractor is to provide to the sub-grantee all manufacture's warranties for materials installed in the unit. The sub-grantee is to ensure the client/property owner receives these warranty documents.

11.12 Certificates

The contractor is to provide all certificates associated with the installation of measures for the WAP job, including but not limited to, Certificates of Insulation. The sub-grantee is to ensure that the client/property owner receives the certificates.

11.13 List of WAP Approved Contractors

A list of contractors who have complied with the WAP mandatory trainings may be found in the WAP Database. Please note: Contractors who have been grandfathered in, only the continuing education training attendance will be included on this list, as these contractors were exempt from the "new contractor" training.

11.14 Disallowed or Questioned Costs

Examples of situations involving contractors that can result in questioned costs include, but are not limited to, the following:

- Awarding work to a contractor who does not meet minimum qualifications for participation in the program, or who was not approved to submit bids on posted jobs

**Tennessee Housing Development Agency
WAP Manual**

- Awarding work to a contractor who is on the federal Excluded Parties List System
- Not following procurement guidelines
- Not obtaining all required documentation from the contractor

CHAPTER 12- DISASTER RECOVERY PLAN

In the event of a natural disaster that impacts the operations of the WAP, the following disaster recovery plan will be enacted. The following plan will be executed upon a federal or state declaration of disaster for a specific area within the state.

- Identify those current clients who reside in a disaster area. A current client is one who has applied for and been determined eligible for the WAP.
- If the client resides in a disaster area, the sub-grantee must contact the client to determine if the home has sustained any damage. If the client states the home was not damaged in the disaster, document the case file to reflect their statement, along with the date of the contact and the name of the sub-grantee representative who spoke to the client. No further action is required, and standard WAP procedures will be followed.
- If the client states damage occurred, document the contact in the client file, and follow the disaster plan guidance based on the current job status for the home.

Job Not Yet Begun – Home on Wait List

The job is not considered to have begun if the applicant has been approved, but is still on the wait list. Contact the applicant to determine if damage has occurred to the home. If there is no damage, document the case file, and no further action is required. If the home is destroyed or condemned, or if the applicant has moved without intending to return once repaired, close the WAP case. If the home is damaged and requires repair, the home remains on the wait list. Determine if the home is eligible for extra priority points as a result of the disaster and adjust accordingly. Document the client file with relevant information and action taken.

Jobs in Process

Identify those current clients who have a WAP job in process. A job is considered to be in process if any of the following actions have taken place:

1. A pre-energy audit has been completed;
2. The job has been awarded to a contractor;
3. Installation of weatherization measures has begun;

However, there has not been a completed and passed post-energy audit performed as the final inspection by the sub-grantee for these jobs, nor has the job been closed or marked as completed.

Home Damaged; Job Not Yet Awarded or Begun

If the home had a pre-energy audit performed, but the job has not yet been awarded, do not award the job. If it is determined that the home was destroyed or condemned, or if the client is no longer residing in the home and does not intend to return once repaired, close the case and document the file.

If the home was not destroyed, conduct another pre-energy audit to determine if the condition of the home permits the weatherization work to continue, and the weatherization measures to be installed. If home repairs are necessary due to damage, these repairs are to be completed utilizing funds other than DOE (insurance, disaster relief funds, personal funds or loans, funds from other programs, etc.) prior to the energy audit being performed. The weatherization measures work may be deferred pending repair. Upon repair, the home may be audited, and the weatherization work may proceed based on the current audit recommendations, and following current WAP guidelines and policies.

Home Damaged: Job Had Been Awarded, But Not Yet Completed with Final Inspection

If the installation of weatherization measures was in process (work had begun, but the post-audit inspection had not been completed), and the contractor had not yet completed the work, determine if home was destroyed. If destroyed, the contractor is to invoice the sub-grantee for only those measures installed in the home at the time of the disaster. No post inspection is required, but the sub-grantee must confirm the home was destroyed and an audit is not possible due to damage. This home cannot be counted as a completed unit; however DOE Weatherization funds may be used to pay for audit and contractor costs.

If the home was not destroyed, and repairs are necessary due to damage, these repairs are to be completed utilizing other funding sources. Another energy audit will be required once repaired to establish the current status of the home, and the appropriate energy measures based on that status. The job may need to be deferred until necessary renovations are completed prior to weatherization taking place. The contractor may be paid for all measures installed at the point of the disaster, with a post-audit to be conducted on the measures if possible. It may be necessary to re-bid the job if the work to be performed changes significantly or there is a long delay before the job can be finished while waiting on repairs. Do not close the job until all weatherization work is

completed. Depending on the amount of work to be performed following the disaster, the job may need to be re-bid.

Items that had been installed, but were subsequently destroyed due to the natural disaster and not covered by the homeowner's insurance or other funding sources, including disaster relief benefits, may be included in the subsequent audit and work order. The change order process must be followed to accommodate the newly defined measures. Note: Throughout this process, DOE funds may only be used for those energy related incidental repairs. WAP is not designed to be a renovation program.

Home Damaged: Re-Weatherization of Previously Completed Units

A home that has been weatherized prior to the disaster, but which was damaged by a federal or state declared disaster, may reapply for re-weatherization services without regard to the date previously weatherized. A new energy audit is required. All other eligibility conditions will apply, and the job must be reported as a re-weatherization.

Additional Priority Provided

Current clients in a disaster area may be provided priority services, with 15 additional points provided to disaster victims. These points are added to the points already provided to vulnerable household members as part of the priority point system. The household must include a member who is elderly, disabled, or under age six before the additional points can be awarded. Additional priority points will only be provided upon verification of a FEMA assigned number for that client/residence for the specific disaster.

New applications for WAP following a disaster may also receive an additional 15 priority points as a disaster victim provided:

- The existing structure was damaged (not destroyed or condemned) in the disaster, and;
- The household includes a member that is elderly, disabled or under the age of 6 years, and;
- The application is received within four months from the date the disaster occurred, and;
- The applicant provided verification of an assigned FEMA number for the specific disaster.

Points to Remember

- If a weatherization job that was in process or completed was damaged in the natural

disaster, the sub-grantee must determine if the homeowner has insurance or other funds available to cover the costs of repairs. Weatherization funds may not be used if the damage was covered by insurance or other funding sources.

- WAP funds may only be used to address eligible weatherization activities, as currently allowed in Tennessee's policies and procedures.
- If possible, sub-grantees will coordinate the weatherization work efforts for the home to gain efficiencies. This does not negate the requirement to perform a pre-energy audit based on current unit circumstances.
- Personnel that are paid from DOE funds are not allowed to perform disaster relief work in the community. They are permitted to perform work related to protecting the DOE investment, such as securing and protecting weatherization materials and equipment and sub-grantee program files and records when the disaster initially occurs.
- The maximum cap of funds that may be spent per unit includes both pre-disaster and post-disaster work with the exception of jobs that are considered re-weatherization. This cap may only be exceeded with prior approval from the State. See Chapter 1.4.1 Benefit Caps for additional cap information.

CHAPTER 13 – TRAINING AND TECHNICAL ASSISTANCE

The WAP provides allocated funds for the purpose of training and technical assistance. Sub-grantees are responsible for ensuring that all employees and contractors participating in the program have received mandatory training.

13.1 Funding Allocations for Training and Technical Assistance

Each sub-grantee will receive a base amount of funding that fluctuates annually for T&TA activities. These T&TA funds must be used only for training and technical assistance activities. Since the majority of the training will be procured at the State level, the funds provided to local agencies will be utilized primarily for travel and other expenses associated with attending meetings, scheduled trainings and conferences related to the WAP.

A sub-grantee may also request to utilize a portion of their T&TA funding to pay for technical assistance. These services may be provided by a trained and qualified individual, who has the expertise necessary to provide the specified technical assistance required by the sub-grantee. Such a request must include specifics regarding the technical assistance required, the reason why such technical assistance is necessary (such as poor monitoring reports, lack of sub-grantee staff expertise, new program or technical requirements, etc.), the expected outcome to be achieved as a result of the technical assistance being procured, and the amount of T&TA funding the sub-grantee is requesting to spend.

Agencies can opt to budget a lesser amount of T&TA, and convert the difference to the program operations line item if they do not believe they will spend all T&TA funds in the current program year. Once funds are moved from T&TA to program operations, these funds can no longer be used for T&TA activities, nor can a later budget revision return them to the T&TA line item.

13.2 Training

13.2.1 Title VI – Civil Rights

Sub-grantees must train all employees associated with the WAP on compliance with Title VI. Sub-grantees may utilize their own curriculum to provide this training. Training is required on an annual basis for all employees. The sub-grantee shall retain a list that includes the trainee's name and date of training for documentation purposes.

13.2.2 Mold and Moisture

Although the WAP is not a mold remediation program, and DOE funds may not be used to test, abate, remediate or alleviate existing mold conditions, it is important that weatherization workers and sub-grantee staff involved in the program operations of the program are able to recognize conditions that promote mold growth and how it may best be prevented.

All energy auditors and weatherization crews are required to be trained on annual basis on the recognition and prevention of mold and moisture impacts and conditions. This training also provides guidance in how to treat less extensive mold conditions that may be encountered within certain homes, to the extent permitted under the program.

The DOE has provided a training curriculum for this purpose. This curriculum is provided in PowerPoint format, and may be found in either the Appendix, or may be accessed at: http://www.waptac.org/data/files/website_docs/health_and_safety/mold_moisture/mold%20training.ppt

Each sub-grantee must keep a log of training attendees for each State fiscal year. The sub-grantee will be responsible for ensuring that all auditors and contractors are trained each year.

Each client must receive *A Brief Guide to Mold, Moisture, and Your Home* during the pre-audit. This guide gives the client information regarding mold basics, mold cleanup and prevention along with other helpful information. The sub-grantee may add this to their current checklist of information given to the client or develop a form to ensure that each client receives the information. This guide may be found in the Appendix section.

If the auditor or contractor detects the presence of mold the *Mold Release Form* must be completed and signed by the client. This form is located in Chapter 18. The sub-grantee must retain this form in the client file and proceed with deferral following procedures outlined in Chapter 5, if appropriate.

13.2.3 Lead Safe Weatherization

THDA encourages all auditors and weatherization crews working on pre-1978 homes to receive Lead Safe Weatherization (LSW) training. This is not a requirement but a highly beneficial training certificate. Sub-grantees may request this specific training for auditors and contractors.

13.2.4 Identification of Training Needs

The need for additional training and technical assistance may be determined as a result of DOE guidance, desk reviews, and findings as a result of monitoring and post-inspection technical visits. Sub-grantee input will be encouraged regarding the topics to be covered. Changes in federal requirements or program policies and procedures may also result in the need to provide/procure training.

13.2.5 Procurement of One-Time and Specialized Training

The majority of one-time and specialized training will be procured by THDA, and provided to the local agencies. This allows not only for consistency in the training statewide, but can also provide cost savings.

Sub-grantees must obtain prior approval from THDA prior to utilizing training and technical assistance funds to procure any training for their staff or contractors, with the exception of the annual refresher training. THDA will evaluate each request on a case by case basis. There may be occasions where THDA provides a blanket approval to the sub-grantee network that allows procurement of specific training through a preapproved training vendor.

13.3 Technical Assistance

13.3.1 State Inspections

THDA will conduct inspections of completed units to ensure that all weatherization measures have been correctly identified, in accordance with program policies and procedures, and these measures have been correctly and fully installed in the reported unit. THDA may conduct these inspections through the use of staff or contracted entities.

Inspections will provide an opportunity to provide on-site technical assistance, if the need arises. Sub-grantee agencies should look upon these inspections as a learning opportunity, if concerns are identified, and also as a forum to present sub-grantee best practices. The ultimate goal is to build a strong network of sub-grantees, auditors and weatherization contractors who consistently provide quality workmanship in the identification and installation of energy efficiencies.

THDA will conduct inspections on a minimum of five percent (5%) of all completed units for each sub-grantee. Sub-grantees that have been determined to be of higher risk or do not have a separation of duties between the pre auditor and the QCI inspector will have a minimum of 10% of units inspected. The state has the right to inspect beyond 5% of any agency's

reported units at its sole discretion.

THDA will utilize T&TA funding to procure services or staff to conduct the required state inspections of units that have been reported by sub-grantee agencies as previously inspected, and now reported as completed with a passed inspection.

13.3.2 Sub-grantee Technical Experts

Tennessee will continue developing a network of sub-grantee experts that can serve as an on-site resource. As funding permits, these sub-grantee experts will receive specialized training, which they will in turn disseminate to the sub-grantee network of weatherization staff, energy auditors and weatherization contractors. Continuing education will be provided annually to the network of energy auditors and contractors approved by the local agencies, if funding is available.

Peer-to-Peer technical assistance and utilization of sub-grantee expertise will be used to provide technical assistance on specific topics and to sub-grantees who are in need of program technical assistance.

13.3.3 Tennessee Weatherization Field Guide and Standard Work Specifications

Tennessee has developed a state specific Weatherization Field Guide and Standard Work Specifications. This guide was developed using the National Renewable Energy Laboratory Standard Work Specifications (SWS) as the base, with customization performed to incorporate Tennessee specific requirements. This guide is an available technical resource for all sub-grantee agencies, auditors and contractors participating in the WAP.

In the event that the THDA SWS contains guidance that is in direct conflict with DOE regulations or specific requirements, the DOE take precedence. Tennessee has also released a series of technical assistance memorandums. These memorandums may be found in the Appendix. The THDA SWS will be reviewed annually. Any updates or clarifications will be distributed as needed.

13.3.4 THDA/Sub-Grantee Communication

Regular meetings (via conference call as well as in-person) between the sub-grantee network and THDA will determine situations that require training and/or technical assistance to be provided. In addition, findings from monitoring reports will be used to identify technical assistance needs, which may be sub-grantee specific or network-wide.

THDA program staff will conduct an annual program meeting prior to the beginning of the new program year. The purpose of this meeting will be to review any changes to the program's policies and procedures and any changes in federal program requirements. This meeting is also used as an opportunity to define THDA's expectations for sub-grantee performance.

13.5 Contractor T&TA Retention Agreements

T&TA funds may be used to train contractors at the sub-grantee level participating in the WAP with approval on a case-by-case basis by THDA. In making the determination to pay for contractors' training, sub-grantees should secure a retention agreement in exchange for the training. The retention agreement should require that contractors will work in the Program for a specific amount of time and must align with the cost of the T&TA provided. A sample contractor/agency retention agreements can be found in Chapter 19.

13.6 Continuing Education for Energy Auditors and Weatherization Contractors

THDA may require all energy auditors (staff or contracted) and/or contractors to participate in continuing education or other training courses. Failure to fully participate in mandatory training or to obtain additional training certifications will result in the individual no longer being qualified to provide services for WAP.

CHAPTER 14 – FISCAL ACCOUNTABILITY

14.1 SAMs and DUNS Number

A DUNS (Data Universal Numbering System) number is required for any company or entity that works through or with the government. The DUNS number is a unique identifying number for a specific business. All sub-grantees are required to have a current DUNS number.

All sub-grantees are also required to have a current registration with the SAM (System for Award Management) and to keep this registration current. Documentation of the sub-grantee's DUNS and CCR registration is required.

14.2 Pollution Occurrence Insurance (POI)

Sub-grantees are not required to purchase Pollution Occurrence Insurance, but may opt to do so. If a sub-grantee does opt to obtain POI, it is an allowable expenditure.

14.3 Financial Audit

Sub-grantee's may charge a percentage of the audit costs to the WAP, in accordance with the sub-grantee's approved in-direct cost allocation plan.

14.4 Contract and Amendments

Sub-grantees must comply with all the terms and conditions of their current contract, and any subsequent amendments. All submitted expenditures will be reviewed in accordance with the sub-grantee's current, approved budget.

14.5 Budget and Budget Revisions

14.5.1 Allowable Administrative Expenditures

Administrative costs may be paid based on the guidance provided in the appropriate OMB circular(s) and other program guidance for the specific sub-grantee (governmental or non-profit), and in accordance with the sub-grantee's submitted and approved annual budget. The sub-grantee should define their administrative cost consistent with the generally accepted accounting practices and procedures within each organization. Indirect costs can be considered

a part of Grantee Administration and will be considered allowable provided an indirect rate or amount is approved by the cognizant sub-grantee for the sub-grantee.

Examples of allowable sub-grantee administrative costs include:

- All telephone costs, including long distance charges, incurred by the weatherization program;
- Salary and fringe benefits of the weatherization coordinator when not carrying out the functions allowable under program support;
- Salaries and fringe benefits of clerks/secretaries, inventory clerks, fiscal and other administrative staff;
- Administrative costs not covered under other defined categories, for example: space, copying and consumables.

Sub-grantees should consult with the entity that provides their audit services.

14.5.2 Caps on Administrative Expenditures

Administrative costs are capped at six percent (6%) of actual expenditures under the sub-grantee's WAP contract.

Any sub-grantee who receives less than \$350,000 total in federal WAP funding may request to transfer up to an additional five percent (5%) of their total funding allocation for administrative costs. Such requests must be submitted, with justification to support the request, as part of the sub-grantee's annual budget to THDA for review. THDA approval is required.

14.5.3 Line Item Limitations

At the beginning of each program year, every sub-grantee will be provided the gross amount of their funding allocation for WAP. Additionally, each sub-grantee will also receive the maximum amount of funds that can be allocated for those budget items that have maximum caps. This includes:

- Training and Technical Assistance
- Health and Safety Expenditures

A sub-grantee can opt to submit a budget with less than the maximum amount allowed for the capped line items, transferring the excess funds to other line items as permitted under state and federal budget guidelines. THDA approval will be required for all budget revisions. If, during the program year, the sub-grantee is allocated additional funding, or the funding in the existing contract is reduced, these caps will be adjusted according.

14.5.4 Budget Revisions

Budget revisions will be submitted to THDA program staff for review. All budget revisions must be approved by THDA.

14.6 Reimbursement of Expenses

Expenditures will be reimbursed, with appropriate documentation to support the expenditure, and in accordance with the approved budget for the sub-grantee. Items considered to be questioned costs will not be reimbursable, and are subject to recovery for subsequent invoices, or by other means.

14.7 Advance Payments

Per 2 CFR 200.305(b)(1) sub-grantees have the ability to request advance payments. Subgrantees must send all advance payment request to THDA. THDA will approve or deny the request subject to funding and the sub-grantee's current standing on the WAP Risk Assessment.

14.8 Equipment Purchases

All equipment purchases require advance approval by THDA prior to purchase. "Equipment" is defined as having an original purchase price of \$5,000 or more. If a request to purchase equipment is approved, the sub-grantee must follow acceptable procurement methods in obtaining the equipment.

Equipment that is purchased using DOE WAP funds can only be used for units that are being weatherized through the DOE WAP.

14.9 Submission of Invoices

14.9.1 Frequency

The WAP is a cost reimbursement program and sub-grantees are reimbursed monthly upon submission of the required invoicing documents. All invoices must be submitted within 60 days from the end of the month in which the expense was incurred. An invoice is not considered to have been submitted in its entirety unless it is accompanied by documentation to support the expenditure(s).

14.9.2 Documentation

Invoices are to be submitted on the THDA provided invoice document found in Chapter 18. All invoices must be accompanied by documentation that supports all expenditures on the invoice. Each completed job to be invoiced must be closed on the WAP Database, with the job included on the monthly invoice in which the job was completed.

The following is to be submitted for every job included on the monthly invoice for reimbursements. Each job should be included on the invoice submitted for the month in which it is completed and closed in the database.

Please be sure to include the job number on each of the documents provided.

Contracted Audits

1. Job Number
2. Type of audit conducted (pre-energy, initial post-energy, subsequent post-energy)
3. Name of contracted auditor
4. Amount Paid for audit, and date paid

Completed WAP Jobs

1. NEAT/MHEA pre-energy audit recommended measures for both the original work order and the re-run audit to reflect actual work at actual cost.
2. Copy of contractor's final, detailed invoice
3. Copy of the Bidder's Work Order
4. Documentation of any change order requests, to include date requested, what is included in the change order, reason for request, NEAT/MHEA support of the change order dollar amount and how established, and staff name of who approved the change order.
5. QCI report that details each item included on the work order, and the status of the inspection. If any items did not pass inspection, please submit both the original form and evidence that it was re-inspected and subsequently passed. This should also include pre- and post-audit blower door/pressure pan/CO readings. In the event that the post-audit target was not met, provide an explanation of same.

6. Photographic documentation of all pre- and post-audit measures.
7. The pay request documentation must clearly state the funding source for each measure.

Administrative and Staffing costs

1. Staff Time Sheets
2. Travel expense – purpose and documentation to support invoice
3. Office expenses
4. Supplies
5. Cost allocation

Training and Technical Assistance

1. Training obtained – title and purpose
2. Who provided the training
3. Who attended the training (name and job title)
4. Receipt for expenses being submitted for reimbursement
5. For staff travel associated with a specific job, please provide the job number, the date of the travel, total mileage and expenses. ***Note: Travel for staff related to program operation activities will be charged to the Program Operations line item.***

All invoices will be reviewed for accuracy prior to payment being made. Any discrepancy must be resolved before payment is made.

14.10 Reporting Requirements

Sub-grantees are reminded to be cognizant of the reporting requirements outlined in their contracts. Failure to meet these reporting requirements will result in contract funds being withheld until the state office is in receipt of the reports.

CHAPTER 15 – MONITORING AND CORRECTIVE ACTION

15.1 Programmatic and Management Monitoring

Each sub-grantee will have an on-site monitoring visit performed annually, at minimum. Sub-grantees will be monitored for compliance with federal and state policies and procedures, and where applicable, compliance with the sub-grantee's approved operational plan. A sample of case files that is a mix of denials, approved-wait list, in process and completed may be reviewed at this visit for the following, although this list is not meant to be all inclusive:

- Correct determination of eligibility and notification provided,
- Case documentation
- Identification of re-weatherized units, and sub-grantee method for tracking homes that have been weatherized
- Compliance with rental property requirements and eligibility
- Compliance with multi-family building policies
- Compliance with Historic Preservation guidelines
- Correct calculation of priority and priority standards followed
- Pre-audit and appropriate identification of measures in accordance with program policies, utilizing the state approved audit tool and review of the generated work order to ensure quality and detail provided
- Procurement of work
- Quality control inspection process
- Measures invoiced in correct budget category (ECM, Incidental Repairs, H&S)
- Client Education
- Timeliness
- Database accuracy and timeliness of data entry
- Compliance with program policies and procedures
- Use of standard, mandatory templates
- Customer satisfaction
- Best Practices
- Previous monitoring findings, concerns, recommendations

In addition to the review of case files, the following information may also be reviewed at the annual visit:

- Conduct inventory of any equipment (Equipment - original purchase price of \$5,000 or more) purchased with DOE funds.
- Review staff and contractor qualifications and contracts, if applicable, to determine

- compliance with program requirements
- Review sub-grantee's process of tracking and addressing quality and workmanship concerns and findings for staff, auditors and contractors.
- Review process for contract payment
- Review the sub-grantee procedures for identification of staff performance and subsequent corrective action to address any deficiencies
- Using the operational plan that each sub-grantee must submit to the Grantee on an annual basis for review and approval, monitor for compliance with the Plan.
- The sub-grantee's most recent annual audit
- Review findings from Grantee's technical inspections and corrective action plans that have been implemented to address any concerns
- Procurement process complies with federal and state requirements, and follows procedures outlined in the sub-grantee's operational plan
- Budget management of funds
- Compliance with production goals
- Contract compliance
- Timely and accurate submission of reports and invoices
- Identification of Training and Technical Assistance needs

This list is not meant to be all-inclusive, and may be expanded as necessary to ensure compliance with both federal and state program guidelines. Some or all of the components may be reviewed, at the discretion of THDA.

15.2 Financial Monitoring

In addition to an annual on-site financial monitoring visit to each sub-grantee, all invoices submitted for payment will undergo a fiscal desk review prior to any payment being authorized. This desk review will include 100% of all invoices and the documentation that supports the amount invoiced. The invoice and supporting documentation will be reviewed and approved by multiple staff persons prior to submission to THDA's fiscal department for payment. Any invoice item that lacks sufficient back-up documentation will not be paid until documentation is provided that justifies the amount invoiced. Additionally, any invoiced expense that is not an allowable expense will be disallowed, and deducted from the amount to be paid.

Every sub-grantee will have an annual on-site financial compliance review conducted by THDA staff. This review will be conducted utilizing a financial audit review checklist that will be developed following the DOE model provided in WPN 12-05, and shared with the sub-grantees at the beginning of the program year. At minimum, this monitoring visit will review

the following items:

- Financial Management and Accounting Systems and Operations
- A review of the most recent annual audit conducted for the sub-grantee. Any additional audits related to WAP that have been conducted within the last twelve (12) months will also be reviewed
- Payroll and personnel
- Equipment, defined as any item with an initial cost of \$5,000 or more that was purchased with DOE-WAP funds (vehicles are not permitted to be purchased with DOE-WAP funds under Tennessee's policies)
- Procurement
- Invoicing (supported by fiscal desk reviews mentioned earlier)
- Record Retention
- Contract compliance
- Follow-up on issues from prior monitoring visits, reports, desk reviews and other sources

15.3 Technical Monitoring

In addition, THDA will conduct quality assurance inspections of five percent (5%) *or more* of all completed units per sub-grantee during the fiscal year. Sub-grantees who are considered to be at risk, or who have had findings identified in prior monitoring may have their completed units inspected at a higher rate. This inspection may be performed by a THDA employee or a contractor acting on behalf of the Grantee. Weatherization activities will be monitored to ensure compliance with the guidelines provided in the Tennessee Weatherization Field Guide, the Health and Safety Plan, technical assistance memorandums and the WAP Policies and Procedures manual. Quality assurance inspections will also serve as an opportunity to provide technical assistance as appropriate.

To the extent possible, units to be inspected by THDA will be selected from the units included on the sub-grantee's monthly invoice, and inspected prior to being reported to DOE as completed. Any unit found to be deficient will be required to be corrected. Findings related to technical assistance visits will be tracked on a sub-grantee, auditor and contractor level to help identify exceptional as well as poor performance and workmanship. These results will be used to identify training and technical assistance needs for our continuous quality improvement process.

15.4 Desktop Monitoring

THDA, or its representatives, may opt to conduct desktop monitoring of a sub-grantee.

15.5 Sub-Grantee Compliance

Each sub-grantee, their staff, and contractors are required to comply with all monitoring. This includes monitoring site visits, data requests, access to records – programmatic, administrative, technical and fiscal, phone and desk audits and conferences, etc. Monitoring and technical review may be conducted by THDA, the State and/or Federal entities or their representatives.

15.6 Monitoring Reports and Corrective Action Plans

Within thirty (30) days following every on-site program or financial monitoring visit, a report that details the findings of the visit, including any identified best practices will be provided to the sub-grantee. The sub-grantee will be required to provide a written Corrective Action Plan (CAP) that addresses all identified findings and concerns. The CAP must provide the actions the sub-grantee has taken or plans to take, along with a timeline for implementation, to address and alleviate the concerns. If the sub-grantee disagrees with any findings in the monitoring report, they may provide rebuttal as part of their CAP. The CAP is not final until it has been reviewed and all corrective action plans and/or rebuttals accepted by the Grantee. If there are questioned costs identified as part of the monitoring visit, and these costs are not successfully resolved during the CAP process, these costs will be recovered from the next invoice. If they cannot be recovered from a subsequent invoice, the sub-grantee will be required to make payment arrangements with THDA for the questioned costs.

Compliance with CAPs will be monitored through desk reviews, communication with the sub-grantee, and subsequent monitoring visits. Sub-grantees who continue to have sub-standard performance that is not successfully addressed by corrective action may have funding reduced, be placed on probation or face termination and no longer be allowed to participate in the program.

15.7 Financial Audit Requirement (Sub-grantees receiving over \$500,000)

In accordance with the terms and conditions of the contract, each sub-grantee shall comply with the Annual Report and Audit requirement. The sub-grantee shall prepare and submit, within nine months after the close of the reporting period (i.e. program year), an annual report of its activities funded under the WAP Contract to THDA, the TN Comptroller of the Treasury, and the Commissioner of Finance and Administration. The annual report for any sub-grantee that receives five hundred thousand dollars (\$500,000) or more in aggregate federal and state funding for all its programs shall include audited financial statements. All books of account and financial records shall be subject to annual audit by the TN Comptroller of the Treasury or the Comptroller's duly appointed representative. When an audit is required, the sub-grantee may, with the prior approval of the Comptroller, engage a licensed independent public accountant to

perform the audit. The audit contract between the sub-grantee and the licensed independent public accountant shall be on a contract form prescribed by the TN Comptroller of the Treasury. Any such audit shall be performed in accordance with generally accepted government auditing standards, the provisions of OMB Circular A-133, if applicable, and the *Audit Manual for Governmental Units and Recipients of Grant Funds* published by the TN Comptroller of the Treasury. The sub-grantee shall be responsible for reimbursement of the cost of the audit prepared by the TN Comptroller of the Treasury, and payment of fees for the audit prepared by the licensed independent public accountant. Payment of the audit fees of the licensed independent public accountant by the sub-grantee shall be subject to the provisions relating to such fees contained in the prescribed contract form noted above. Copies of such audits shall be provided to the designated cognizant state sub-grantee, the State Granting Dept., the TN Comptroller of the Treasury, and the TN Dept. of Finance and Administration and shall be made available to the public.

15.8 Reporting

- a. **Monitoring.** At the end of a program year THDA will review each sub-grantee's financial and programmatic monitoring reports to ensure all outstanding issues have been addressed/corrected. As mandated by federal guidance, THDA will also provide to DOE a report that includes successes and significant problems identified through monitoring. This narrative will be incorporated within the mandated *T&TA, Monitoring and Leveraging Report*.
- b. **State Policy 22.** State Policy 22 requires an annual report of sub-grantee monitoring. THDA will provide a summary of all sub-grantee monitoring, including findings and recommendations to the Tennessee Department of Finance and Administration.
- c. **Production Reporting.** Contracted funds should be expended by the end of each grant cycle. Production benchmarks will be established and monitored to ensure contracted county allocation production goals are met. For those sub-grantees who are substantially behind on production, additional planning documentation may be requested. Under circumstances where a sub-grantee fails to display adequate progress, THDA reserves the right to decrease the amount of the grant and reallocate funds to other sub-grantees.

CHAPTER 16 – SUBGRANTEE ADMINISTRATIVE RESPONSIBILITY

Sub-grantees are required to meet or exceed performance standards and production goals. Emphasis is placed on administration of a program that provides quality workmanship and excellent customer service, while adhering to requirements of the program.

16.1 Client Files and Case Documentation

Each client must have a client file. Documentation that supports client eligibility and services provided must be retained in the client file. If a sub-grantee is unable to provide or locate required documentation, there is no alternative other than to assume non-compliance.

Although every client situation is different, each client file should contain the following documents, at minimum. Unusual situations may require additional documentation to support actions taken. Sub-grantees may include additional requirements, based on their own internal policies.

16.1.1 Client File Contents

- Client Application,
- Proof of eligibility (income, identity, disability if applicable, etc..),
- Energy expenses
- Calculation of priority points
- Energy Bill Release Form
- Proof of ownership of property that is to be weatherized
- If client is renting, a signed landlord agreement is required
- If a re-weatherization, the date the property was originally weatherized
- If a Multi-Family Building: Total units, total eligible units, related job numbers,
- Signatures authorizing WAP to be performed
- Copies of all client notices
- Energy Audit, with recommended measures and SIR values, field notes, all diagnostic test results including blower door and pictures of the home. If unable to perform diagnostic testing, explanation of why they could not be performed.
- If job is deferred, documentation regarding why the job is deferred, what is required to be corrected before it can be considered for weatherization, and client notice of deferral
- Mold and Moisture Assessment, and client notification, if applicable
- Pre-1979 homes- Lead Paint notification documentation
- Work Order/Job Posting Document

- Documentation of bid posting, submitted bids, and selected contractor
- Determination of SIR, based on actual costs in accepted bid
- Weatherization Contractor contract to perform services, with finalized work order and contractor eligibility documentation as required
- LSW and Certified Renovator documentation, if appropriate based on age of the home and work being performed. Documentation that LSW was properly implemented (e.g., photos of the site, containment set up, etc.).
- Notification of any other hazardous conditions, if applicable
- All change order requests, proof of cost effectiveness for any request, amount to be paid, and documentation of approval/denial.
- Quality Control Inspection results, including all diagnostic testing, pictures and notes, and client approval of work performed. If unable to conduct a post-audit due to client refusal to cooperate, documentation of actions take to attempt a post-audit
- Documentation of Client Education
- Itemized Invoice from Contractor, with materials and labor cost per measure broken out.
- Insulation Certificate(s) and Warranty copies, with originals provided to client/homeowner

It is recommended that sub-grantees utilize a client file checklist to ensure all documentation is present. A Job Documentation sheet can also be used to provide a history of the job flow, and a place to document justification of installed measures, incidental repairs and health and safety items.

16.2 Case File/Documentation Retention

The books, records, client files and documents of the sub-grantee (and any approved subcontractor), insofar as they relate to work performed or money received under this Contract, shall be maintained for a period of five years from the date of the final payment and shall be subject to audit at any reasonable time and upon reasonable notice by the state agency, the Comptroller of the Treasury, or duly appointed representatives. The records of not-for-profit entities shall be maintained in accordance with the *Accounting and Financial Reporting for Not-for-Profit Recipients of Grant Funds in Tennessee*, published by the Tennessee Comptroller of the Treasury and found at <http://www.comptroller1.state.tn.us/ma/finreptmanual.asp>. The records for local governments shall be maintained in accordance with the *Internal Control and Compliance Manual for Tennessee Municipalities*, published by the Tennessee Comptroller of the Treasury and found at <http://www.comptroller1.state.tn.us/ma/citymanual.asp> and in accordance with GFOA's publication, *Governmental Accounting, Auditing and Financial Reporting*.

16.2.1 Listing of all Weatherized Units

Sub-grantees must maintain a list of all homes/properties ever weatherized by their sub-grantee. This list may **not** be purged, but must be retained by the sub-grantee and made available upon request. At minimum, the list must include the following:

- Full Address (street, city, zip)
- County
- Month/Year in which the weatherization was performed
- Original job number (if one was assigned)

16.3 WAP Database

Every approved application is to be entered into the WAP database. Sub-grantees are required to ensure that all data is timely and accurately entered and updated for proper case management and correct reporting purposes.

16.4 Operational Plan

Every sub-grantee is required to submit an Operational Plan to THDA for review and approve, utilizing a template provided by THDA. In the event that the submitted and approved Operational Plan conflicts with federal or state regulations or requirements, the federal and/or state requirement takes precedence.

16.5 Procurement of Services

Sub-grantees are required to procure services in accordance with federal and state procurement regulations. Please refer to item 16.4 regarding conflicts.

16.6 Management of Work

All sub-grantees are to administer and manage their programs in such a way as to ensure that properties are timely and accurately weatherized, and that provides for all funding allocations to be spent within the program year for which they are allocated.

16.6.1 Oversight of Work Being Performed

Sub-grantees shall provide oversight of work while it is in process. This can include review of information provided by auditors to ensure accuracy and completeness, sufficient detail provided in all work orders, timeliness of scheduling and conducting assigned audits, and customer service

and satisfaction. Sub-grantees are encouraged to have staff, as possible, to perform unannounced visits to job sites where work is in process. This allows the sub-grantee to determine the contractor and his staff at work, and to also verify compliance with OSHA, RRP, LSW and employee compliance with program requirements. Customer service and care of the job site while work is being performed is also important. If unable to make an on-site visit, the sub-grantee may opt to contact the client while the work is in process, checking in to make sure everything is proceeding as planned.

16.6.2 Addressing Poor Performance

Sub-grantees are expected to monitor and address poor performance and workmanship issues for all staff, including energy auditors (employee or contracted) and weatherization contractors approved to work for their sub-grantee. This can include probation, suspension, or termination of the individual/entity from future participation in the program with that sub-grantee.

16.6.3 Corrective Action Plans

If a monitoring visit by THDA, DOE, the State, or their representatives, either programmatic or technical, results in areas of concern or findings being identified that were not corrected at the time of the visit, the sub-grantee must provide a written corrective action plan that addresses the steps the sub-grantee has taken to correct the identified issue, and measures the sub-grantee is putting in place (with a timeline) to prevent future occurrences. All corrective action plans must be provided to THDA within the timeframe as defined in the written report.

Failure to submit the required corrective action plan, or failure to comply with the submitted and approved corrective action plan, can result in the sub-grantee's contract being reduced, and funds reallocated, or termination of the contract.

16.7 Client Appeal Processes

Every sub-grantee shall develop an appeal/grievance process and submit this process for approval as part of their Operational Plan. Every client must be notified of their right to appeal, and the sub-grantee's appeal process. The sub-grantee must comply with their submitted and approved process. Further, every sub-grantee shall maintain documentation related to client appeal requests and outcomes, and provide such records upon request.

16.8 Client Confidentiality and Protection of Records

Strict standards of confidentiality of records and information shall be maintained in accordance with applicable state and federal law. All material and information, regardless of form, medium or method of communication, provided to the Grantee by the State or acquired by the Grantee on behalf of the State shall be regarded as confidential information in accordance with the provisions of applicable state and federal law, state and federal rules and regulations, departmental policy, and ethical standards. Such confidential information shall not be disclosed, and all necessary steps shall be taken by the Grantee to safeguard the confidentiality of such material or information in conformance with applicable state and federal law, state and federal rules and regulations, departmental policy, and ethical standards. The Grantee's obligations under this section do not apply to information in the public domain; entering the public domain but not from a breach by the Grantee of this Grant Contract; previously possessed by the Grantee without written obligations to the State to protect it; acquired by the Grantee without written restrictions against disclosure from a third party which, to the Grantee's knowledge, is free to disclose the information; independently developed by the Grantee without the use of the State's information; or, disclosed by the State to others without restrictions against disclosure. Nothing in this paragraph shall permit Grantee to disclose any information that is confidential under federal or state law or regulations, regardless of whether it has been disclosed or made available to the Grantee due to intentional or negligent actions or inactions of agents of the State or third parties. It is expressly understood and agreed the obligations set forth in this section shall survive the termination of this Grant Contract.

16.9 Client Education

Client education can be one of the most cost effective energy conservation measures. Clients will control their energy consumption, within limits, if they are aware of energy conservation habits and the benefits of this program. It is a goal of WAP to educate, promote and maintain good relationships with our clients, assist with health and safety awareness, remediate potential health and safety concerns within program guidelines, and advocate energy savings measures that will benefit our clients the most.

A supply of client education kits will be provided to each sub-grantee, as part of the program's partnership with TVA. The sub-grantee is to provide the pre-energy auditor with a kit, to be delivered at the time the pre-audit is conducted, with the auditor to go over the items in the kit, and install the CFL bulbs included in the kit in high-use rooms of the home. Client education continues throughout the pre and post audit process, and is an important part of the auditor's role.

The sub-grantee can provide additional client education to the applicant throughout the application and installation process. This may include items such as energy efficiency

materials, counseling in either a group or private setting, etc... Sub-grantees may also wish to use a client education checklist, to document what has been provided to the client to assist them in conserving their energy usage, as a best practice.

The WAP Database will require the sub-grantee to document the client education provided for every client served. This information is an important part of the agreement with TVA, and that allows us to provide the client education kits to our clients, free of charge.

CHAPTER 17 – WAP DATABASE

Sub-grantee staff will be provided access to a THDA database that may be accessed through the internet. All approved applications are to be entered by the sub-grantee into this database. As applicants are selected for weatherization, their case information will be updated in the database. It is critical that all cases are updated timely and accurately. This database will not only provide data for the purposes of case managements for both the sub-grantees and THDA, but will also serve as the data source for the TN WAP federal reports.

The database provides the user with messages that identify those fields that are mandatory, and navigation of the tabs.

17.1 Approved Users

Only those users approved by the sub-grantee's designated authority will be permitted access to the database. Approved users will be provided a link to the database for purposes of registration. The user's email address is the user id. An email address may only be associated to a single sub-grantee. A user may only access and update data associated with their sub-grantee of record.

All users associated to a specific sub-grantee will have access to inquire and update all open jobs for that sub-grantee.

17.2 Database Functions

The user may select from the following options:

- Add Jobs
- Search Jobs
- Add Prior WAP
- Reports

17.2.1 Add Jobs

This function is used to add new jobs to the database. When a user adds a new job, the database will automatically assign the job number following the completion and saving of data on the first screen. The job number will have the prefix of the user's associated sub-grantee.

17.2.2 Search Jobs

The search function is used to locate jobs already in the database. The user may search using a single or a combination of search options. These options include:

- Sub-grantee (will default to the sub-grantee of record for the user)

- Auditor Name
- Multi-Family – Building ID
- County (only those counties within the sub-grantee’s service area)
- Client Last Name
- Contractor Name
- Job Number (the user’s associated sub-grantee’s prefix will be pre-populated)
- Job Status
- Zip Code

If multiple job numbers are returned as a result of the search, a listing will be provided. If the search results in only a single possibility, the system will take the user directly to the Client Info screen for that job. If no results are found, the user will receive a message to that effect.

17.2.3 Add Prior WAP

This feature allows the user to enter data related to jobs that were completed prior to the implementation of the DHS and/or THDA WAP Databases. This function will allow the creation of a statewide listing of all units weatherized under the program. Such a listing will allow the user to also search for instances of prior WAP, thereby reducing the possibility of weatherizing a unit that had previously been weatherized and may not be eligible for further weatherization.

Note: Any new job that is designated as a “Re-Weatherization” must have the prior WAP job information entered into the database before it can be entered.

17.3 Database Tabs

Data in the system is tied to the specific job number, with the data for the specific job organized by tabs.

17.3.1 Client Info Tab

This is the first tab in the series, and the first one to be filled out. It collects client demographics. The user must complete all sections with the exception of Client Education when entering a new job. *Save and Continue* will take the user to the second tab, and assign the job number for the unit.

Prior to entering any new job, the user is to search the database and sub-grantee file to ensure the property has not been weatherized previously.

17.3.2 Property Detail Tab

This tab collects data related to the property to be weatherized. If the applicant rents the property, the landlord information, including the rental agreement check box and sign date are captured in a pop-up box on this screen.

17.3.2.1 Landlord

The landlord information will be required if either *Renter Occupied Site Built* or *Renter Occupied Mobile Home* is selected under *Building Classification*. The information will be required before the user can move to the next tab.

17.3.3 Pre-Audit Tab

The pre-audit tab captures information regarding the pre-audits assigned and conducted on the job. The auditor assigned is also captured, and in the event the auditor is contracted, the amount paid for the audit is entered by the user. Once the user has entered a *Date Received*, the application status will be automatically changed from “Approved-Wait List” to “In Process”.

A pre-audit determination is entered, based on the findings of the auditor. A determination will be made of either:

- Approved for Bid, **or**
- Deferred

If approved for bid, the user may access the Contractor tab. If not approved for bid, the Contractor tab may not be accessed.

If the auditor determines the job is deferred, the user must select the reason for deferral from the drop down box that is displayed when “Deferred” is selected. When selecting deferred as the audit determination, the user must also change the Application Status to “Deferred”.

A history of all pre-audits conducted will be retained by the system and may be accessed from this screen.

17.3.4 Contractor Tab

The Contractor tab becomes available to the user when the pre-audit has been conducted, and the job determined to be approved for Bid. The Contractor tab captures data associated with the job posting and awarding of the contract, including the contractor who was awarded the work to be performed.

17.3.4.1 Contractor Name

Only the names of the Contractors that have been approved to work for that sub-grantee will be displayed. Once selected, the system will auto-populate the contractor’s name, address and license number. A contractor may only have a single address associated. Since some contractors work for multiple agencies, any updates required to the contractor’s information must be provided to THDA, who will in turn update the system.

17.3.4.2 Bid Amounts

Information regarding the accepted and awarded bid amounts for the job are to be entered on the screen, broken out into ECM/IR and Health and Safety. The system will automatically calculate and populate the Total Bid field. Any updates to the amounts must also be entered, thereby creating a history of change orders. The system will retain history of all changes to the bid amounts.

When completing the job, and before it can be closed, the amount on the Contractor Tab and the Job Details Tab must match.

17.3.5 Post-Audit Tab

This tab collects data related to the post audits conducted on a specific job. Each audit conducted must have a determination reason selected from the drop down table. Options are:

- Passed
- Failed
- Client Refused

A job cannot be closed if the last audit has a determination of Failed. Subsequent audits will be performed.

If the job is passed, the job may be closed, once all data has been entered into the system on all the tabs. If information is incomplete on any tab, the user will be directed to complete the required information before the job may be closed. When all job information is complete, the user will have to enter the Invoice Date to close the job. This will be checked against by THDA when processing invoices.

If the audit results in a determination of “Client Refused”, the job may only be closed with an application status of “No Final”. This is only entered after the sub-grantee has followed all procedures as outlined in the manual and it is determined that a post audit cannot be conducted. A case that with a final status of “No Final” may be paid, but cannot be reported to DOE as completed unit. The amount paid for the job will be included when calculating the average cost per job, however.

17.3.6 Job Cost Tab

This tab captures the details of the work that was performed on that specific unit, along with the final cost per measure, broken out into materials and labor. Diagnostics related to blower door results are also documented on this screen.

17.3.6.1 Pre and Post WAP CFM

These fields capture the pre-weatherization and post-weatherization blower door readings. Once entered, the system auto-calculates and displays the results.

17.3.6.2 LCM (Low Cost Measures)

If low-cost measures were provided for the home, the user indicates by check the LCM box. The cost of the measures is then entered, with a value of \$50 or less.

17.3.6.3 ECM/IR Measures

The user carefully selects the appropriate measure as performed for the unit, and as indicated on the work order, and enters the labor and materials cost, broken out. The system automatically totals the costs and displays them. Costs are compared to those entered on the Contractor tab.

17.3.6.4 Health and Safety Measures

All health and safety measures, and their expenses, for the job are entered on this screen. Individual items are auto-calculated by the system and displayed.

17.3.6.5 Total Job Costs

The system auto-calculates and displays the total job costs. If the job had a contractor penalty, the user will enter that amount. The system displays the job total both pre and post contractor penalty application. This must match the contractor invoice and amount entered on the Contractor tab.

It is critical that users enter all costs in the appropriate fields. We will be using this data to track and estimate expenditures throughout the program year, and for revision of the audit cost library.

17.4 Application Status

Each job will have an application status assigned.

- Approved-Wait List: Every newly approved application entered into the database will default to this application status. The job will retain this status until one of the following occurs:
 - The job has a date entered into the Pre-Audit tab
 - The user has changed the application status to Terminated or Deferred.

Jobs with a status of Approved-Wait List will be on the Priority Point report.

- In Process: A job's application status automatically changes to In Process when the

initial pre-audit is assigned. This status indicates the job has been selected for and is in the process of weatherization.

- **Terminated:** The user can change the application status to Terminated provided no funds have been spent on the job (including the cost of any contracted audit). If the user changes the status to Terminated, a drop down box will display. The user must select the reason for the termination of the case. Once the application status has been changed to Terminated, the case cannot be updated by the user. Only THDA admin can make a change to the case or the application status.
- **Discontinued:** The user can change the application status to Discontinued, if some funds have been spent on the job, such as the cost of a contracted audit, but weatherization has not been performed. A designation of Discontinued will allow the user to invoice for those costs.

If the user changes the status to Discontinued, a drop down box will display. The user must select the reason for the discontinuation of the case. Once the application status has been changed to Discontinued, the case cannot be updated by the user. Only THDA admin can make a change to the case or the application status.

- **Deferred:** The user is to change the job status to Deferred to reflect such a determination. The user can change the status back to Approved-Wait List, In Process, Terminated or Discontinued, depending on the circumstances of the case.
- **Closed:** The user changes the status to Closed when all weatherization work has been performed, it has a passed post audit, job costs are entered, and all data – including information related to client education – has been entered into the case. This allows the job to be counted as a completed unit in the month in which the application status was changed to Closed. Once a job has been changed to Closed, only a THDA admin role can update the case.

Note: The job will need to be included on the invoice for the month in which it was closed. This allows our fiscal and program federal reports to balance.

No Final: The user selects the application status of No Final when the job has been completed, all data entered, but a post audit could not be performed because the client refused to cooperate or for reasons outside of the sub-grantee's control. A case that with a final status of "No Final" may be paid, but cannot be reported to DOE as completed unit. The amount paid for the job will be included when calculating the average cost per job, however.

17.5 Reports

Users will be able to see reports for their associated sub-grantee. Only users with THDA

Admin profiles will see statewide report results.

17.5.1 Completed Units quarterly report that provides data for compliance with DOE federal program reports. Quarters are tied to State fiscal year. Only those jobs that were closed within the report quarter are included on the report. Reweathering jobs are included as a separate count.

17.5.2 Pre-Audit Completed

This report provides a list of any job where there is a pre-audit conducted date, with a determination of “Approved to Bid” but there is not a date entered in the Job Posting date on the Contractor tab. This report identifies those jobs that are ready to be posted for bid.

The report provides a list of all jobs for that sub-grantee that met the above conditions, with a link to the actual job from the report.

17.5.3 Job Status

This is a report that provides the sub-grantee with a list of all their jobs. Data is real time, and valid as of the date/time the report is ran. Report fields are:

- County
- Job Number
- Client Name
- Approval Date
- Application Status

17.5.4 Job Process

This case management report provides the user with a listing of all jobs with a current status of *In Process*, and where the job is in the process. This report relies on the timely updating of case data in order to be a useful case management tool. The user selects from the following options, and can link to the specific job from the results returned.

- **Pre-Audit Assigned:** Includes those jobs where a pre-audit has been assigned but not conducted.
- **Pre-Audit Conducted:** There is a pre-audit conducted date in the system, with a status of Approved for Bid, but the job does not have a Date Job Posted on the Contractor tab. This helps to identify those jobs ready to be posted for bid.
- **Jobs Posted:** This identifies those jobs that have been posted for bid, but have not yet been awarded.

- **Jobs Awarded:** This identifies those jobs where the contractor has been awarded the job, but it has not been referred for a post audit. These will be those jobs with the contractor, currently in the process of having weatherization performed.
- **Post Audit Assigned:** The contractor has reported the job is finished, and the auditor has been assigned to conduct the post audit, but it has not yet been completed.
- **Post Audit Complete:** This identifies those jobs where the post audit has been conducted and completed with a finding of either “passed” or “no final”. These are jobs that are ready to be closed.

17.5.5 Priority Point Listing

This report provides a list of jobs by priority points assigned. The report only includes those jobs with an application status of Approved-Wait List. Sub-grantees may only view the list for the counties they serve. The list is sorted by county, and then by priority points – highest to lowest.

No job should ever have more than 100 priority points.

17.5.6 Duplicate Addresses

This report includes all jobs that have the same address in the database. It is used to prevent duplicate entries, and as a case management report for data clean up. It includes the following fields:

- County
- Street address
- City
- Number of duplicate records
- List of job numbers for that address – the report will provide a link to each of the job numbers.

CHAPTER 18 – FORMS

WEATHERIZATION ASSISTANCE PROGRAM (WAP) APPLICATION FOR ASSISTANCE - PROGRAM YEAR 2019

♦ Application is not complete without applicant signature on page 2.

The applicant must provide proof of identity and citizenship with this application. A driver's license, passport, or other government issued document is acceptable proof

Has this home been weatherized under the WAP program since September 30, 1994 through any TN WAP Agency? (circle) Yes No

If yes, which agency provided assistance? _____

If yes, what was the month/year weatherization was performed? _____

For Agency Office Use Only

DATE APPLICATION RECEIVED: _____

DATE APPLICATION COMPLETED: _____

APPLICATION TYPE: WEATHERIZATION or RE-WEATHERIZATION

APPLICATION STATUS: APPROVED or DENIED

JOB # ASSIGNED: _____

Applicant Name (must provide first and last name): _____

Telephone:
Cell:

Current Home Address: _____ City: _____ State: _____ Zip: _____ County (current home address): _____

Mailing Address (if different from home address): _____ City: _____ State: _____ Zip: _____

Emergency/Alternative Contact (Name & phone #): _____

LIST ALL HOUSEHOLD MEMBERS (INCLUDING APPLICANT). USE ADDITIONAL PAPER IF YOU NEED MORE SPACE

NAME (must provide first and last name)	MARITAL STATUS	RELATIONSHIP TO APPLICANT	SOCIAL SECURITY NUMBER	DATE OF BIRTH	AGE	SEX	RACE (Optional to Provide) White, Black, Hispanic, Asian/Pacific Islander, Native American, Native Alaskan, Other - define	Citizenship (indicate if U.S. Citizen, Legal Alien, or Illegal Alien)	DOES HOUSEHOLD MEMBER RECEIVE REGULAR FINANCIAL ASSISTANCE FOR A PERMANENT DISABILITY?	HEALTH INSURANCE	INCOME	Has this person received Families First (Temporary Assistance for Needy Families) or SSI benefits within the last 12 months? Please mark yes or no
Applicant Name:									Y or N	Y or N	Y or N	
Household Member:									Y or N	Y or N	Y or N	
Household Member:									Y or N	Y or N	Y or N	
Household Member:									Y or N	Y or N	Y or N	
Household Member:									Y or N	Y or N	Y or N	
Household Member:									Y or N	Y or N	Y or N	
Household Member:									Y or N	Y or N	Y or N	
Household Member:									Y or N	Y or N	Y or N	
Household Member:									Y or N	Y or N	Y or N	

FAMILY TYPE (check one)

- Single Parent Female
- Single Parent Male
- 2 Parent Household
- Single Person Female (no children) Single Person
- Male (no children) More

DECLARATION OF DISABILITY

(Please use additional paper if more space is needed)

LIST THE NAME OF ANY HOUSEHOLD MEMBER WITH A DISABILITY BELOW, AND HOW IT WAS ESTABLISHED (Social Security Disability, SSI, VA, Vocational Rehabilitation, etc.):

HOUSEHOLD TOTAL INCOME (Below list income information for applicant and all household members). Use additional paper if more space is needed.

NAME	SOURCE OF INCOME	GROSS MONTHLY INCOME (provide proof of all income)	IF EMPLOYED, PROVIDE EMPLOYER'S NAME & ADDRESS

HOUSING

OWN

RENT

SQUARE FOOTAGE: _____

YEAR HOME BUILT: _____

ROOF CONDITION: (please circle) POOR FAIR GOOD

EVIDENCE of MOLD or MOISTURE: YES NO

IF OWNER OF HOME, PLEASE PROVIDE THE FOLLOWING INFORMATION:

NAME (S) ON DEED: _____
 DEED BOOK: _____ PAGE: _____ TITLE # if MOBILE HOME: _____

IF RENTING, PLEASE PROVIDE THE FOLLOWING INFORMATION:

LANDLORD NAME (first and last): _____
 LANDLORD PHONE NUMBER: _____
 LANDLORD ADDRESS: _____

TYPE OF HOME STRUCTURE (circle one in each column)

FOUNDATION TYPE	BUILDING EXTERIOR	SINGLE OR MULTI-FAMILY BUILDING TYPE
Crawl Space	Brick Exterior	Owner Occupied - Site Built
Slab	Vinyl Siding Exterior	Renter Occupied - Site Built
Basement	Wood Exterior	Mobile Home - Owner Occupied
Mobile Home Skirting	Concrete Exterior	Mobile Home - Renter Occupied
Other (describe below): _____	Other Exterior - Describe Below _____	Multi-Family - 2 TO 4 Units (enter total units in building: _____)
		Multi-Family - 5 or more units(enter total units in building: _____)

Have you received assistance in the Low Income Home Energy Assistance Program (LIHEAP) since October 1, 2018?

Please circle: YES or NO

HEATING SOURCE: (Circle your primary source)

ELECTRIC NATURAL GAS PROPANE KEROSENE WOOD
 FUEL OIL COAL OTHER

HOME ENERGY COSTS: \$ _____
 Utility Company Name: _____
 Utility Company Address: _____
 Phone #: _____
 Account #: _____
 Utility Company Name: _____
 Utility Company Address: _____
 Phone #: _____
 Account #: _____

Do any household members have any known or suspected health concerns that would be negatively impacted by weatherization work?

Please circle: YES or NO

(PLEASE ATTACH STUBS, INVOICES, RECEIPTS, ETC FOR ALL ENERGY SOURCES IN THE HOUSEHOLD)

I CERTIFY THAT THE ABOVE ACCOUNT(S) IN THE NAME OF _____

IS FOR THE USE OF MY HOUSEHOLD AND I AM RESPONSIBLE FOR ITS PAYMENTS.

IS THIS ACCOUNT IN YOUR LANDLORD'S NAME? Y or N

NOTE: If the energy bill is not in a household member's name, you must provide proof you are responsible for payment of the bill.

Applicant Certification:

I certify that all of the information provided in this application for weatherization assistance is true and correct. I understand that any one who fraudulently covers up a material fact or who knowingly gives false information for the receipt of weatherization assistance is liable upon conviction to a fine of \$10,000 or imprisonment for not more than five years, or both. I authorize the verification of any and all information provided herein to determine my eligibility, and acknowledge that I have been informed of my appeal rights. I understand that I will be notified in writing of my eligibility status. Pursuant to federal law (5 United States Code 552(b)(6) and 10 Code of Federal Regulations 600.153(f)), identifying information provided by you for determination of your eligibility for Weatherization Assistance and for the provision of services from the program will be considered confidential and, unless otherwise authorized or required by law, will not be shared with any other persons or agencies except for purposes directly related to the administration of the Weatherization Program. I do _____ do not _____ agree that the information contained in my application may be shared with other agencies from which I seek additional services.

APPLICANT SIGNATURE: _____ DATE: _____

NO PERSON ON THE BASIS OF HANDICAP, RACE, COLOR, RELIGION, SEX, AGE, OR NATIONAL ORIGIN WILL BE EXCLUDED FROM PARTICIPATION IN, OR BE DENIED BENEFITS OF, OR BE OTHERWISE SUBJECTED TO DISCRIMINATION IN THE OPERATION OF THE WEATHERIZATION PROGRAM.

To Be Completed By Agency Staff Only:

Total Children under age 6: _____
 Total Disabled Members: _____
 Total Age 60 yrs or older: _____

% OF POVERTY: _____
 APS REFERRAL? YES _____ NO _____
 TOTAL PRIORITY POINTS: _____

% OF ENERGY BURDEN: _____
 HIGH ENERGY BURDEN? YES _____ NO _____
 HIGH RESIDENTIAL ENERGY USER? YES _____ NO _____

TOTAL HOUSEHOLD MEMBERS: _____

CATEGORICALLY ELIGIBLE? YES _____ NO _____

Total # Illegal Aliens in Household: _____

TOTAL ANNUAL HOUSEHOLD INCOME DETERMINED: \$ _____
 TOTAL ANNUAL HOUSEHOLD ENERGY COSTS DETERMINED: \$ _____

SIGNATURE OF DETERMINING OFFICIAL: _____

DATE CERTIFIED: _____

WEATHERIZATION ASSISTANCE PROGRAM (WAP) APPLICATION FOR MULTI-FAMILY BUILDINGS <small>(Separate form required for each free standing building)</small>		<small>For Agency Office Use Only</small>										
<small>◆ Application is not complete without applicant signature at bottom of the page..</small>		DATE APPLICATION RECEIVED: _____										
*** You must provide applications and verifications for building unit residents with this application before we can determine eligibility. ***		DATE APPLICATION COMPLETED: _____										
Has this Building Entity/Owner had another building weatherized under the program or filed an application for other buildings? (circle) Yes No		APPLICATION TYPE: WEATHERIZATION or RE-WEATHERIZATION										
Has this building been weatherized under the WAP program since September 30, 1994 through any TN WAP Agency? (circle) Yes No		APPLICATION STATUS: APPROVED or DENIED										
If yes, which agency provided assistance? _____		MULTI-FAMILY BUILDING #: _____										
If yes, what was the month/year weatherization was performed? _____		DOE APPROVED BUILDING (circle): YES NO										
Building Owner Name (must provide first and last name)*: _____		If not listed on DOE approved list please complete the information below: TOTAL NUMBER OF UNITS: _____ TOTAL ELIGIBLE UNITS: _____ PERCENTAGE OF ELIGIBLE UNITS: _____										
Mailing Address: _____ City: _____ State: _____ Zip: _____												
Telephone: _____ Cell: _____												
Building Address: _____ Building Number: _____ City: _____ State: _____ Zip: _____ County: _____		MAXIMUM ALLOWABLE AMOUNT (total # of eligible units x \$6500) : <div style="border: 1px solid black; width: 100px; height: 20px; margin: 5px auto;"></div>										
* Verification of ownership must be attached to this application.												
Building Representative Name: _____		RELATED JOB NUMBERS FOR <div style="border: 1px solid black; width: 100%; height: 40px; margin: 5px auto;"></div>										
Building Representative Contact Information (Address and Phone Number): _____												
<small>** If a representative is acting on behalf of building owner/public building, documentation that the person has authority to do so, must accompany this application.</small>												
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">TYPE OF BUILDING (circle)</td> <td style="width: 30%;">Total number of units: _____</td> <td style="width: 40%;">Total Square Footage: _____</td> </tr> <tr> <td>PRIVATE OWNED</td> <td>Number of occupied units: _____</td> <td></td> </tr> <tr> <td>PUBLIC OWNED</td> <td>Number of vacant units: _____</td> <td></td> </tr> </table>		TYPE OF BUILDING (circle)	Total number of units: _____	Total Square Footage: _____	PRIVATE OWNED	Number of occupied units: _____		PUBLIC OWNED	Number of vacant units: _____			
TYPE OF BUILDING (circle)	Total number of units: _____	Total Square Footage: _____										
PRIVATE OWNED	Number of occupied units: _____											
PUBLIC OWNED	Number of vacant units: _____											
YEAR BUILDING BUILT: _____		ROOF CONDITION: (please circle) POOR FAIR GOOD										
		EVIDENCE OF MOLD or MOISTURE (please circle): YES NO										
TYPE OF BUILDING STRUCTURE		Are there any known plans for the government to purchase, condemn, tear down, or otherwise clear the dwelling ? (circle one) Yes No Is the building currently for sale? (circle one) Yes No Are there any known plans for the sale of this building? (circle one) Yes No										
Brick Exterior Vinyl Siding Exterior Wood Exterior Concrete/Block Exterior Other Exterior - Describe Please: _____												
Foundation Type: _____												
HEATING SOURCE: (Circle)												
WOOD ELECTRIC FUEL OIL COAL KEROSENE NATURAL GAS L.P. GAS												
Are the units individually heated/cooled (circle)? : YES NO												
Are the unit residents responsible for their full energy bills (circle)? : YES NO												
Please complete Utility company information below:												
BUILDING ENERGY COSTS: \$ _____												
Utility Company Name: _____		Utility Company Name: _____										
Utility Company Address: _____		Address: _____										
Phone #: _____		Phone #: _____										
Account #: _____		Account #: _____										
Applicant Certification:												
<small>I certify that all of the information provided in this application for weatherization assistance is true and correct. I understand that anyone who fraudulently covers up a material fact or who knowingly gives false information for the receipt of weather ization assistance is liable upon conviction to a fine of \$10,000 or imprisonment for not more than five years, or both. I authorize the verification of any and all information provided herein to determine eligibility, and acknowledge that I have been informed of my appeal rights.</small> <small>I agree to freeze rents in all units at the current level (as of time the weatherization is performed) for 3 years. I understand that this rent freeze applies to current and future tenants for the time period. I also understand that the rent freeze must continue even if the building is sold in the meantime. I acknowledge that the failure to comply requires me to reimburse the State/DOE for the tot al cost share they paid within 90 days from the date non -compliance has been established.</small> <small>I understand that I will be notified in writing of my eligibility status. Pursuant to federal law (5 United States Code 552(b)(6) and 10 Code of Federal Regulations 600.153(f)), identifying information provided by you for determination of your eligibili ty for Weatherization Assistance and for the provision of services from the program will be considered confidential and, unless othe rwise authorized or required by law, will not be shared with any other persons or agencies except for purposes directly related to the administration of the Weatherization Program.</small>												
APPLICANT SIGNATURE: _____		DATE: _____										
<small>NO PERSON ON THE BASIS OF HANDICAP, RACE, COLOR, RELIGION, SEX, AGE, OR NATIONAL ORIGIN WILL BE EXCLUDED FROM PARTICIPATION I N, OR BE DENIED BENEFITS OF, OR BE OTHERWISE SUBJECTED TO DISCRIMINATION IN THE OPERATION OF THE WEATHERIZATION PROGRAM.</small>												
To Be Completed By Agency Staff Only:												
SIGNATURE OF DETERMINING OFFICIAL: _____		DATE CERTIFIED: _____										
<small>Note: If applicant has indicated "Yes" to government acquisition or any type of clearance, owner sale of home, or renter moving, the Department of Human Services is to be notified before action is taken on the application.</small>												

WEATHERIZATION ASSISTANCE PROGRAM (WAP) APPLICATION FOR MULTI-FAMILY BUILDING RESIDENTS

◆Application is not complete without applicant signature on page 2.

The owner of the building you reside in has applied for Weatherization and we need to collect information from each unit resident for the purposes of determining eligibility. The building entity must agree to freeze rents in all units at the current level (as of time the weatherization is performed) for 3 years. Even if the building is sold during this time, the rent freeze must continue.

Has this home been weatherized under the WAP program since September 30, 1994 through any TN WAP Agency? (circle) Yes No

If yes, which agency provided assistance? _____

If yes, what was the month/year weatherization was performed? _____

For Agency Office Use Only
 DATE APPLICATION RECEIVED: _____
 DATE APPLICATION COMPLETED: _____
 JOB NUMBER: _____
 BUILDING ID: _____
 UNIT: _____
 APPLICATION TYPE: WEATHERIZATION or RE-WEATHERIZATION
 APPLICATION STATUS: ELIGIBLE or INELIGIBLE

Applicant Name (must provide first and last name): _____ Telephone: _____
 Cell: _____

Current Home Address: _____ City: _____ State: _____ Zip: _____
 Unit/Apartment #: _____ County (current home address): _____

Mailing Address (if different from home address): _____ City: _____ State: _____ Zip: _____

Emergency/Alternative Contact (Name & phone #): _____

LIST ALL HOUSEHOLD MEMBERS (INCLUDING APPLICANT). USE ADDITIONAL PAPER IF YOU NEED MORE SPACE

NAME (must provide first and last name)	MARITAL STATUS	RELATIONSHIP TO APPLICANT	SOCIAL SECURITY NUMBER	DATE OF BIRTH	AGE	SEX	RACE (Optional to Provide) White, Black, Hispanic, Asian/Pacific Islander, Native American, Native Alaskan, Other - define	DOES HOUSEHOLD MEMBER RECEIVE REGULAR FINANCIAL ASSISTANCE FOR A PERMANENT DISABILITY?	HEALTH INSURANCE	INCOME	RECEIVE FOOD STAMPS, SUPPLEMENTAL SECURITY INCOME, FAMILIES FIRST CASH ASSISTANCE (INDICATE ANY RECEIVING)
Applicant Name:								Y or N	Y or N	Y or N	
Household Member:								Y or N	Y or N	Y or N	
Household Member:								Y or N	Y or N	Y or N	
Household Member:								Y or N	Y or N	Y or N	
Household Member:								Y or N	Y or N	Y or N	
Household Member:								Y or N	Y or N	Y or N	
Household Member:								Y or N	Y or N	Y or N	
Household Member:								Y or N	Y or N	Y or N	

FAMILY TYPE (check one) **DECLARATION OF DISABILITY (Please use additional paper if more space is needed)**

Single Parent Female

Single Parent Male

2 Parent Household

Single Person Female (no children)

Single Person Male (no children)

More Than One Adult (no children)

NAME HOUSEHOLD MEMBER(S) AND PLEASE STATE PERMANENT DISABILITY:

HOUSEHOLD TOTAL INCOME (Below list income information for applicant and all household members age 18 or older). Use additional paper if more space is needed.

NAME	SOURCE OF INCOME	GROSS MONTHLY INCOME	IF EMPLOYED, PROVIDE EMPLOYER'S NAME & ADDRESS

☛ NOTE 1: ASSISTANCE WILL BE DENIED DUE TO AN APPLICANT'S REFUSAL OR INABILITY TO FURNISH ALL HOUSEHOLD MEMBERS' SOCIAL SECURITY NUMBERS AND VERIFICATION ☛

▶ NOTE 2: YOU MUST ATTACH INCOME DOCUMENTATION FOR EVERY PERSON IN HOUSEHOLD AGE 18 OR OLDER ◀

◀ COMPLETE BOTH PAGES ▶

HOUSING

OWN RENT If renting, please list your current rent amount: \$ _____

SQUARE FOOTAGE: _____ EVIDENCE of MOLD or MOISTURE: YES NO

IF OWNER OF BUILDING UNIT PLEASE PROVIDE THE FOLLOWING INFORMATION: DEED BOOK: _____ PAGE: _____

HEATING SOURCE (Circle):

WOOD ELECTRIC FUEL OIL COAL KEROSENE NATURAL GAS L.P. GAS

Is your unit individually heated/cooled? (circle): YES NO

Are you responsible for your full energy bill? (circle) YES NO

Included in rent? (Circle): YES NO If included in rent are you responsible for any overages? (please list amount): \$ _____

Please complete Utility Company information below:

Utility Company Name: _____
Utility Company Address: _____
Phone #: _____
Account #: _____

Have you received assistance in the Low Income Home Energy Assistance Program (LIHEAP) since October 1, 2018?
Please circle: YES or NO

(PLEASE ATTACH STUBS, INVOICES, RECEIPTS, ETC FOR ALL ENERGY SOURCES IN THE HOUSEHOLD)

I CERTIFY THAT THE ABOVE ACCOUNT(S) IN THE NAME OF _____
IS FOR THE USE OF MY HOUSEHOLD AND I AM RESPONSIBLE FOR ITS PAYMENTS.
IS THIS ACCOUNT IN YOUR LANDLORD'S NAME? Y or N

Do any household members have any known or suspected health concerns that would be negatively impacted by weatherization work?
Please circle: YES or NO

Applicant Certification:

I certify that all of the information provided in this Multi-Family Building Residents' application for Weatherization assistance is true and correct. I understand that anyone who fraudulently covers up a material fact or who knowingly gives false information for the receipt of weatherization assistance is liable upon conviction to fine of \$10,000 or imprisonment for not more than five years, or both. I authorize the verification of any and all information provided herein to determine the residential building eligibility. Pursuant to federal law (5 United States Code 552(b)(6) and 10 Code of Federal Regulations 600.153(f)), identifying information provided by you for determination of the residential unit eligibility for Weatherization Assistance and for the provision of services from the program will be considered confidential and, unless otherwise authorized or required by law, will not be shared with any other persons or agencies except for purposes directly related to the administration of the Weatherization Program

I do ___ do not ___ agree that the information contained in my application may be shared with other agencies from which I seek additional assistance.

APPLICANT SIGNATURE: _____ DATE: _____

NO PERSON ON THE BASIS OF HANDICAP, RACE, COLOR, RELIGION, SEX, AGE, OR NATIONAL ORIGIN WILL BE EXCLUDED FROM PARTICIPATION IN, OR BE DENIED BENEFITS OF, OR BE OTHERWISE SUBJECTED TO DISCRIMINATION IN THE OPERATION OF THE WEATHERIZATION PROGRAM.

To Be Completed By Agency Staff Only:

Age under 12 months _____
Age 2 years or under _____
Age 3-5 years _____
Age 60-69 years _____
Age 70 or older _____

% OF POVERTY: _____ % OF ENERGY BURDEN: _____
HIGH ENERGY BURDEN? YES _____ NO _____
TOTAL PRIORITY POINTS: _____ HIGH RESIDENTIAL ENERGY USER? YES _____ NO _____
CATEGORICALLY ELIGIBLE? YES _____ NO _____
TOTAL ANNUAL HOUSEHOLD INCOME DETERMINED: \$ _____

SIGNATURE OF DETERMINING OFFICIAL: _____

DATE CERTIFIED: _____

Homeowner Permission Weatherization Assistance Program

Address: _____

By signing below, I authorize:

1. I am the owner of the property listed above,
2. This residence is not currently for sale, nor is it designated for acquisition or foreclosure by federal, state or local programs.
3. The Local Weatherization Agency to make arrangements for weatherization activities, including:
 - The inspection of the interior and exterior of my home;
 - Photographs to document work;
 - The installation of weatherization materials as determined appropriate;
 - Upon completion of work, I give permission for the contractor, sub-contractor staff, local, state, and federal officials to inspect said work.
 - I understand the warranty is one year of workmanship with materials being covered by manufacturers' warranties only.
4. The Local Weatherization Agency to share my information with The State of Tennessee, Tennessee Housing Development Agency, Tennessee Valley Authority, and the U.S. Department of Energy, or their representative, for the purpose of evaluating the Program's effectiveness as a result of services provided.
5. The Local Weatherization Agency to share information contained in my Weatherization Assistance Program application with agencies and/or programs for which I may qualify for additional services.

Homeowner/Applicant:

Signature

Date

Renter Permission Weatherization Assistance Program

Address: _____

By signing below, I authorize:

1. The Local Weatherization Agency to make arrangements for weatherization activities, including:
 - The inspection of the interior and exterior of my home;
 - Photographs to document work;
 - The installation of weatherization materials as determined appropriate;
 - Upon completion of work, I give permission for the contractor, sub-contractor staff, local, state, and federal officials to inspect said work.
 - I understand the warranty is one year of workmanship with materials being covered by manufacturers' warranties only.
2. The Local Weatherization Agency to share my information with The State of Tennessee, Tennessee Housing Development Agency, Tennessee Valley Authority, and the U.S. Department of Energy, or their representative, for the purpose of evaluating the Program's effectiveness as a result of services provided.
3. The Local Weatherization Agency to share information contained in my Weatherization Assistance Program application with agencies and/or programs for which I may qualify for additional services.

Applicant/Tenant:

Signature

Date

Landlord Agreement (Single Family) Weatherization Assistance Program

Address: _____

This Agreement is for the provision of work under the Weatherization Assistance Program for the property located at the address above. The Owner/Authorized Agent agrees to the following conditions:

1. The benefits of the weatherization assistance provided shall accrue primarily to the lessee;
2. The rent for the property shall not be raised for a period of one year from the completion date of the weatherization work, unless the increase is demonstrably related to matters other than the weatherization work performed. This rent freeze remains in place for a period of one year from date of completion of the weatherization work, even if the applicant no longer resides in the property;
3. The lessee will not be evicted without legal cause (non-payment of rent, etc.) for a period of one year from the date of the completion of the weatherization work;
4. If a complaint regarding a rent increase or eviction action is received by the Agency, the Owner/Authorized Agent agrees to immediately provide the Agency, upon request, written information that the terms of this Agreement have not been violated;
5. No undue or excessive enhancement shall occur to the value of the property identified above;
6. There is no known plan for government acquisition or clearance of the property within 12 months of receiving weatherization work;
7. Permission is granted for the Agency to conduct or to make arrangements for weatherization work to take place, including, the inspection of the interior and exterior of the home, the installation of weatherization materials as authorized by the weatherization agency, access to the home for the inspection of completed work;
8. In the event the property is sold, the new owner shall be bound by the terms of this agreement;
9. The terms of this Agreement shall be binding on the parties hereto, their heirs, executors, administrators, representatives, successors and assigns;
10. If this Agreement is not adhered to the cost of the weatherization improvements shall be reimbursed by the Owner/Authorized Agent to the Agency.

Owner/Authorized Agent:

Signature

Date

Owner Mailing Address

Landlord Agreement (Multi-Family) Weatherization Assistance Program

Address: _____

This Agreement is for the provision of work under the Weatherization Assistance Program for the property located at the address above. The Owner/Authorized Agent agrees to the following conditions:

1. The benefits of the weatherization assistance provided shall accrue primarily to the lessee;
2. The rent for the property shall not be raised for a period of three years from the completion date of the weatherization work, unless the increase is demonstrably related to matters other than the weatherization work performed. This rent freeze remains in place from the date of completion of the weatherization work, even if the applicant no longer resides in the property or if the property changes ownership;
3. The lessee will not be evicted without legal cause (non-payment of rent, etc.) for a period of three years from the date of the completion of the weatherization work;
4. No undue or excessive enhancement shall occur to the value of the property identified above;
5. If a complaint regarding a rent increase or eviction action is received by the Agency, the Owner/Authorized Agent agrees to immediately provide the Agency, upon request, written information that the terms of this Agreement have not been violated;
6. There is no known plan for government acquisition or clearance of the property identified above within 12 months of receiving weatherization work;
7. Permission is granted for the Agency to conduct or to make arrangements for the following activities: the inspection of the exterior and interior of structure, installation of weatherization materials as authorized, supervision of installation and inspection of all completed work;
8. In the event the property is sold, the new owner shall be bound by the terms of this agreement;
9. The terms of this Agreement shall be binding on the parties hereto, their heirs, executors, administrators, representatives, successors and assigns;
10. If this Agreement is not adhered to the cost of the weatherization improvements shall be reimbursed by the Owner/Authorized Agent to the Agency.

Owner/Authorized Agent:

Signature

Date

Owner Mailing Address

Applicant Appeal Form Weatherization Assistance Program

Address: _____

I reside at the above address and am appealing my Weatherization Assistance Program application denial because:

Signature

Date

Daytime Phone Number

Applicant Appeal Form Weatherization Assistance Program

For Agency Use Only:

Date Appeal Received by Local Agency:

Date Reviewed by Supervisor:

Outcome:

- Client abandoned the appeal.
- Case decision validated, no action required.
- Case decision overturned, case reinstated. Reason for decision:

Signature:

WAP Coordinator

Date

Notarized Self-Certification of Income Statement Weatherization Assistance Program

Address: _____

A: I certify that during the period of _____ that I had the following income or employment:

Source	Amount	Frequency
--------	--------	-----------

B: I certify that during the period of _____ I earned *zero* income.

C: I certify that the following household members 18 years or older have *zero* income:

Name: _____ has zero income as of ____/____/____

Name: _____ has zero income as of ____/____/____

Name: _____ has zero income as of ____/____/____

I further certify that I cannot obtain proof of this employment and the amount of money I received, and this is a true and complete statement to the best of my knowledge. I further understand that knowingly giving false information for the receipt of Weatherization Assistance Program benefits is liable upon conviction to a fine of \$10,000 or imprisonment for not more than five (5) years, or both.

Signature

Date

Date subscribed and sworn to before me: _____

NOTARY PUBLIC: My commission expires: _____

[Notary Seal:]

Signature of Notary

Printed/Typed Name of Notary

Client Education Checklist

Weatherization Assistance Program

Address: _____

- AC and Heating Systems
 - Discuss appropriate use and maintenance
 - Explain hazards of combustion gas system
- Appliances and Water Heaters
 - Discuss appropriate use and maintenance
 - Explain hazards of combustion gas system
- Asbestos: Discuss possible existence of asbestos in materials
 - How to take precautions if the possibility of asbestos is present
 - Provide results if materials are tested
- Biological and Unsanitary Conditions
 - Inform client of observed conditions (sensory inspection)
 - How to maintain a sanitary home
 - Steps to correct deferral conditions
- Building Structure and Roofing
 - Notify of structurally compromised areas
 - Notify if termites or other wood destroying insects exists
- Client Education Kit: List contents and explain how to use effectively
- Code compliance: Inform Client of observed code compliance issues.
- Combustion Gases
 - Provide combustion gas and hazard information
 - Explain ventilation procedures
 - Importance of the bathroom vent to remove moisture
 - Importance of the kitchen exhaust vent when cooking
 - Importance of maintaining and cleaning equipment
 - Keeping burners clean to prevent CO build up
- Drainage: Explain importance of cleaning and maintaining drainage systems if applicable
 - Proper slope away from residence (5% grade)
- Electrical
 - Provide information regarding overloading circuits, electrical safety/risks
 - Knob and Tube wiring hazards and risk if they are covered (heat build-up)
- Fire Hazards: Inform client of any observed hazards
- Air pollutants
 - Inform client of observed conditions and associated risks
 - Provide written materials on the proper disposal
- Injury Prevention: Inform client of observed hazards and associated risks
- Insulation
 - Use of cellulose (attic and/or walls)
 - With, Boric Acid & Ammonium Sulfate
 - Use of fiberglass
- Lead Based Paint in Homes Built pre-1978**
 - **Provide Client with EPA's, *Renovate Right* pamphlet**

Client Education Checklist Weatherization Assistance Program

- Mold and Moisture**
 - **Provide Client with EPA's *Mold and Moisture and Your Home* pamphlet**
 - **Provide client notification and signed disclaimer**
- Pre-existing or Potential Health Conditions
 - Screen the client during pre-audit for any health risks that might impede effective weatherization
 - Inform client of any potential risks
 - Provide agency outcome
 - List any known or suspected health and safety concerns for anyone living the household:
- Pests: Inform client of observed conditions and associated risks
- Radon: Provide client with EPA's *Consumer's Guide to Radon and Radon Informed Consent Form***
- Refrigerant: Set Freezer 0-5° and Fridge 36-40°
 - Inform client not to disturb Freon
- Smoke, CO, and Fire Extinguishers
 - Instruct on the installation of smoke and CO detectors if applicable
- Solid Fuel Heating: Explain potential fire and CO hazards
- Space Heaters: Inform client of hazards and collect a signed waiver if removed**
- Spray Polyurethane Foam: Provide notification of use to seal the home
- Thermostat: Correct setting to be energy efficient (summer 78°, winter 68°)
- Ventilation: Discuss function, maintenance and proper use of ventilation systems

Client: _____
Signature Date

Auditor: _____
Signature Date

Repair, Renovate and Paint Pamphlet Weatherization Assistance Program

Address: _____

Please Check To Indicate Receipt:

- I have received a copy of the EPA Renovate Right Pamphlet informing me of the potential risk of the lead hazard exposure from renovation activity to be performed in my home. I received this pamphlet before the work began. An electronic version of the Repair, Renovate and Paint (RRP) pamphlet can be found at:
<https://www.cpsc.gov/s3fs-public/renovateright.pdf>

Occupant Signature:

Sign

Date

Agency Representative Signature:

Sign

Date

INSULATION CERTIFICATE – 16 CFR 460.17

Date: _____

Job Number: _____ Permit Number: (if applicable) _____
Site Address: _____ City/State: _____
County: _____ Agency: _____

CEILING	
Batt or Blanket Type _____	Loose Fill Type _____
Brand Name _____	Added Thickness (inches) _____
Total Thermal Resistance (R-Value) _____	Total Thickness (inches) _____
Total Coverage Area _____	Attic Chutes, Baffles, or Dams in place? _____
Number of bags (loose fill only) _____	
Location: <input type="checkbox"/> _____	

EXTERIOR WALL	
Frame Type _____ (stick or balloon)	
Material _____	Brand Name _____
Thickness (inches) _____	Thermal Resistance (R-Value) _____
Coverage Area _____	PSI of Insulation (i.e. 3.5 lbs psi) _____ (if applicable)
Location: <input type="checkbox"/> _____	

RAISED FLOOR	
Material _____	Brand Name _____
Thickness (inches) _____	Thermal Resistance (R-Value) _____
Coverage Area _____	Is Rim Joist Sealed? _____
Ground Cover in place? _____	How Is It Sealed? _____
Location: <input type="checkbox"/> _____	

KNEE WALL(S)	
Material _____	Brand Name _____
Thickness (inches) _____	Thermal Resistance (R-Value) _____
Coverage Area _____	
Location: <input type="checkbox"/> _____	

FOUNDATION WALL(S)	
Material _____	Brand Name _____
Thickness (inches) _____	Thermal Resistance (R-Value) _____
Coverage Area _____	
Location: <input type="checkbox"/> _____	

Declaration

I hereby certify that the above insulation installed in the building at the above location in conformance with FTC, Tennessee Weatherization Field Guide, and IRC (Building Codes Enforcement).

Contractor (Signature)

Date

Quality Control Inspection Form - Weatherization Assistance Program

Address: _____ Job: _____

Client Name: _____ Agency: _____ Contractor: _____

Energy Auditor: _____ Audit Date: _____

Quality Control Inspector: _____ QCI Date: _____

DIAGNOSTIC TESTING

Square Footage: _____

Blower Door

Test	Pre	Target	Post
BD CFM50			
Attic Zonal		X	
Floor Zonal		X	
Wall Zonal		X	
Pressure Pan Location			

ASHRAE 62.2 2016

Location	Pre	Operable Window	Post
Bath 1			
Bath 2			
Kitchen			

Duct Blower Measurements

Test	CFM		Pre	Target	Post
Fan Flow	Total				
	Outside				
At Duct Pressure	Total				
	Outside				
House Pr. WRT Outside	Total				
	Outside				

Combustion Safety

TEST		APPLIANCE				
		Furnace	DHW	Dryer	Stove	UVSH
Fuel Leak	Pre					
	Post					
CO	Pre					
	Post					
Spillage	Pre					
	Post					
Efficiency	Pre					
	Post					
CAZ	Pre					
	Post					

Lead Safe Practices

Is an EPA Certified Renovator required? _____ If yes, is there proof of RRP? _____

Is Lead Safe Weatherization required? _____ If yes, is picture documentation provided? _____

INSPECTION RESULTS

Measure: _____ Pass: _____ Fail: _____

Comments: _____ Pass with Justification: _____ SWS: _____

Measure: _____ Pass: _____ Fail: _____

Comments: _____ Pass with Justification: _____ SWS: _____

Measure: _____

Pass: _____ Fail: _____

Comments:

Pass with Justification: _____ SWS: _____

Measure: _____

Pass: _____ Fail: _____

Comments:

Pass with Justification: _____ SWS: _____

Measure: _____

Pass: _____ Fail: _____

Comments:

Pass with Justification: _____ SWS: _____

Measure: _____

Pass: _____ Fail: _____

Comments:

Pass with Justification: _____ SWS: _____

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Pass with Justification: _____ SWS: _____

Measure: _____

Pass: _____ Fail: _____

Comments:

Pass with Justification: _____ SWS: _____

Measure: _____

Pass: _____ Fail: _____

Comments:

Pass with Justification: _____ SWS: _____

Measure: _____

Pass: _____ Fail: _____

Comments:

Pass with Justification: _____ SWS: _____

Measure: _____	Pass: _____	Fail: _____
Comments:	Pass with Justification: _____	SWS: _____
Measure: _____	Pass: _____	Fail: _____
Comments:	Pass with Justification: _____	SWS: _____
Measure: _____	Pass: _____	Fail: _____
Comments:	Pass with Justification: _____	SWS: _____
Measure: _____	Pass: _____	Fail: _____
Comments:	Pass with Justification: _____	SWS: _____

I, _____, certify that the weatherization work identified has been completed in a satisfactory manner to the best of my knowledge. I understand that if the work is not satisfactorily completed due to poor workmanship, I do not have to sign this form. I further understand that I may appeal such dissatisfaction with the agency.

 (Client's Signature) (Date)

The work identified in this form was inspected and approved by:

 (Post-Auditor's Signature) (Date)

Contractor Requirement Checklist Weatherization Assistance Program

Agency:	
Program Year:	
Contractor:	
Contractor Crew Leader:	

Active TN General Contractor License

Visit <http://verify.tn.gov/> to check on current contractor license status. If the building is a multi-family building with five or more units, or has more than four floors, the contractor must have an active TN Commercial Contractors License

System for Award Management (SAM) Status

Must check the federal Excluded Parties List System (EPLS) prior to entering into a contract to provide services. Visit <https://www.sam.gov> to make sure the contractor is not suspended or debarred from Federal programs. Any contractor on this list is prohibited from providing services, and the sub-grantee agency cannot award a contract for provision of WAP services to the entity. A print screen from system showing the date ran is required in the file.

WAP Training Certificate

Certificate issued by CHP or THDA showing WAP training or proof that they have a minimum of 3 years' experience installing weatherization measures

OSHA Training Certificate

OSHA 30 for the crew leader and OSHA 10 for workers

EPA Renovation, Repair and Painting Certificate

Required for any contractor bidding on work on units built prior to 1978

Liability Insurance

All contractors are required to provide proof of liability insurance

Check Excluded Parties List (EPLS) Annually

Any contractor on this list is prohibited from participating in the WAP.

Please see the TN WAP Manual for additional information.

Contractor Requirement Checklist Weatherization Assistance Program

Agency:	
Program Year:	
Contractor:	
Contractor Crew Leader:	

Active TN General Contractor License

Visit <http://verify.tn.gov/> to check on current contractor license status. If the building is a multi-family building with five or more units, or has more than four floors, the contractor must have an active TN Commercial Contractors License

System for Award Management (SAM) Status

Must check the federal Excluded Parties List System (EPLS) prior to entering into a contract to provide services. Visit <https://www.sam.gov> to make sure the contractor is not suspended or debarred from Federal programs. Any contractor on this list is prohibited from providing services, and the sub-grantee agency cannot award a contract for provision of WAP services to the entity. A print screen from system showing the date ran is required in the file.

Documented Weatherization Training Experience

Provide weatherization training certificate(s) from DOE approved weatherization training center or documented proof of minimum of 3 years' industry experience installing weatherization measures

OSHA Training Certificate

OSHA 30 for the crew leader and OSHA 10 for workers

EPA Renovation, Repair and Painting Certificate

Required for any contractor bidding on work on units built prior to 1978

Liability Insurance

All contractors are required to provide proof of liability insurance

Please see the TN WAP Manual for additional information.

Authorized Signature Form Weatherization Assistance Program

Agency: _____

Contract Number: _____

<u>Authorized Signers</u>	
<i>Two signatures are required for each pay request. It is recommended that four signers are authorized to increase flexibility.</i>	
Name:	Signature:
By signing below I certify that the signatures of the above individuals are the only people authorized to sign WAP pay requests.	
Chief Elected Official Name	Chief Elected Official Signature and Date
<i>Note: The Chief Elected Official may not be one of the persons authorized to sign a pay request. In other words, an elected official cannot certify his or her own signature.</i>	

A New Form Must Be Submitted Whenever Authorized Signers Change.

Request To Exceed ACPU Cap Weatherization Assistance Program

Agency:	
Date Submitted:	
Job Number:	
Current WAP ACPU:	\$
Current Status of Job:	
Total Job Cost:	\$
Total DOE ECM/IR Cost:	\$
Total DOE H&S Cost:	\$
Total LWx Cost:	\$

Justification to Exceed Cap:

Please attach:

1. Work Order with actual SIRs
2. Recommended Measures Report

To be completed by THDA:

Date Received:	
Request Reviewed By:	
Request Approved?	

Sign
Date

RETAIN A COPY OF THIS REQUEST IN THE CLIENT FILE

Mold Inspection and Release Weatherization Assistance Program

Mold can be a problem in any home where there is an excessive amount of moisture present. Weatherization agencies cannot provide direct mitigation of existing mold problems. An assessment of your home included a visual check for mold.

The following areas have been checked for mold:

- | | | |
|---|---|---|
| <input type="checkbox"/> Living/Bedroom Areas | <input type="checkbox"/> Mold is visibly present. | <input type="checkbox"/> Mold is not visibly present. |
| <input type="checkbox"/> Bathroom Areas | <input type="checkbox"/> Mold is visibly present. | <input type="checkbox"/> Mold is not visibly present. |
| <input type="checkbox"/> Laundry Areas | <input type="checkbox"/> Mold is visibly present. | <input type="checkbox"/> Mold is not visibly present. |
| <input type="checkbox"/> Combustion Areas | <input type="checkbox"/> Mold is visibly present. | <input type="checkbox"/> Mold is not visibly present. |
| <input type="checkbox"/> Crawlspace Areas | <input type="checkbox"/> Mold is visibly present. | <input type="checkbox"/> Mold is not visibly present. |
| <input type="checkbox"/> Attic Areas | <input type="checkbox"/> Mold is visibly present. | <input type="checkbox"/> Mold is not visibly present. |
| <input type="checkbox"/> Basement Areas | <input type="checkbox"/> Mold is visibly present. | <input type="checkbox"/> Mold is not visibly present. |
| <input type="checkbox"/> Other Area (specify below) | <input type="checkbox"/> Mold is visibly present. | <input type="checkbox"/> Mold is not visibly present. |

Area: _____

Moldy or Musty Odors: Are present Are not present

(Moldy or musty odors could be an indicator of hidden mold growth)

The Department of Energy generally does not allow weatherization agencies to mitigate mold problems, but some actions associated with a cost effective energy saving measure may be taken to reduce moisture problems. The following measures *may* be taken and *may* help to mitigate existing moisture problems:

- Crawlspace vapor barrier will be installed
- Mechanical ventilation will be installed
- Mechanical ventilation will be repaired
- Combustion spillage will be repaired
- Plumbing leaks will be repaired
- Drainage problems will be repaired
- Roof leaks will be repaired
- Other:

Agency Auditor

Date

- I have received information concerning moisture and mold conditions in my home and I will take steps to reduce excessive moisture. I agree to hold the weatherization agency harmless for any future moisture or mold problems that may arise after weatherization work has been completed.

Occupant Signature

Date

Radon Informed Consent Form

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, "[Weatherization and Indoor Air Quality: Measured Impacts in Single-family Homes under the Weatherization Assistance Program](#)," there is a small risk of increased radon levels in homes when the building air tightness levels are improved. 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 evidence that the installation of continuous mechanical ventilation (ASHRAE 62.2 compliant exhaust fans) reduces radon levels in homes, and counteracts any radon increases that are due to improved building air tightness levels.

Zones 1 and 2 Only:

Precautionary Measures: Since your house is located in a county identified as having moderate- to high-potential-radon levels¹, precautionary measures indicated below *may* be installed as part of weatherization:

- Exposed dirt floors covered and sealed
- Floor/foundation penetrations sealed
- Open sump pit capped
- Crawl space venting inspected and/or improved
- Basement isolated (air sealed) from living space
- 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.

Client Name: _____

Client Signature: _____ Date: _____

¹ Defined as counties with predicted indoor radon screening levels at or above 2 pico Curies per liter of air (pCi/L). Link to EPA interactive zonal radon map: <https://www.epa.gov/radon/find-information-about-local-radon-zones-and-state-contact-information#radonmap>

CHAPTER 19 – TEMPLATES

Notice of Incomplete Application Template Weatherization Assistance Program

Copy and Paste onto Agency Letterhead

Date of Mailing

Client Street

Client City, State, Zip

Subject: Documentation Needed- **Job #**

Dear **Client Name,**

This letter is to notify you that additional information is needed before your Weatherization Assistance Program application can be processed. Please submit: **required document** by **date due** or the application will be considered incomplete and denied.

If you have any questions please contact me at: **phone number and email address**

Sincerely,

**WAP Coordinator
Contact Info**

Application Approval Notice Template Weatherization Assistance Program

Copy and Paste onto Agency Letterhead

Date of Mailing

Client Street

Client City, State, Zip

Subject: Application Approval Notice- **Job #**

Dear **Client Name,**

This letter is to notify you that your application for the Weatherization Assistance Program has been approved. Your name has been added to our Client Wait List. Clients are served in order of priority, as funding becomes available for your county. Priority is given to the elderly, disabled and families with children under the age of six.

While waiting to be contacted, please let us know if you have changes in your household which could result in you being served faster. Once your name reaches the top of the wait list, you will be contacted by an Energy Auditor. The Energy Auditor will inspect your home to determine what weatherization measures are most needed and will provide the most savings within the guidelines of the Program.

If you have any questions please contact me at: **phone number and email address**

Sincerely,

**WAP Coordinator
Contact Info**

Multi-family Approval Notice Template Weatherization Assistance Program

Copy and Paste onto Agency Letterhead

Date of Mailing

Client Street

Client City, State, Zip

Subject: Multi-family Approval Notice- **Job #**

Dear **Client Name**,

This letter is to inform you that your Weatherization Assistance Program application has been approved. Your building has been placed on the Wait List. Clients are served in order of priority, as funding becomes available for your county. Priority is given to the elderly, disabled and families with children under six years of age.

Once your building reaches the top of the wait list, you will be contacted by an Energy Auditor. The Energy Auditor will inspect the building to determine what weatherization measures are most needed and will provide the most savings within the guidelines of the Program. While you are waiting to be contacted, please let us know if you have any changes, such as a change in building ownership or property management.

Your case was approved with _____ of the _____ total units in the building containing an eligible household. If you have any questions please contact me at: **phone number and email address**

Sincerely,

**WAP Coordinator
Contact Info**

Denial Notice Template Weatherization Assistance Program

Copy and Paste onto Agency Letterhead

Date of Mailing

Client Street

Client City, State, Zip

Subject: Weatherization Program Application Denial Notice- **Job #**

Dear **Client Name,**

This letter is to notify you that your application for the Weatherization Assistance Program has been denied. The reason(s) for this decision is:

- Household income is above the maximum allowed amount.
- Required documentation was not provided. We did not receive: _____
- The home is not eligible due to: _____
- Your landlord did not sign the required Landlord Agreement form.
- Other: _____

This decision was made based on a household size of **XX** and an annual household income of **XX**. If you disagree with the decision, you may file an appeal by contacting our office by mail or by phone at: **phone number and address**

Sincerely,

WAP Coordinator
Contact Info

Multi-family Denial Notice Template Weatherization Assistance Program

Copy and Paste onto Agency Letterhead

Building Street Address

Building City, State, Zip

Date of Mailing

Subject: Multi-Family Building Denial Notice - **Job #:**

Dear **Client Name,**

This letter is to inform you that the Weatherization Assistance Program application for the Multi-family building you submitted has been denied. The reason(s) for this decision is:

- The Multi-Family building did not have enough units currently occupied by eligible households. Only _____ units, or ____ % , were verified as currently occupied by an eligible household and the building was not deemed as meeting minimum occupancy standards through current inclusion on a HUD or USDA eligible building listing.
- Required documentation was not provided. We did not receive: _____
- Other: _____

If you disagree with the decision, you may file an appeal by contacting our office by mail or by phone at: **phone number and address**

Sincerely,

**WAP Coordinator
Contact Info**

Application Termination Notice Template Weatherization Assistance Program

Copy and Paste onto Agency Letterhead

Date of Mailing

Client Street

Client City, State, Zip

Subject: Application Termination Notice- **Job #**

This letter is to notify you that your Weatherization Assistance Program case is being closed because your household no longer meets the eligibility requirements. The reason(s) for this decision is:

- Household income is above the maximum allowed amount.
- Your home is no longer eligible for the program because
- You no longer live in the home for which you applied.
- There is not enough funding to serve the households on the wait list for your county.
- Other: _____

If you have any questions regarding this notice, you may contact our office at **Phone Number**.

If you disagree with the decision, you may file an appeal by contacting our office by mail or by phone at: **phone number and address**

Sincerely,

**WAP Coordinator
Contact Info**

Multi-family Termination Notice Template Weatherization Assistance Program

Copy and Paste onto Agency Letterhead

Date of Mailing

Building Street Address

Building City, State, Zip

Subject: Multi-Family Building Notice of Termination - **Job #:**

Dear **Client Name,**

This letter is to inform you that the Weatherization Assistance Program application for the Multi-family building you submitted has been closed. The reason for this decision is:

- The Multi-Family building is no longer eligible for the program because:
- There is not enough funding to serve the households on the wait list for your county.
- Required documentation was not provided. We did not receive: _____
- Other: _____

If you have any questions regarding this notice, you may contact our office at **Phone Number**.

If you disagree with the decision, you may file an appeal by contacting our office by mail or by phone at: **phone number and address**

Sincerely,

**WAP Coordinator
Contact Info**

Deferral Notice Template Weatherization Assistance Program

Copy and Paste onto Agency Letterhead

Date of Mailing

Client Street

Client City, State, Zip

Subject: Weatherization Deferral Notice - **Job #**

Dear **Client Name**,

Your Weatherization Assistance case is being postponed. We cannot begin the work to weatherize your home until the following concerns are corrected:

You have until **Date** to correct these concerns. Once they have been corrected, please contact our office so we can return your case to our list of homes to be weatherized. You will not need to file a new application.

If you disagree with the decision, you may file an appeal by contacting our office by mail or by phone at: **phone number and address**. If you have any questions please contact me at: **phone number and email address**

Sincerely,

**WAP Coordinator
Contact Info**

Multi-family Deferral Notice Template Weatherization Assistance Program

Copy and Paste onto Agency Letterhead

Date of Mailing

Client Street

Client City, State, Zip

Subject: Weatherization Deferral Notice - **Job #**

Dear **Client Name**,

Your Weatherization Assistance case is being postponed. We cannot begin the work to weatherize your multi-family building until the following concerns are corrected:

You have until **Date** to correct these concerns. Once they have been corrected, please contact our office so that we can return your building to the list of homes to be weatherized. You will not need to file a new application.

If you disagree with the decision, you may file an appeal by contacting our office by mail or by phone at: **phone number and address**. If you have any questions please contact me at: **phone number and email address**

Sincerely,

**WAP Coordinator
Contact Info**

Audit Notification Template Weatherization Assistance Program

Copy and Paste this language onto Agency Letterhead

Client Street

Client City, State, Zip

Date of Mailing

Dear **Client Name,**

This letter is to notify you that we are ready to begin the process of weatherizing your home. The first step is scheduling an energy audit. During this energy audit, a certified Energy Auditor will inspect your home to determine the weatherization measures that will provide the most savings within the guidelines of the Program.

The Energy Auditor who has been assigned to conduct the inspection is **Energy Auditor Name**. This auditor will be contacting you to schedule an appointment for the energy audit. If you have any questions please contact me at: **phone number and email address**

Sincerely,

WAP Coordinator

Contact Info

Scope of Work Template- Single Family Weatherization Assistance Program

Copy and Paste this language onto Agency Letterhead

Client Street

Client City, State, Zip

Date of Mailing

Dear **Client Name**,

An energy audit was recently conducted through the Weatherization Assistance Program to identify the energy saving measures for your home. The weatherization work that will be performed will meet program guidelines and provide the greatest energy savings for the dollars spent. The measures to be installed include the following: **Summary of Measures**

The contractor who will be completing the work on your home is **Contractor Name**. The contractor is required to use new materials, and clean up after the work is performed. This work is to be provided at no cost to you. This contractor will be contacting you to make arrangements to begin work.

Once the work has been completed, it will be inspected to ensure it was performed correctly and to the standards of the Weatherization Assistance Program. If you have any questions please contact me at: **phone number and email address**

Sincerely,

WAP Coordinator

Contact Info

Scope of Work Template- Multi Family Weatherization Assistance Program

Copy and Paste this language onto Agency Letterhead

Client Name

Client Street

Client City, State, Zip

Date of Mailing

Dear **Client Name**,

An energy audit was recently conducted through the Weatherization Assistance Program to identify the energy saving measures for your building. The weatherization work that will be performed will meet program guidelines and provide the greatest energy savings for the dollars spent. The measures to be installed include the following: **Summary of Measures**

The contractor who will be completing the work is **Contractor Name**. The contractor is required to use new materials, and clean up after the work is performed. This work is to be provided at no cost to you. This contractor will be contacting you to make arrangements to begin work.

Once the work has been completed, it will be inspected to ensure it was performed correctly and to the standards of the Weatherization Assistance Program. If you have any questions please contact me at: **phone number and email address**

Sincerely,

WAP Coordinator

Contact Info

QCI Notification Template Weatherization Assistance Program

Copy and Paste this language onto Agency Letterhead

Client Street

Client City, State, Zip

Date of Mailing

Dear **Client Name,**

This letter is to notify you that the weatherization work on your home has been completed by the contractor and is ready for the quality control inspection. This inspection is a requirement of the program to ensure the work as performed correctly and to the standards of the Weatherization Assistance Program.

The Energy Auditor who has been assigned to conduct the inspection of the work is **QCI Inspector Name**. This inspector will contact you to schedule an appointment. If you have any questions please contact me at: **phone number and email address**

Sincerely,

WAP Coordinator

Contact Info



Tennessee Housing Development Agency

404 James Robertson Parkway, Suite 1200

Nashville, TN 37243-0900

(615) 815-2200

Ralph M. Perrey
Executive Director

Client Name

Client Street

Client City, State, Zip

Date of Mailing

Dear **Client Name**,

The State of Tennessee is required to perform a final inspection on a sample of all homes that received services under the Weatherization Assistance Program. The purpose of this inspection is to make sure that the work performed was completed correctly according to program guidelines. Your case has been selected for post-inspection review.

The Inspector who has been assigned to conduct the review of the work that was done on your home is **INSPECTOR NAME**. This inspector will be contacting you to schedule a time when you are available and they can enter your home. It is your responsibility to work with this Inspector to schedule a time and allow access to your home.

If you have any questions regarding this notice, you may contact our office at 615-815-2044.

Sincerely,

Weatherization Assistance Program – Community Programs Division

cc: *(Insert agency name associated with case)* WAP Program Coordinator

Energy Auditor Contract Template

Weatherization Assistance Program

The Tennessee Housing Development Agency (THDA) has allocated funds to the **[Name of Agency]** (Agency) under the U.S. Department of Energy's (DOE) Weatherization Assistance Program (WAP) to implement and supervise weatherization services designed to improve energy efficiency of eligible dwellings. This Contract is to provide energy audits to eligible dwellings. Both parties agree as follows:

1. The Contractor shall commence and complete all audits and/or re-inspections within **XX** days from the date the Auditor is notified of the job.
2. The Contractor shall perform the audits using the National Energy Audit Tool (NEAT) or the Mobile Home Energy Audit (MHEA), version 8.9, and/or other tools as approved.
3. The Contractor shall ensure that the latest version of the cost library is used when performing audits. In the event the Agency has a approved agency cost library, the auditor shall utilize that cost library at the direction of the agency.
4. The Contractor shall provide all audit results to the Agency, to include, but not be limited to the following items:
 - a. Pre-Energy Audit
 - b. Field notes and diagrams
 - c. Recommended Measures
 - d. Created work order
 - e. Diagnostic test results
 - f. Digital pictures of items to be included in the work order and/or inspected, in a format acceptable to the Agency
 - g. Justification for any required diagnostic test not performed
 - h. Any additional items as required by the Agency.
5. The Contractor shall report audit results electronically as prescribed by the Agency.
6. The Contractor shall provide client education when conducting an audit, to include hand delivery and review of all items in the Client Education Kit provided by the Agency. Such review shall include, the installation of the included CFL bulbs during the pre-audit. The auditor shall report the number and wattage of CFL bulbs installed.
7. The Contractor shall participate in Agency required training and certifications and provide documentation of required certifications as requested. The Contractor will ensure that all work is performed by staff in compliance with requirements.
8. The Contractor shall be responsible to the Agency for the acts and omissions of the Contractor's employees.
9. The Contractor shall provide for all labor, materials, equipment, tools, transportation, and other facilities and services necessary for the proper execution and completion of the WAP audits and/or re-inspections.
10. The Contractor shall comply with all laws, ordinances, rules, regulations, and lawful orders of any public authority bearing on the performance of the audits and/or re-inspections.

Energy Auditor Contract Template Weatherization Assistance Program

11. The Contractor shall permit the Agency or an authorized representative to review the audits and/or re-inspections at any time during the progress of the work and before final payment is made. The Contractor shall re-execute any audit that in the opinion of the Agency, fail to conform to the requirements of this contract.
12. The Contractor shall purchase and maintain liability insurance in the amount that will protect against claims which may arise out of or result from the Contractor's operations under this Contract. The Contractor shall, upon request from the Agency, provide documentation of current and valid insurance.
13. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Agency and its agents and employees from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of or resulting from, whether directly or indirectly, the performance of the work, the enforcement of this Contract, or any other source. In any and all claims against the Agency or any of its agents or employees by any employee of the Contractor, and subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation herein shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or subcontractor under Worker's or Workmen's Compensation Acts, disability benefit Acts or other employment benefit Acts.
14. This Contract shall be governed by the laws of the State of Tennessee.
15. The Contractor and the Agency each binds himself, his partners, successors, assigns, and legal representatives to the other parties here and to the partners, successors, assigns and legal representatives of such other party in respect to all, covenants, contracts, and obligations contained in this Contract. Neither party shall assign this Contract or sublet it without the written consent of the Agency.
16. The duties and obligations imposed by this Contract and the rights and remedies available hereunder shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law. No action or failure to act by the Agency shall constitute a waiver of any right or duty afforded under this Contract, nor shall any action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.
17. Violation of any of the conditions, provisions, or requirements of this Contract by the Contractor shall give the Agency the option of immediately terminating this Contract and any further payments thereunder, except for acceptable work performed prior to the violation.
18. This Contract constitutes the complete and final contract between the parties. Any amendments, modifications, additions, or changes thereto shall be voidable unless both parties give their written consent to such amendments, modifications, additions, and changes.
19. Upon submission of a complete invoice, the Agency shall pay the Contractor for performing work based upon the following rates:

Energy Auditor Contract Template Weatherization Assistance Program

Description	Amount
Pre-Audit	\$XX.00
Post-Audit	\$XX.00
Re-Inspection	\$XX.00

20. Breach. A party shall be deemed to have breached the Contract if they fail to perform in accordance with any term or provision of the Contract. The Agency shall notify Contractor in writing of a Breach.

- a. In event of a Breach by Contractor, the Agency shall have available the remedy of Actual Damages and any other remedy available at law or equity.
- b. Liquidated Damages— In the event of a Breach, the Agency may assess Liquidated Damages. The Agency shall notify the Contractor of amounts to be assessed as Liquidated Damages. The parties agree that due to the complicated nature of the Contractor’s obligations under this Contract it would be difficult to specifically designate a monetary amount for a Breach by Contractor as said amounts are likely to be uncertain and not easily proven. Contractor hereby represents and covenants it has carefully reviewed the Liquidated Damages contained below and agree that said amounts represent a reasonable relationship between the amount and what might reasonably be expected in the event of Breach, and are a reasonable estimate of the damages that would occur from a Breach. It is hereby agreed between the parties that the Liquidated Damages represent solely the damages and injuries sustained by the Agency in losing the benefit of the bargain with Contractor and do not include any injury or damage sustained by a third party. The Contractor agrees that the liquidated damage amount is in addition to any amounts Contractor may owe the Agency pursuant to the indemnity provision or other section of this Contract.

c. Breaches and Associated Liquidated Damages

Breach		Amount	Penalty
1.	Failure to complete any audit and/or re-inspection within the timeframe prescribed from the date notified of the job. (Reference Section 2)	Agency to Define	Per incident
2.	Approved a completed job upon inspection that upon subsequent State inspection, was determined to have failed to meet program requirements.	Agency to Define	Per incident

- d. The Agency may continue to withhold the Liquidated Damages or a portion thereof until the Contractor cures the Breach, the Agency exercises its option to declare a Partial Default, or the Agency terminates the Contract. The Agency is not obligated to assess Liquidated Damages before availing itself of any other remedy. The Agency may choose to discontinue Liquidated Damages and avail itself of any other remedy available under this Contract or at law or equity; provided, however, Contractor shall receive a credit for said Liquidated Damages previously withheld except in the event of a Partial Default.

Energy Auditor Contract Template Weatherization Assistance Program

- e. The Agency shall be able to deduct from amounts which are or shall be due to the Contractor under this or any other Contract between Agency and the Contractor.
 - f. **Contract Termination.** In the event of a Breach, the Agency may terminate the Contract immediately or in stages. The Contractor shall be notified of the termination in writing. Said notice shall hereinafter be referred to as Termination Notice. The Termination Notice may specify either that the termination is to be effective immediately, on a date certain in the future, or that the Contractor shall cease operations under this Contract in stages. In the event of a termination, the Agency may withhold any amounts which may be due Contractor without waiver of any other remedy or damages available to the Agency at law or at equity. The Contractor shall be liable to the Agency for any and all damages incurred by the Agency and any and all expenses incurred by the Agency which exceed the amount the Agency would have paid Contractor under this Contract. Contractor agrees to cooperate with the Agency in the event of a Contract Termination or Partial Default.
21. **Termination for Convenience.** The Agency may terminate this Contract without cause for any reason. Said termination shall not be deemed a Breach of Contract by the Agency. The Contractor shall be entitled to compensation for authorized expenditures as of the termination date, but in no event shall the Agency be liable to the Contractor for compensation for any service which has not been rendered. The final decision as to the amount, for which this Agency is liable, shall be determined by the Agency. Should the Agency exercise this provision, the Contractor shall not have any right to any actual general, special, incidental, consequential, or any other damages whatsoever of any description or amount.
22. **Conflict of Interest.**
- a. **Purpose.** The purpose of this clause is to ensure that the Contractor is not biased because of its financial, contractual, organizational, or other interests which relate to the work under this contract, and does not obtain any unfair advantage over other parties by virtue of its performance of this contract.
 - b. **Scope.** The restrictions described herein shall apply to performance or participation by the Contractor and any of its affiliates or their successors in interest (hereinafter collectively referred to as "Contractor") in the activities covered by this clause as a prime Contractor, subcontractor, cosponsor, joint venturer, consultant, or in any similar capacity. For the purpose of this clause, affiliation occurs when a business concern is controlled by or has the power to control another or when a third party has the power to control both. In the event that the Contractor was aware of facts required to be disclosed or the existence of an actual or potential organizational conflict of interest and did not disclose such facts or such conflict of interest to the Agency, Agency may terminate this contract for default.
 - c. **Remedies.** For breach of any of the above or for nondisclosure or misrepresentation of any facts required to be disclosed concerning this contract, including the existence of an actual or potential organizational conflict of interest at the time of or after award, the Agency may terminate the contract for default,

Energy Auditor Contract Template Weatherization Assistance Program

disqualify the Contractor from subsequent related contractual efforts, and pursue such other remedies as may be permitted by law or this contract.

- d. Waiver. Requests for waiver shall be directed in writing to the Agency and include a description of the request and the supporting justification. If it is determined to be in the best interests of the Agency, the Agency may grant such a waiver in writing.

Signatures:

Contractor

Name of Contractor:	
Contractor's Authorized Representative Signature:	
Date:	

Agency

Agency's Authorized Representative:	
Agency's Authorized Representative Signature:	
Date:	

Contract to Provide Services Weatherization Assistance Program

The Tennessee Housing Development Agency (THDA) has allocated funds to the **[Name of Agency]** (Agency) under the U.S. Department of Energy's (DOE) Weatherization Assistance Program (WAP) to implement and supervise weatherization services designed to improve energy efficiency of eligible dwellings. The Agency will contract for energy efficiency measures to a qualified Contractor separately for each individual eligible dwelling based upon Work Order Bid Forms received by the Agency for that dwelling from all qualified and interested Contractors that participate in the bid process for that individual dwelling. This Contract is to provide specific services for the eligible client at the address below as further detailed in the attached **Work Order Bid Form** which is attached to this document.

Contractor Name:	
Job Number:	
Client Name:	
Job Address:	
Approved Total Work Order Amount:	
Date Work Must Be Completed:	

1. The Contractor agrees to perform the measures identified in the attached **Work Order Bid Form**. Any change order that modifies the accepted bid amount shall be approved first in writing by the Agency. The Agency shall not pay for any work completed that is not authorized first in writing by the Agency.

2. The contract between the parties consists of the following "Contract Documents" all of which constitute one instrument:
 - a. The terms and conditions of this Contract
 - b. The Contractor's proposal as specified in the attached **Work Order Bid Form**
 - c. The standards of the TN Weatherization SWS Field Guide
 - The Contractor agrees to obtain all required certifications, for self and/or employees on this project, in accordance with program policies and procedures. All work must comply State and Federal WAP requirements and the THDA Standard Work Specifications found at the site: <https://s3.amazonaws.com/thda.org/Documents/Business-Partners/Grant-Administrators/Weatherization/Tennessee-WAP-Standard-Work-Specifications-Field-Guide.pdf>
 - In the event of sub-contracting any portion of the work contained in this contract, the Contractor agrees to ensure that all sub-contractors and employees who perform work will have all required certifications and comply with the terms of this contract.
 - d. DOE Weatherization Materials Standards
 - e. Construction Changes as specified in an amended Work Order.

Contract to Provide Services Weatherization Assistance Program

3. The Contractor certifies that it has a current TN General Contractor License BC-A or General Contractor License BC or Home Improvement License and agrees to maintain such license throughout the term of this agreement.
4. The Contractor shall, comply with all applicable federal, State and local laws, ordinances and regulations and obtain all required permits and comply with local building code requirements. The Contractor shall purchase and maintain liability insurance in the amount that will protect against claims which may arise out of or result from the Contractor's operations under this Contract. The Contractor shall, upon request from the Agency, provide documentation of current and valid insurance.
5. The Contractor shall be solely responsible for all construction, methods, techniques, sequences, and procedures. The Contractor shall furnish all materials, equipment, machinery, tools and labor to perform the work required to complete the project and assure that all materials will be new, free from faults and defects and in conformance with DOE Weatherization Materials Standards. To the greatest extent practicable, all equipment and products purchased with funds made available under this contract should be American-made. The Contractor shall remedy defects identified by the agency associated with faulty materials or workmanship which appear within one (1) year of the completion date following final inspection by the Agency.
6. The Contractor understands and agrees that, pursuant to federal law (5 United States Code 552(b)(6) and 10 Code of Federal Regulations 600.153(f)), identifying owner/renter information provided to Contractor as part of the provision of services under the Contract is confidential and, unless otherwise authorized or required by law, will not be shared with any other persons or agencies except for purposes directly related to the administration of the WAP. Contractor agrees to take necessary measures to ensure the protection of identifying client information, and will immediately report to the Agency any attempts to obtain such information resulting from legal actions, service of any documents or use of any legal procedures by any other persons or entities directed toward the release of such information.
7. The Contractor shall permit the Agency to inspect and approve the work at any time during the progress of the work and before final payment is made and shall remedy any deficiencies identified by the Agency as failing to conform to the requirements of the Contract prior to receiving payment for any work performed.
8. The Contractor agrees to comply with the Agency's Waste Management Plan in disposing of any sanitary or hazardous waste generated as a result of the proposed project. Further, the Contractor shall ensure that the Project is in compliance with all Federal, State and local regulations for waste disposal. The Contractor shall, at all times, keep the premises and rooms clean and free from accumulation of waste materials or rubbish caused by his operations. At the completion of the work, the Contractor shall remove all waste material from the project, as well as all his tools, construction equipment, machinery, and surplus materials. If the Contractor fails to return the property to the original state of cleanliness upon completion, the Agency may do so, and the cost thereof shall be charged to the Contractor and may be off-set against any obligations owed to the Contractor by the Agency.

Contract to Provide Services Weatherization Assistance Program

9. The Contractor shall indemnify and hold harmless the State of Tennessee, the Agency and all of its officers, agents and employees and the Owner/Renter of the dwelling on which the work is performed from all suits, actions or claims of any character, including, but not limited to, liens or other claims filed against the dwelling or its owners/renters by subcontractors arising from the Contractor's acts or omissions in the execution of the work, use of unacceptable materials in constructing the work, infringement of patent, trademark or copyright, claims for Workers' Compensation. The Contractor shall be responsible for any and all injury or damage to persons or to property arising from the execution of the work and due to any act, omission, neglect or misconduct in its manner or method of performing the work or due to its non-execution of the work or defective work or materials.
10. The Contractor shall provide the Owner or Renter with all written guarantees and warranties covering material and equipment furnished under the Contract.
11. No person on the grounds of handicap, race, color, religion, sex, age or national origin will be excluded from participation in, or be denied benefits of, or be otherwise subjected to discrimination in the performance of this Contract, or in the employment practices of the Contractor. The Contractor shall upon request show proof of such non-discrimination, and shall post in conspicuous places, available to all employees and applicants, notices of non-discrimination.
12. The Contractor shall maintain documentation for all charges against the Agency under this Contract. The books, records, and documents of the Contractor, insofar as they relate to work performed or money received under this Contract, shall be maintained in conformity with generally accepted accounting principles for a period of three (3) years from the date of the final payment, and shall be subject to audit at any reasonable time and upon reasonable notice, by the Agency or the Comptroller of the Treasury, State of Tennessee, THDA, or either's duly authorized representatives, or a licensed independent accountant.
13. Violation of this Contract by the Contractor shall give the Agency the option of immediately terminating this Contract and any further payments thereunder, except for acceptable work performed prior to the violation. Further, such violations shall give the Agency the option of disqualifying the Contractor from eligibility to participate in the WAP until such time as eligibility is re-established.
14. Termination for Convenience. The Contract may be terminated by either party by giving written notice to the other, at least ten (10) days before the effective date of termination. Should the Agency exercise this provision, the Contractor shall be entitled to compensation for all satisfactory and authorized services completed as of the termination date. Should the Contractor exercise this provision, the Agency shall have no liability to the Contractor except for work which has been satisfactorily completed as determined by the final audit. The final decision as to what constitutes satisfactory completion of the work shall be determined by the Agency.
15. Payment of Invoice. Upon passing inspection by the Agency, and the submission of a correct and legible invoice from the Contractor, the Agency shall pay to the Contractor the total payment due within thirty (30) business days of receipt of the invoice.

Contract to Provide Services Weatherization Assistance Program

- a. All invoices submitted must be itemized, and reflect the cost separately for materials and labor for each item.
 - b. The Contractor's invoice shall be subject to reduction for amounts which are determined by the Agency, on the basis of audits or monitoring conducted in accordance with the terms of this Contract, not to constitute allowable costs.
 - c. In no event, regardless of cause, will the Agency pay for work not completed by the Contractor and/or not inspected and/or not approved by the Agency.
 - d. The Agency reserves the right to deduct from amounts which are or shall become due and payable to the Contractor under this or any Contract between the Contractor and the Agency any amounts which are or shall become due and payable to the Agency by the Contractor.
 - e. The payment of the invoice shall neither be construed as acceptance nor as an approval of any of the costs invoiced.
16. The obligations of the parties to this Contract are subject to prevention by causes beyond the parties' control that could not be avoided by exercise of due care including, but not limited to, natural disasters or any other similar cause.
17. The duties and obligations imposed by this Agreement and the rights and remedies available hereunder shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.
18. Breach. A party shall be deemed to have breached the Contract if the Contractor fails to perform in accordance with any term or provision of the Contract. The Agency shall notify the Contractor in writing of a Breach.
- (1) In event of a Breach by Contractor, the Agency shall have available the remedy of Actual Damages and any other remedy available at law or equity.
 - (2) Liquidated Damages. In the event of a Breach, the Agency may assess Liquidated Damages. The Agency shall notify the Contractor of amounts to be assessed as Liquidated Damages. The parties agree that due to the complicated nature of the Contractor's obligations under this Contract it would be difficult to specifically designate a monetary amount for a Breach by Contractor as said amounts are likely to be uncertain and not easily proven. Contractor hereby represents and covenants it has carefully reviewed the Liquidated Damages contained in (3) Breaches and Associated Liquidated Damages and agree that said amounts represent a reasonable relationship between the amount and what might reasonably be expected in the event of Breach, and are a reasonable estimate of the damages that would occur from a Breach. It is hereby agreed between the parties that the Liquidated Damages represent solely the damages and injuries sustained by the Agency in losing the benefit of the bargain with Contractor and do not include any injury or damage sustained by a third party. The Contractor agrees that the liquidated damage amount is in addition to any amounts Contractor may owe the Agency pursuant to the indemnity provision or other section of this Contract.

Contract to Provide Services Weatherization Assistance Program

The Agency may continue to withhold the Liquidated Damages or a portion thereof until the Contractor cures the Breach, the Agency exercises its option to declare a Partial Default, or the Agency terminates the Contract. The Agency is not obligated to assess Liquidated Damages before availing itself of any other remedy. The Agency may choose to discontinue Liquidated Damages and avail itself of any other remedy available under this Contract or at law or equity; provided, however, Contractor shall receive a credit for said Liquidated Damages previously withheld except in the event of a Partial Default.

(3) **Breaches and Associated Liquidated Damages:**

	Breach	Amount	Penalty
1	Failure to complete work within XX days. (Reference Item 10)	<i>(To be defined by Agency)</i>	Per incident
2	Failure to complete work _____ following the initial XX days.	<i>(To be defined by Agency)</i>	<i>(To be defined by Agency)</i>
3	Failure to furnish materials that are new, free from faults and defects, and in conformance with DOE Weatherization materials standards	Amount required to correct the deficiencies	Per incident
4	Failure to pass inspection of completed work, necessitating subsequent inspection(s)	<i>(To be defined by Agency)</i>	<i>(To be defined by Agency)</i>

(4) **Contract Termination**— In the event of a Breach, the Agency may terminate the Contract immediately or in stages. The Contractor shall be notified of the termination in writing. In the event of a termination, the Agency may withhold any amounts which may be due Contractor without waiver of any other remedy or damages available to the Agency at law or at equity. The Contractor shall be liable to the Agency for any and all damages incurred by the Agency and any and all expenses incurred by the Agency which exceed the amount the Agency would have paid Contractor under this Contract. Contractor agrees to cooperate with the Agency in the event of a Contract Termination or Partial Default.

19. **Conflict of Interest.** The Contractor shall warrant that no part of the total Contract amount provided herein shall be paid directly or indirectly to any employee of the Agency as wages, compensation, or gifts in connection with any work performed relative to this Contract.

Purpose. The purpose of this clause is to ensure that the Contractor (1) is not biased because of its financial, contractual, organizational, or other interests which relate to the work under this contract, and (2) does not obtain any unfair competitive advantage over other parties by virtue of its performance of this contract.

Contract to Provide Services Weatherization Assistance Program

Scope. The restrictions described herein shall apply to performance or participation by the Contractor and any of its affiliates or their successors in interest (hereinafter collectively referred to as "Contractor") in the activities covered by this clause as a prime Contractor, subcontractor, cosponsor, joint venturer, consultant, or in any similar capacity. For the purpose of this clause, affiliation occurs when a business concern is controlled by or has the power to control another or when a third party has the power to control both. In the event that the Contractor was aware of facts required to be disclosed or the existence of an actual or potential organizational conflict of interest and did not disclose such facts to the Agency, Agency may terminate this contract for default.

Remedies. For breach of any of the above restrictions or for nondisclosure or misrepresentation of any facts required to be disclosed concerning this contract, including the existence of an actual or potential organizational conflict of interest at the time of or after award, the Agency may terminate the contract for default, disqualify the Contractor from subsequent related contractual efforts, and pursue such other remedies as may be permitted by law or this contract.

Waiver. Requests for waiver shall be directed in writing to the Agency and include supporting documentation. If it is determined to be in the best interests of the Agency, the Agency may grant in writing.

20. **Completeness.** This Contract constitutes the complete and final agreement between the parties. Any amendments, modifications, additions, or changes to shall be void unless both parties give their written consent.

Signatures:

Contractor

Name of Contractor:	
Contractor's Authorized Representative Signature:	
Date:	

Agency

Agency's Authorized Representative:	
Agency's Authorized Representative Signature:	
Date:	

Attachment: Work Order Bid Form

Sample Training And Technical Assistance Retention Agreement Weatherization Assistance Program

THIS TRAINING AND TECHNICAL ASSISTANCE RETENTION AGREEMENT made this Date, between Sub-Grantee Name (hereinafter Insert Sub-Grantee Abbreviation), and Contractor Name (hereinafter "Contractor"), for training and technical assistance (hereinafter "T&TA") towards the cost of the Insert Course/Training (hereinafter "Training Course") under the Insert Grantee Name Weatherization Assistance Program (hereinafter Insert Grantee Abbreviation).

WITNESS: _____

WHEREAS, Section 3.0 of DOE's Weatherization Program Notice 09-1B requires that contractors receiving DOE T&TA funds sign a retention agreement that they will provide weatherization services for a specific amount of time that aligns with the funds provided; WHEREAS, Contractor desires to receive T&TA funds assistance for the Training Course; NOW THEREFORE, in consideration of the premises and agreements of Sub-Grantee Abbreviation and Contractor as hereinafter provided, the parties hereby mutually agree as follows:

1. Sub-Grantee Abbreviation will provide DOE T&TA funds to cover the cost of Contractor's participation in the Training Course, limited to the following:
 - a. Reasonable travel costs in accordance with DOE standards;
 - b. Insert Other Costs, If Applicable
2. Contractor shall satisfactorily complete the Training Course and any required examinations;
3. Contractor shall remain actively employed or actively participate in Insert Grantee Abbreviation {Insert Weatherization Activity} for a period of no less than Insert Timeframe following completion of the Training Course.
4. If Contractor does not fulfill his or her obligations under this Agreement, Contractor will reimburse Sub-Grantee Abbreviation the total T&TA funds drawn within thirty (30) calendar days of notice from Sub-Grantee Abbreviation. Said reimbursement amount shall become immediately due and payable as a debt and obligation of Contractor to Sub-Grantee Abbreviation. Repayment will be made in the full amount due as a lump sum. If payment is not received by Sub-Grantee Abbreviation within thirty (30) days, Sub-Grantee Abbreviation may assess reasonable costs of collection, including but not limited to interest, court costs, and attorney's fees.
5. Contractor has read and understands the terms of this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed the date and year first indicated.

{Contractor Name}: Sign and Date _____

{Sub-Grantee Name}: Sign and Date _____

Annual Reverification Form – Single Family Weatherization Assistance Program

Client Name: _____ Job Number: _____

Client Address: _____

Please complete all questions below, and return this form by: _____

Return to:

**Failure to return a completed and signed form with current proof of your household's
income and energy costs will result in your weatherization case being closed and
removed from the wait list for services.**

Please call _____ if you need help in filling out this form.

1. Do you still live at the above address? _____ If **NO**, what is your new address?

2. What is your phone number? _____

3. Is this property listed for sale? _____

4. Is this property in the process of being foreclosed or condemned? _____

5. If you rent, has your landlord changed? _____ If **YES**, please give the name,
address and phone number for your new landlord:

Annual Reverification Form – Single Family Weatherization Assistance Program

6. Do the following people still live in the home with you? Please mark **YES** or **NO** for each person listed.

<i>Name</i>	<i>Still living in the home</i>	<i>No longer in the home</i>

7. Has anyone else moved into the home? _____ If **YES**, please provide their information below.

<i>Name</i>	<i>Relationship</i>	<i>DOB</i>	<i>Sex</i>	<i>Race</i>	<i>Disabled?</i>	<i>Income Source</i>

8. Please list all income that you or anyone in your home has. This includes income from a job or money received from any source. List the person's name who received the income, and the amount received each month before any deductions. **You must send proof of the income for the last three (3) months with this form.**

Name	Income Source	Monthly Amount

Annual Reverification Form – Single Family Weatherization Assistance Program

9. What is the amount of your last 3 electric bills? _____ (Include copies)
10. If you heat with natural gas, propane, or other fuels, what is the amount of your last 3 bills? _____ (Include copies)
11. Have there been any other changes in your Weatherization case since you filed your application or completed your last Reverification form on _____?

If **YES**, please explain:

I certify that all of the information provided in this application for weatherization assistance is true and correct. I understand that anyone who fraudulently covers up a material fact or who knowingly gives false information for the receipt of weatherization assistance is liable upon conviction to a fine of \$10,000 or imprisonment for not more than five years, or both. I authorize the verification of any and all information provided herein to determine my eligibility, and acknowledge that I have been informed of my appeal rights. I understand that I will be notified in writing of my eligibility status. Pursuant to federal law (5 United States Code 552(b)(6) and 10 Code of Federal Regulations 600.153(f)), identifying information provided by you for determination of your eligibility for Weatherization Assistance and for the provision of services from the program will be considered confidential and, unless otherwise authorized or required by law, will not be shared with any other persons or agencies except for purposes directly related to the administration of the Weatherization Program.

I do ___ do not ___ agree that the information contained in my application may be shared with other agencies from which I seek additional services.

Signature: _____ Date: _____

Please provide a phone number where you can be reached during the day:

**Annual Reverification Form – Single Family
Weatherization Assistance Program**

For Agency Use Only

Client Name: _____

Job Number: _____

Date Mailed: _____

Date Returned: _____

Remains Eligible? _____ *Yes* _____ *No*

Updated Priority Points: _____

Date Notice Mailed: _____

Staff Person Completing Re-Verification: _____

Date Completed: _____

Multi - Family Annual Reverification Form Weatherization Assistance Program

Please complete this form entirely. Attach all required resident forms and verifications and submit it to us no later than _____.

Be sure to sign and date the bottom of this form as it cannot be accepted without your signature.

Building Entity/Owner Name: _____

Phone Number: _____

Mailing Address: _____

Building Address: _____

Authorized Representative Name and Contact Information (Address and Phone Number):

Total Units in the Building: _____ Occupied Units: _____ Vacant Units: _____

Is this property listed for sale? _____

Is this property in the process of being foreclosed or condemned? _____

Please complete the following for all original households (residing in the building at the time of original WAP application). Do not list any new households here. If you need more room, attach another sheet of paper

Head of Household Name	Unit Number	Household still lives in the same unit?	If not in the same unit, does this household now live in any other unit in the building? (Please list new unit number)

Multi - Family Annual Reverification Form Weatherization Assistance Program

Head of Household Name	Unit Number	Household still lives in the same unit?	If not in the same unit, does this household now live in any other unit in the building? (Please list new unit number)

You must submit Multi-Family Building Resident Reverification form, current proof of income, and current energy bills for all original households that still live in the building.

You must submit complete Multi Family Building Resident Application, with all supporting documents/verifications, for all new (i.e. - did not live in the building at the time of original WAP application) households.

Failure to submit all required documentation by _____ will result in your case being closed and removed from the wait list.

I certify that all of the information provided on this Weatherization Assistance Program renewal form is true and correct. I understand that anyone who fraudulently covers up a material fact or who knowingly gives false information for the receipt of weatherization assistance is liable upon conviction to a fine of \$10,000 or imprisonment for not more than 5 years, or both. I authorize the verification of any and all information provided herein to determine the Multi-Family Building eligibility, and acknowledge that I have been informed of my appeal rights. Pursuant to federal law (5 United States Code 552(b)(6) and 10 Code of Federal Regulations 600.153(f), identifying information provided by you for determination of the building eligibility for Weatherization Assistance and for the provision of services from the program will be considered confidential and, unless otherwise authorized or required by law, will not be shared with any other persons or agencies except for purposes directly related to the administration of the Weatherization Program.

Signature: _____ **Date:** _____

**Multi - Family Annual Reverification Form
Weatherization Assistance Program**

(For Office Use Only)

Job Number: _____

Building ID: _____

Date original approval for WAP:: _____

Date Form Returned: _____

Notification of Reverification - Single Family Weatherization Assistance Program

Copy and Paste onto Agency Letterhead

Date of Mailing

Client Street

Client City, State, Zip

Subject: Notification of Reverification- **Job #**

Dear **Client Name,**

The Weatherization Assistance Program requires that an annual review be conducted on approved cases waiting for service. The purpose of this review is to make sure each case still meets eligibility requirements and to update priority points. In order to remain eligible, and stay on the wait list for service, you must update your case. This includes providing proof of current income and household circumstances for everyone who lives in the home.

Please complete and sign the attached form and return it to our office by _____. You must attach proof of income for all household members for the last three (3) months, updated energy bills, and other information needed to review your case. Failure to return this information will result in your case being closed and removed from the wait list for the program.

If you have any questions regarding this notice, you may contact our office at

_____.

Sincerely,

Weatherization Assistance Program

Attachment

Notification of Reverification – Multi Family Building Owner Weatherization Assistance Program

Copy and Paste onto Agency Letterhead

Date of Mailing

Multi – Family Building Street

City, State, Zip

Subject: Notification of Reverification- **Job #**

Dear **Building Owner,**

The Weatherization Assistance Program requires that an annual review be conducted on approved cases waiting for service. The purpose of this review is to make sure each case still meets eligibility requirements and to update priority points. In order to remain eligible, and stay on the wait list for service, you must update your case. This includes providing proof of current income and household circumstances for the residents in the units of your building.

Please complete and sign the attached form and return it to our office by _____.

You must attach proof of income each household unit in the building for the last three (3) months, along with other information needed to review your case as noted on the review form attached. Updated information regarding the number of eligible units is necessary in order to determine eligibility and maximum funds allowed for your building in the event it is selected for Weatherization from the priority list. Failure to return this information will result in your case being closed and removed from the wait list for the program.

If you have any questions regarding this notice, you may contact our office at

_____.

Sincerely,

Weatherization Assistance Program

Attachment

CHAPTER 20

APPENDIX A—STANDARDS FOR WEATHERIZATION MATERIALS

If the standards listed in this appendix conflict with those required by current local codes, the local code shall have precedence and a copy of the applicable section will be retained with procurement records.

The following Government standards are produced by the Consumer Product Safety Commission and are published in title 16, Code of Federal Regulations:

Thermal Insulating Materials for Building Elements Including Walls, Floors, Ceilings, Attics, and Roofs Insulation—organic fiber—conformance to Interim Safety Standard in 16 CFR part 1209;

Fire Safety Requirements for Thermal Insulating Materials According to Insulation Use—Attic Floor—insulation materials intended for exposed use in attic floors shall be capable of meeting the same flammability requirements given for cellulose insulation in 16 CFR part 1209;

Enclosed spaces—insulation materials intended for use within enclosed stud or joist spaces shall be capable of meeting smoldering combustion requirements in 16 CFR part 1209.

The following standards which are not otherwise set forth in part 440 are incorporated by reference and made part of part 440. The following standards have been approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. These materials are incorporated as they exist on January 3, 2002 and a notice of any change in these materials will be published in the FEDERAL REGISTER. The standards incorporated by reference are available for inspection at the Office of the Federal Register Information Center, 800 North Capitol Street, Suite 700, Washington, DC 20001.

The standards incorporated by reference in part 440 can be obtained from the following sources:

Air Conditioning and Refrigeration Institute, 4301 N. Fairfax Drive, Suite 425, Arlington, VA 22203; (703) 524-8800.
American Architectural Manufacturers Association, 1827 Walden Office Square, Suite 104, Schaumburg, Illinois 60173-4268; (847) 303-5664.
American Gas Association, 400 N. Capitol Street, NW, Washington, DC 20001; (202) 824-7000.
American National Standards Institute, Inc., 11 West 42nd Street, New York, NY 10036; (212) 642-4900.
American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990; (212) 591-7722.

American Society for Testing and Materials, 100 Bar Harbor Drive, West Conshohocken, PA 19428-2959; (610) 832-9585.

Association of Home Appliance Manufacturers, 1111 19th Street, NW, Suite 402, Washington DC, 20036; (202) 872-5955.

Federal Specifications, General Services Administration, General Services Administration, Federal Supply Service, Office of the CIO and Marketing Division, Room 800, 1941 Jefferson Davis Hwy., Arlington, VA 22202; (703) 305-6288.

Gas Appliance Manufacturers Association, 2107 Wilson Boulevard, Suite 600, Arlington, Virginia 22201; (703) 525-7060.

National Electrical Manufacturers Association, 1300 North 17th Street, Suite 1847, Rosslyn, VA 22209; (703) 841-3200.

National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101; (617) 770-3000.

Sheet Metal and Air Conditioning Contractors Association, 4201 Lafayette Center Drive, Chantilly, Virginia 20151-1209; (703) 803-2980.

Solar Rating and Certification Corporation, c/o FSEC, 1679 Clearlake Road, Cocoa, FL 32922-5703; (321) 638-1537.

Steel Door Institute, 30200 Detroit Road, Cleveland, OH 44145-1967; (440) 899-0010.

Steel Window Institute, 1300 Sumner Avenue, Cleveland, OH 44115-2851; (216) 241-7333.

Tubular Exchanger Manufacturers Association, 25 North Broadway, Tarrytown, NY 10591; (914) 322-0040.

Underwriters Laboratories, Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096; (847) 272-8800.

Window & Door Manufacturers Association, 1400 East Touhy Avenue, Suite 470, Des Plaines, IL 60018; (800) 223-2301.

More information regarding the standards in this reference can be obtained from the following sources:
Environmental Protection Agency, 401 M Street, NW, Washington, DC 20006; (202) 554-1080.

National Institute of Standards and Technology, U.S. Department of Commerce, Gaithersburg, MD 20899; (301) 975-2000.

Weatherization Assistance Program, Office of Building Technology Assistance, Energy Efficiency and Renewable Energy, 1000 Independence Avenue, SW, EE-42, Washington, DC 20585-0121; (202) 586-4074.

THERMAL INSULATING MATERIALS FOR
BUILDING ELEMENTS INCLUDING WALLS,
FLOORS, CEILINGS, ATTICS, AND ROOFS

[Standards for conformance]

Insulation--mineral fiber:	
Blanket insulation	ASTM ¹ C665-98.
Roof insulation board	ASTM C726-00a.
Loose-fill insulation	ASTM C764-99.
Insulation--mineral cellular:	
Vermiculite loose-fill insulation	ASTM C516-80 (1996)e1.
Perlite loose-fill insulation .	ASTM C549-81 (1995)e1.
Cellular glass insulation block	ASTM C552-00.
Perlite insulation board . . .	ASTM C728-97.
Insulation--organic fiber:	
Cellulosic fiber insulating board	ASTM C208-95.
Cellulose loose-fill insulation	ASTM C739-00.
Cellulose wet-spray insulation	ASTM C1149-97.
Insulation--organic cellular:	
Preformed block-type polystyrene insulation	ASTM C578-95.
Rigid preformed polyurethane insulation board	ASTM C591-00.
Polyurethane or polyisocyanurate insulation board face with aluminum foil on both sides	FS ² HH-I-1972/1 (1981).
Polyurethane or polyisocyanurate insulation board face with felt on both sides	FS HH-I-1972/2 (1981) and Amendment 1, October 3, 1985).
Insulation--composite boards:	
Mineral fiber insulation board	ASTM C726-00a.
Perlite board	ASTM C728-97.
Gypsum board and polyurethane or polyisocyanurate composite board	FS HH-I-1972/4 (1981).

¹ ASTM indicates American Society for Testing and Materials.

² FS indicates Federal Specifications.

THERMAL INSULATING MATERIALS FOR
BUILDING ELEMENTS INCLUDING WALLS,
FLOORS, CEILINGS, ATTICS, AND
ROOFS--Continued

[Standards for conformance]

Materials used as a patch to reduce infiltration through the building envelope	Commercially available.
THERMAL INSULATING MATERIALS FOR PIPES, DUCTS, AND EQUIPMENT SUCH AS BOILERS AND FURNACES	
[Standards for conformance]	
Insulation--mineral fiber:	
Preformed pipe insulation .	ASTM ¹ C547-00.
Blanket and felt insulation (industrial type)	ASTM C553-00.
Blanket insulation and blanket type pipe insulation (metal-mesh covered, industrial type)	ASTM C592-00.
Block and board insulation	ASTM C612-00.
Spray applied mineral fiber thermal and sound absorbing insulation	ASTM C1014-99ae1.
High-temperature fiber blanket insulation	ASTM C892-00.
Duct work insulation	ASTM C1290-00.
Insulation--mineral cellular:	
Calcium silicate block and pipe insulation	ASTM C533-95.
Cellular glass insulation . .	ASTM C552-00.
Expanded perlite block and pipe insulation	ASTM C610-99.
Insulation--organic cellular:	
Preformed flexible elastomeric cellular insulation in sheet and tubular form	ASTM C534-99.
Unfaced preformed rigid cellular polyurethane insulation	ASTM C591-00.
Insulation skirting	Commercially available.

¹ ASTM indicates American Society for Testing and Materials.

FIRE SAFETY REQUIREMENTS FOR INSULATING MATERIALS ACCORDING TO INSULATION USE

[Standards for conformance]

Attic floor	Insulation materials intended for exposed use in attic floors shall be capable of meeting the same smoldering combustion requirements given for cellulose insulation in ASTM ¹ C739-00.
Enclosed space	Insulation materials intended for use within enclosed stud or joist spaces shall be capable of meeting the same smoldering combustion requirements given for cellulose insulation in ASTM C739-00.
Exposed interior walls and ceilings	Insulation materials, including those with combustible facings, which remain exposed and serve as wall or ceiling interior finish, shall have a flame spread classification not to exceed 150 (per ASTM E84-00a).
Exterior envelope walls and roofs	Exterior envelope walls and roofs containing thermal insulation shall meet applicable local government building code requirements for the complete wall or roof assembly.
Pipes, ducts, and equipment	Insulation materials intended for use on pipes, ducts, and equipment shall be capable of meeting a flame spread classification not to exceed 150 (per ASTM E84-00a).

¹ ASTM indicates American Society for Testing and Materials.

STORM WINDOWS

[Standards for conformance]

Storm windows:	
All storm windows . .	AAMA/NWWDA ¹ 101/I.S. 2-97.
Aluminum frame storm windows	AAMA ² 1002.10-93.
Rigid vinyl frame storm windows	ASTM ³ D4726-00.
Frameless plastic glazing storm	Required minimum thickness for windows is 6 mil (0.006 inches). Commercially available.
Movable insulation systems for windows	

¹ AAMA/NWWDA indicates American Architectural Manufacturers Association/National Wood Window & Door Association (now the Window & Door Manufacturers Association).

² AAMA indicates American Architectural Manufacturers Association.

³ ASTM indicates American Society for Testing and Materials.

REPLACEMENT WINDOWS

[Standards for conformance]

Replacement windows:	
All windows	AAMA/NWWDA ¹ 101/I.S. 2-97.
Steel frame windows	Steel Window Institute recommended specifications for steel windows, 1990.
Rigid vinyl frame windows	ASTM ² D4726-00.

¹ AAMA/NWWDA indicates American Architectural Manufacturers Association/National Wood Window & Door Association (now the Window & Door Manufacturers Association).

² ASTM indicates American Society for Testing and Materials.

STORM DOORS

[Standards for conformance]

Storm doors:	
All storm (glass) doors	AAMA/NWWDA ¹ 101/I.S. 2-97.
Aluminum frame storm doors	AAMA ² 1102.7-89.
Sliding glass storm doors	AAMA 1002.10-93.
Rigid vinyl storm doors .	ASTM ³ D3678-97 and D4726-00..
Vestibules:	
Materials to construct vestibules	Commercially available.

¹ AAMA/NWWDA indicates American Architectural Manufacturers Association/National Wood Window & Door Association (now the Window & Door Manufacturers Association).

² AAMA indicates American Architectural Manufacturers Association.

³ ASTM indicates American Society for Testing and Materials.

REPLACEMENT DOORS

[Standards for conformance]

Replacement doors:	
All replacement doors	AAMA/NWWDA ¹ 101/I.S. 2-97.
Steel doors	ANSI ² A250.8-98.
Wood doors:	
Flush doors	ANSI/NWWDA ³ I.S. 1-97 (Amendment, exterior door provisions).
Stile and rail doors	NWWDA ⁴ I.S. 6-97.

¹ AAMA/NWWDA indicates American Architectural Manufacturers Association/National Wood Window & Door Association (now the Window & Door Manufacturers Association).

² ANSI indicates American National Standards Institute.

³ ANSI/NWWDA indicates American National Standards Institute/National Wood Window & Door Association (now the Window & Door Manufacturers Association).

⁴ NWWDA indicates National Wood Window & Door Association (now the Window & Door Manufacturers Association).

CAULKS AND SEALANTS

[Standards for conformance]

Caulks and sealants:	
Glazing compounds for metal sash	ASTM ¹ C669-00.
Oil and resin base caulks	ASTM C570-00.
Acrylic (solvent types) sealants	ASTM C920-98e1.
Butyl rubber sealants	FS ² Commercial Item Description A-A-272 (6/7/95).
Chlorosulfonated polyethylene sealants	ASTM C920-98e1.
Latex sealing compounds	ASTM C834-00e1.
Elastomeric joint sealants (normally considered to include polysulfide, polyurethane, and silicone)	ASTM C920-98e1.
Preformed gaskets and sealing materials	ASTM C509-00.
Duct sealing mastic	UL ³ 181A-M, Second Edition, 1994 and UL 181B-M, First Edition, 1995.

¹ ASTM indicates American Society for Testing and Materials.

² FS indicates Federal Specifications.

³ UL indicates Underwriters Laboratories.

WEATHERSTRIPPING

[Standards for conformance]

Weatherstripping	Commercially available. Selected according to the provisions cited in ASTM ¹ C755-97. Permeance not greater than 1 perm when determined according to the desiccant method described in ASTM E96-00.
Vapor retarders	
Items to improve attic ventilation	Commercially available.

¹ ASTM indicates American Society for Testing and Materials.

BOILER/FURNACE CONTROL SYSTEMS

[Standards for conformance]

Automatic set back thermostats	Listed by UL ¹ . Conformance to NEMA ² DC3-1989 (R1996).
Line voltage or low voltage room thermostats	Listed by UL. Conformance to NEMA DC3-1989 (R1996).
Clock thermostats	Listed by UL. Conformance to NEMA DC3-1989 (R1996).
Automatic gas ignition systems	ANSI ³ Z21.21-2000. AGA ⁴ Laboratories Certification Seal.
Energy management systems	Listed by UL.
Hydronic boiler controls	Listed by UL.
Other burner controls . .	Listed by UL.

¹ UL indicates Underwriters Laboratories.

² NEMA indicates National Electrical Manufacturers Association.

³ ANSI indicates American National Standards Institute.

⁴ AGA indicates American Gas Association.

HEAT EXCHANGERS

[Standards for conformance]

Heat exchangers, water-to-water and steam-to-water	ASME ¹ Boiler and Pressure Vessel Code, 1998, Sections II, V, VIII, IX, and X, as applicable to pressure vessels. Standards of Tubular Exchanger Manufacturers Association, Eighth Edition, 1999.
Heat exchangers with gas-fired appliances ²	ANSI/UL ³ 462, Ninth Edition, approved by ANSI February 28, 1997.

¹ ASME indicates American Society for Mechanical Engineers.

² The heat reclaimer is for installation in a section of the vent connector from appliances equipped with draft hoods or appliances equipped with powered burners or induced draft and not equipped with a draft hood.

³ ANSI/UL indicates American National Standards Institute/Underwriters Laboratories.

WATER HEATER MODIFICATIONS

[Standards for conformance]

Insulate tank and distribution piping	(See insulation section of this appendix)
Install heat traps on inlet and outlet piping	Applicable local plumbing code.
Install/replace water heater heating elements	Listed by UL ¹ .
Electric, freeze-prevention tape for pipes	Listed by UL.
Install stack damper, gas-fueled	ANSI ² Z21.66-1996, including Exhibits A & B, and ANSI Z223.1-1999 (same as NFPA ³ 54-1999).
Install stack damper, oil-fueled	UL 17, Third Edition, 1994, NFPA 31-2001, NFPA 211-2000 (same as ANSI A52.1), and ANSI/NFPA 70-1999 (same as IEEE ⁴ National Electrical Code).
Install water flow modifiers	Commercially available.

¹ UL indicates Underwriters Laboratories.

² ANSI indicates American National Standards Institute.

³ NFPA indicates National Fire Prevention Association.

⁴ IEEE indicates Institute of Electrical and Electronics Engineers.

REPLACEMENT WATER HEATERS

[Standards for conformance]

Electric (resistance) water heaters	10 CFR ¹ 430 and UL ³ 174.
Heat pump water heaters	UL 1995, Second Edition, 1995. Electrical components to be listed by UL.
Gas water heaters: Rated ≤ 75 kBtu/hr . .	10 CFR 430 and ANSI ⁴ Z21.10.1-1998.
Rated ≥ 75 kBtu/hr . .	ANSI Z21.10.3-1998.
Oil water heaters	UL 732, Fifth Edition, 1995.

¹ CFR indicates Code of Federal Regulations.

² UL indicates Underwriters Laboratories.

³ ANSI indicates American National Standards Institute.

SOLAR WATER HEATING SYSTEMS

[Standards for conformance]

Solar water heating systems including forced circulation, integral collector storage, thermo-syphon, and self-pumping systems	System must be certified per SRCC ¹ OG 300, July 16, 1998.
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¹ SRCC indicates Solar Rating and Certification Corporation.

WASTE HEAT RECOVERY DEVICES

[Standards for conformance]

Desuperheater/water heaters	ARI ¹ 470-1995 and UL 1995, Second Edition, 1995.
Condensing heat exchangers	Commercially available components installed per manufacturers' specifications. NFPA ² 211-2000 (same as ANSI A52.1) may apply in certain instances. See also the Heat Exchangers section of this appendix.
Heat pump water heating heat recovery systems	UL 1995, Second Edition, 1995. Electrical components to be listed by UL.
Energy recovery equipment	Energy Systems Analysis and Management, 1997 (SMACNA ³).

¹ ARI indicates Air Conditioning and Refrigeration Institute.

² NFPA indicates National Fire Prevention Association.

³ SMACNA denotes Sheet Metal and Air Conditioning Contractors' National Association.

BOILER REPAIR AND

Install gas conversion burners	ANSI ¹ Z21.8-1994 (for gas- or oil-fired systems), ANSI Z21.17-1998, and ANSI Z223.1-1999 (same as NFPA 54-1999). AGA ² Laboratories Certification Seal.
Replace oil burner	UL ³ 296, Ninth Edition, 1994 and NFPA 31-2001.
Install burners (oil/gas)	ANSI Z223.1-1999 for gas equipment and NFPA ⁴ 31-2001 for oil equipment.
Re-adjust boiler water temperature or install automatic boiler temperature reset control	ASME ⁵ CSD-1-1998, ANSI Z223.1-1999, and NFPA 31-2001.
Replace/modify boilers	ASME Boiler and Pressure Vessel Code, 1998, Section II, IV, V, VI, VIII, IX, and X. Boilers must be Hydronics Institute Division of GAMA equipment.
Clean heat exchanger, adjust burner air shutter(s), check smoke no. on oil-fueled equipment. Check operation of pump(s) and replacement filters.	Per manufacturers' instructions.
Replace combustion chambers	Refractory linings may be required for conversions.

**BOILER REPAIR AND
MODIFICATIONS/EFFICIENCY
IMPROVEMENTS—Continued**

[Standards for conformance]

Replace heat exchangers, tubes	Protection from flame contact with conversion burners by refractory shield.
Install/replace thermostatic radiator valves	Commercially available. One-pipe steam systems require air vents on each radiator; see manufacturers' requirements.
Install boiler duty cycle control system	Commercially available. ANSI/NFPA 70-1999 (same as IEEE National Electrical Code) and local electrical code provisions for wiring.

¹ ANSI indicates American National Standards Institute.

² AGA indicates American Gas Association.

³ UL indicates Underwriters Laboratories.

⁴ NFPA indicates National Fire Prevention Association.

⁵ ASME indicates American Society for Mechanical Engineers.

HEATING AND COOLING SYSTEM REPAIRS AND
TUNE-UPS/EFFICIENCY IMPROVEMENTS
[Standards for conformance]

Install duct insulation . . .	ASTM ¹ C612-00 (see insulation sections of this appendix).
Reduce Input of burner; derate gas-fueled equipment	Local utility company and procedures if applicable for gas-fueled furnaces and ANSI ² Z223.1-1999 (same as NFPA ³ 54-1999) including Appendix H.
Repair/replace oil-fired equipment	NFPA 31-2001.
Replace combustion chamber in oil-fired furnaces or boilers	NFPA 31-2001.
Clean heat exchanger and adjust burner; adjust air shutter and check CO ₂ and stack temperature. Clean or replace air filter on forced air furnace	ANSI Z223.1-1999 (same as NFPA 54-1999) including Appendix H.
Install vent dampers for gas-fueled heating systems	Applicable sections of ANSI Z223.1-1999 (same as NFPA 54-1999) including Appendix H, I, J, and K. ANSI Z21.66-1996 and Exhibits A&B for electrically operated dampers.
Install vent dampers for oil-fueled heating systems	Applicable sections of NFPA 31-2001 for installation and in conformance with UL ⁴ 17, Third Edition, 1994.

HEATING AND COOLING SYSTEM REPAIRS AND
TUNE-UPS/EFFICIENCY IMPROVEMENTS—Continued
[Standards for conformance]

Reduce excess combustion air: A: Reduce vent connector size of gas-fueled appliances B: Adjust barometric draft regulator for oil fuels	ANSI Z223.1-1999 (same as NFPA 54-1999) part 9 and Appendices G & H. NFPA 31-2001 and per furnace and boiler manufacturers' instructions. ANSI Z21.71-1993.
Replace constant burning pilot with electric ignition device on gas-fueled furnaces or boilers	ANSI Z21.71-1993.
Readjust fan switch on forced air gas-or oil-fueled furnaces	Applicable sections and Appendix H of ANSI Z223.1-1999 (same as NFPA 54-1999) for gas furnaces and NFPA 31-2001 for oil furnaces.
Replace burners	See install burners (oil/gas).
Install/replace duct furnaces (gas)	ANSI Z223.1-1999 (same as NFPA 54-1999).
Install/replace heat pumps	ARI ⁵ 210/240-1994. UL 1995, Second Edition, 1995. Commercially available.
Replace air diffusers, intakes, registers, and grilles	Commercially available.
Install/replace warm air heating metal ducts	UL 181, Ninth Edition 1996, including UL 181A, Second Edition 1994 and 181B, First Edition, 1995.
Filter alarm units	Commercially available.

¹ ASTM indicates American Society for Testing and Materials.

² ANSI indicates American National Standards Institute.

³ NFPA indicates National Fire Prevention Association.

⁴ UL indicates Underwriters Laboratories.

⁵ ARI indicates Air Conditioning and Refrigeration Institute.

REPLACEMENT FURNACES, BOILERS, AND
WOOD STOVES

[Standards for conformance]

Chimneys, fireplaces, vents and solid fuel burning appliances	NFPA ¹ 211-2000 (same as ANSI ² A52.1).
Gas-fired furnaces	ANSI Z21.47-1998 and ANSI Z223.1-1999 (same as NFPA 54- 1999).
Oil-fired furnaces	UL ³ 727, Eighth Edition, 1994 and NFPA 31- 2001.
Liquefied petroleum gas storage	NFPA 58-2001.
Ventilation fans: Including electric attic, ceiling, and whole-house fans	UL 507, Ninth Edition, 1999.

¹ NFPA indicates National Fire Prevention Association.

² ANSI indicates American National Standards Institute.

³ UL indicates Underwriters Laboratories.

SCREENS, WINDOW FILMS, AND REFLECTIVE
MATERIALS

[Standards for conformance]

Insect screens	Commercially available.
Window films	Commercially available.
Shade screens:	
Fiberglass shade screens	Commercially available.
Polyester shade screens	Commercially available.
Rigid awnings:	
Wood rigid awnings	Commercially available.
Metal rigid awnings .	Commercially available.
Louver systems:	
Wood louver awnings	Commercially available.
Metal louver awnings	Commercially available.
Industrial-grade white paint used as a heat- reflective measure on roofs, awnings, window louvers, doors, and exterior duct work (exposed)	Commercially available.

AIR CONDITIONERS AND COOLING EQUIPMENT

[Standards for conformance]

Air conditioners: Central air conditioners Room size units	ARI ¹ 210/240-1994. ANSI/AHAM ² RAC 1- 1992.
Other cooling equipment: Including evaporative coolers, heat pumps, and other equipment	UL ³ 1995, Second Edition, 1995.

¹ ARI indicates Air Conditioning and Refrigeration Institute.

² ANSI/AHAM indicates American National Standards Institute/Association of Home Appliance Manufacturers.

³ UL indicates Underwriters Laboratories.

REFRIGERATORS

[Standards for conformance]

Refrigerator/freezers (does not include freezer-only units)	UL ¹ 250. Replaced units must be disposed of properly per Clean Air Act 1990, Section 608, as amended by 40 CFR ² 82, May 14, 1993.
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¹ UL indicates Underwriters Laboratories.

² CFR indicates Code of Federal Regulations.

FLUORESCENT LAMPS AND FIXTURES

[Standards for conformance]

Compact fluorescent lamps	ANSI/UL ¹ 542, Seventh Edition, February 6, 1997 and UL 1993, First Edition, 1993.
Fluorescent lighting fixtures	UL 1570, Fourth Edition, 1995.

¹ ANSI/UL indicates American National Standards Institute/Underwriters Laboratories.



**A BRIEF GUIDE TO
MOLD,
MOISTURE,
AND
YOUR HOME**

**This Guide provides
information and guidance
for homeowners and
renters on how to clean
up residential mold
problems and how to
prevent mold growth.**

*U.S. Environmental Protection Agency
Office of Air and Radiation
Indoor Environments Division
1200 Pennsylvania Avenue
Mailcode: 6609J
Washington, DC 20460
www.epa.gov/iaq*

A BRIEF GUIDE TO MOLD, MOISTURE, AND YOUR HOME

Contents	Page
Mold Basics	
Why is mold growing in my home?	2
Can mold cause health problems?	2
How do I get rid of mold?	3
Mold Cleanup	
Who should do the cleanup?	4
Mold Cleanup Guidelines	6
What to Wear When Cleaning Moldy Areas	8
How Do I Know When the Remediation or Cleanup is Finished?	9
Moisture and Mold Prevention and Control Tips	10
Actions that will help to reduce humidity	11
Actions that will help prevent condensation	12
Testing or sampling for mold	13
Hidden Mold	14
Cleanup and Biocides	15
Additional Resources	16



MOLD BASICS

- The key to mold control is moisture control.
- If mold is a problem in your home, you should clean up the mold promptly *and* fix the water problem.
- It is important to dry water-damaged areas and items within 24-48 hours to prevent mold growth.

W

hy is mold growing in my home?

Molds are part of the natural environment. Outdoors, molds play a part in nature by breaking down dead organic matter such as fallen leaves and dead trees, but indoors, mold growth should be avoided. Molds reproduce by means of tiny spores; the spores are invisible to the naked eye and float through outdoor and indoor air. Mold may begin growing indoors when mold spores land on surfaces that are wet. There are many types of mold, and none of them will grow without water or moisture.



Mold growing outdoors on firewood. Molds come in many colors; both white and black molds are shown here.

Can mold cause health problems?

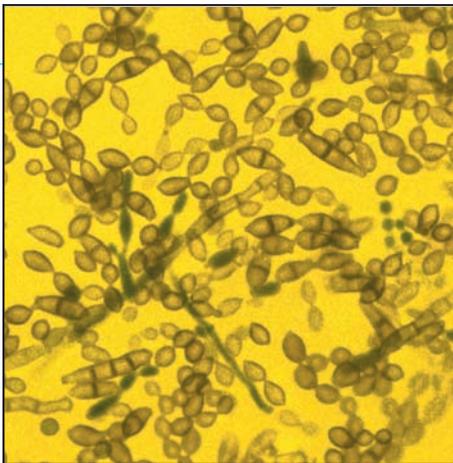
Molds are usually not a problem indoors, unless mold spores land on a wet or damp spot and begin growing. Molds have the potential to cause health problems. Molds produce allergens (substances that can cause allergic reactions), irritants, and in some cases, potentially toxic substances (mycotoxins).

Inhaling or touching mold or mold spores may cause allergic reactions in sensitive individuals. Allergic responses include hay fever-type symptoms, such as sneezing, runny nose, red eyes, and skin rash (dermatitis). Allergic reactions to mold are common. They can be immediate or delayed. Molds can also cause asthma attacks in people with asthma who are allergic to mold. In addition, mold exposure can irritate the eyes, skin, nose, throat, and lungs of both mold-

allergic and non-allergic people. Symptoms other than the allergic and irritant types are not commonly reported as a result of inhaling mold.

Research on mold and health effects is ongoing. This brochure provides a brief overview; it does not describe all potential health effects related to mold exposure. For more detailed information consult a health professional. You may also wish to consult your state or local health department.

How do I get rid of mold? It is impossible to get rid of all mold and mold spores indoors; some mold spores will be found floating through the air and in house dust. The mold spores will not grow if moisture is not present. Indoor mold growth can and should be prevented or controlled by controlling moisture indoors. If there is mold growth in your home, you must clean up the mold **and** fix the water problem. If you clean up the mold, but don't fix the water problem, then, most likely, the mold problem will come back.



Molds can gradually destroy the things they grow on. You can prevent damage to your home and furnishings, save money, and avoid potential health problems by controlling moisture and eliminating mold growth.

Magnified mold spores.

MOLD

CLEANUP



Leaky window – mold is beginning to rot the wooden frame and windowsill.

If you already have a mold problem – **ACT QUICKLY.** Mold damages what it grows on. The longer it grows, the more damage it can cause.

Who should do the cleanup? Who should do the cleanup depends on a number of factors. One consideration is the size of the mold problem. If the moldy area is less than about 10 square feet (less than roughly a 3 ft. by 3 ft. patch), in most cases, you can handle the job yourself, following the guidelines below. However:

- If there has been a lot of water damage, and/or mold growth covers more than 10 square feet, consult the U.S. Environmental Protection Agency (EPA) guide: *Mold Remediation in Schools and Commercial Buildings*. Although focused on schools and commercial

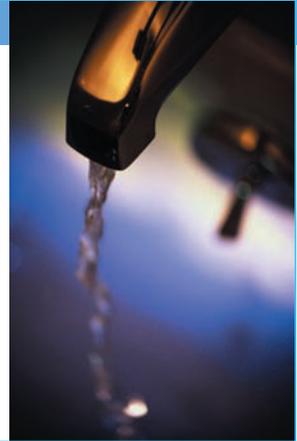
buildings, this document is applicable to other building types. It is available free by calling the EPA Indoor Air Quality Information Clearinghouse at (800) 438-4318, or on the Internet at: www.epa.gov/mold.

- If you choose to hire a contractor (or other professional service provider) to do the cleanup, make sure the contractor has experience cleaning up mold. Check references and ask the contractor to follow the recommendations in EPA's *Mold Remediation in Schools and Commercial Buildings*, the guidelines of the American Conference of Governmental Industrial Hygienists (ACGIH), or other guidelines from professional or government organizations.
- If you suspect that the heating/ventilation/air conditioning (HVAC) system may be contaminated with mold (it is part of an identified moisture problem, for instance, or there is mold near the intake to the system), consult EPA's guide *Should You Have the Air Ducts in Your Home Cleaned?* before taking further action. Do not run the HVAC system if you know or suspect that it is contaminated with mold - it could spread mold throughout the building. Visit www.epa.gov/iaq/pubs/airduct.html, or call (800) 438-4318 for a free copy.
- If the water and/or mold damage was caused by sewage or other contaminated water, then call in a professional who has experience cleaning and fixing buildings damaged by contaminated water.
- If you have health concerns, consult a health professional before starting cleanup.

MOLD CLEANUP GUIDELINES

BATHROOM TIP

Places that are often or always damp can be hard to maintain completely free of mold. If there's some mold in the shower or elsewhere in the bathroom that seems to reappear, increasing the ventilation (running a fan or opening a window) and cleaning more frequently will usually prevent mold from recurring, or at least keep the mold to a minimum.



Tips and techniques The tips and techniques presented in this section will help you clean up your mold problem. Professional cleaners or remediators may use methods not covered in this publication. Please note that mold may cause staining and cosmetic damage. It may not be possible to clean an item so that its original appearance is restored.

- Fix plumbing leaks and other water problems as soon as possible. Dry all items completely.
- Scrub mold off hard surfaces with detergent and water, and dry completely.

Mold growing on the underside of a plastic lawnchair in an area where rainwater drips through and deposits organic material.



Mold growing on a piece of ceiling tile.



- Absorbent or porous materials, such as ceiling tiles and carpet, may have to be thrown away if they become moldy. Mold can grow on or fill in the empty spaces and crevices of porous materials, so the mold may be difficult or impossible to remove completely.
- Avoid exposing yourself or others to mold (see discussions: **What to Wear When Cleaning Moldy Areas** and **Hidden Mold**.)
- Do not paint or caulk moldy surfaces. Clean up the mold and dry the surfaces before painting. Paint applied over moldy surfaces is likely to peel.
- If you are unsure about how to clean an item, or if the item is expensive or of sentimental value, you may wish to consult a specialist. Specialists in furniture repair, restoration, painting, art restoration and conservation, carpet and rug cleaning, water damage, and fire or water restoration are commonly listed in phone books. Be sure to ask for and check references. Look for specialists who are affiliated with professional organizations.

WHAT TO WEAR WHEN

CLEANING MOLDY AREAS



Mold growing on a suitcase stored in a humid basement.

It is important
to take
precautions to
**LIMIT
YOUR
EXPOSURE**
to mold and
mold spores.

- **Avoid breathing in mold or mold spores.** In order to limit your exposure to airborne mold, you may want to wear an N-95 respirator, available at many hardware stores and from companies that advertise on the Internet. (They cost about \$12 to \$25.) Some N-95 respirators resemble a paper dust mask with a nozzle on the front, others are made primarily of plastic or rubber and have removable cartridges that trap most of the mold spores from entering. In order to be effective, the respirator or mask must fit properly, so carefully follow the instructions supplied with the respirator. Please note that the Occupational Safety and Health Administration (OSHA) requires that respirators fit properly (fit testing) when used in an occupational setting; consult OSHA for more information (800-321-OSHA or osha.gov/).

■ **Wear gloves.** Long gloves that extend to the middle of the forearm are recommended. When working with water and a mild detergent, ordinary household rubber gloves may be used. If you are using a disinfectant, a biocide such as chlorine bleach, or a strong cleaning solution, you should select gloves made from natural rubber, neoprene, nitrile, polyurethane, or PVC (see **Cleanup and Biocides**). Avoid touching mold or moldy items with your bare hands.

■ **Wear goggles.** Goggles that do not have ventilation holes are recommended. Avoid getting mold or mold spores in your eyes.



Cleaning while wearing N-95 respirator, gloves, and goggles.

How do I know when the remediation or cleanup is finished?

You must have completely fixed the water or moisture problem before the cleanup or remediation can be considered finished.

- You should have completed mold removal. Visible mold and moldy odors should not be present. Please note that mold may cause staining and cosmetic damage.
- You should have revisited the site(s) shortly after cleanup and it should show no signs of water damage or mold growth.
- People should have been able to occupy or re-occupy the area without health complaints or physical symptoms.
- Ultimately, this is a judgment call; there is no easy answer. If you have concerns or questions call the EPA Indoor Air Quality Information Clearinghouse at (800) 438-4318.

MOISTURE AND MOLD PREVENTION AND CONTROL TIPS

MOISTURE

Control is the Key to

Mold Control



Mold growing on the surface of a unit ventilator.

- When water leaks or spills occur indoors - **ACT QUICKLY.** If wet or damp materials or areas are dried 24-48 hours after a leak or spill happens, in most cases mold will not grow.

- Clean and repair roof gutters regularly.
- Make sure the ground slopes away from the building foundation, so that water does not enter or collect around the foundation.
- Keep air conditioning drip pans clean and the drain lines unobstructed and flowing properly.



Condensation on the inside of a windowpane.

- Keep indoor humidity low. If possible, keep indoor humidity below 60 percent (ideally between 30 and 50 percent) relative humidity. Relative humidity can be measured with a moisture or humidity meter, a small, inexpensive (\$10-\$50) instrument available at many hardware stores.

- If you see condensation or moisture collecting on windows, walls or pipes - ACT QUICKLY to dry the wet surface and reduce the moisture/water source. Condensation can be a sign of high humidity.

Actions that will help to reduce humidity:

- 💧 Vent appliances that produce moisture, such as clothes dryers, stoves, and kerosene heaters to the outside where possible. (Combustion appliances such as stoves and kerosene heaters produce water vapor and will increase the humidity unless vented to the outside.)
- 💧 Use air conditioners and/or de-humidifiers when needed.
- 💧 Run the bathroom fan or open the window when showering. Use exhaust fans or open windows whenever cooking, running the dishwasher or dishwashing, etc.

Actions that will help prevent condensation:

- ◆ Reduce the humidity (see preceding page).
- ◆ Increase ventilation or air movement by opening doors and/or windows, when practical. Use fans as needed.
- ◆ Cover cold surfaces, such as cold water pipes, with insulation.
- ◆ Increase air temperature.

Mold growing on a wooden headboard in a room with high humidity.



Renters: Report all plumbing leaks and moisture problems immediately to your building owner, manager, or superintendent. In cases where persistent water problems are not addressed, you may want to contact local, state, or federal health or housing authorities.



Rust is an indicator that condensation occurs on this drainpipe. The pipe should be insulated to prevent condensation.

Testing or sampling for mold Is sampling for mold needed? **In most cases, if visible mold growth is present, sampling is unnecessary.** Since no EPA or other federal limits have been set for mold or mold spores, sampling cannot be used to check a building's compliance with federal mold standards. Surface sampling may be useful to determine if an

area has been adequately cleaned or remediated. Sampling for mold should be conducted by professionals who have specific experience in designing mold sampling protocols, sampling methods, and interpreting results. Sample analysis should follow analytical methods recommended by the American Industrial Hygiene Association (AIHA), the American Conference of Governmental Industrial Hygienists (ACGIH), or other professional organizations.

HIDDEN MOLD



Mold growing on the back side of wallpaper.

Suspicion of hidden mold You may suspect hidden mold if a building smells moldy, but you cannot see the source, or if you know there has been water damage and residents are reporting health problems. Mold may be hidden in places such as the back side of dry wall, wallpaper, or paneling, the top side of ceiling tiles, the underside of carpets and pads, etc. Other possible locations of hidden mold include areas inside walls around pipes (with leaking or condensing pipes), the surface of walls behind furniture (where condensation forms), inside ductwork, and in roof materials above ceiling tiles (due to roof leaks or insufficient insulation).

Investigating hidden mold problems Investigating hidden mold problems may be difficult and will require caution when the investigation involves disturbing potential sites of mold growth. For example, removal of wallpaper can lead to a massive release of spores if there is mold growing on the underside of the paper. If you believe that you may have a hidden mold problem, consider hiring an experienced professional.

Cleanup and Biocides Biocides are substances that can destroy living organisms. The use of a chemical or biocide that kills organisms such as mold (chlorine bleach, for example) is not recommended as a routine practice during mold cleanup. There may be instances, however, when professional judgment may indicate its use (for example, when immune-compromised individuals are present). In most cases, it is not possible or desirable to sterilize an area; a background level of mold spores will remain - these spores will not grow if the moisture problem has been resolved. If you choose to use disinfectants or biocides, always ventilate the area and exhaust the air to the outdoors. Never mix chlorine bleach solution with other cleaning solutions or detergents that contain ammonia because toxic fumes could be produced.

Please note: Dead mold may still cause allergic reactions in some people, so it is not enough to simply kill the mold, it must also be removed.

Water stain on a basement wall — locate and fix the source of the water promptly.



ADDITIONAL RESOURCES

For more information on mold related issues including mold cleanup and moisture control/condensation/humidity issues, you can call the EPA Indoor Air Quality Information Clearinghouse at

(800) 438-4318.

Or visit:

www.epa.gov/mold



Mold growing on fallen leaves.

This document is available on the Environmental Protection Agency, Indoor Environments Division website at: www.epa.gov/mold

NOTES

Acknowledgements

EPA would like to thank Paul Ellringer, PE, CIH, for providing the photo on page 14.

Please note that this document presents recommendations. EPA does not regulate mold or mold spores in indoor air.



U.S. DEPARTMENT OF
ENERGY | Energy Efficiency &
Renewable Energy



WEATHERIZATION ENERGY AUDITOR SINGLE FAMILY

Moisture Assessment

WEATHERIZATION ASSISTANCE PROGRAM STANDARDIZED CURRICULUM – August 2010

U.S. DEPARTMENT OF
ENERGY | Energy Efficiency &
Renewable Energy

Learning Objectives

MOISTURE ASSESSMENT

By attending this session, participants will gain an understanding of:

- Symptoms of moisture problems in houses.
- Moisture sources.
- Moisture terms and concepts.
- How to measure relative humidity (RH).
- How to use a psychrometric chart.
- Moisture control strategies.
- Moisture assessment tools.

2 | WEATHERIZATION ASSISTANCE PROGRAM STANDARDIZED CURRICULUM – August 2010 eere.energy.gov

Symptoms #1

MOISTURE ASSESSMENT

Excessive window condensation



Photo courtesy of PA WTC

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eere.energy.gov

Symptoms #2

MOISTURE ASSESSMENT

Frost on underside of roof sheathing



Photo courtesy of PA WTC

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Symptoms #3

U.S. DEPARTMENT OF **ENERGY** | Energy Efficiency & Renewable Energy

MOISTURE ASSESSMENT

Mold on interior surfaces



Photo courtesy of PA WTC

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Symptoms #4

U.S. DEPARTMENT OF **ENERGY** | Energy Efficiency & Renewable Energy

MOISTURE ASSESSMENT

Peeling Exterior Paint



Photo courtesy of PA WTC

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Symptom #5

U.S. DEPARTMENT OF
ENERGY | Energy Efficiency &
Renewable Energy

MOISTURE ASSESSMENT

Standing Water in Basements



Photo courtesy of PA WTC

7 | WEATHERIZATION ASSISTANCE PROGRAM STANDARDIZED CURRICULUM – August 2010

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Moisture Sources

U.S. DEPARTMENT OF
ENERGY | Energy Efficiency &
Renewable Energy

MOISTURE ASSESSMENT

- Foundations.
- Unvented space heaters.
- Unvented dryers.
- Disconnected ventilation fans.
- Drying wood indoors.
- Excessive mechanical or passive humidification.



Photo courtesy of PA WTC

These water stains are a result of fan venting into the attic.

8 | WEATHERIZATION ASSISTANCE PROGRAM STANDARDIZED CURRICULUM – August 2010

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Sources of Water Vapor

U.S. DEPARTMENT OF
ENERGY | Energy Efficiency & Renewable Energy

MOISTURE ASSESSMENT

SOURCES OF WATER VAPOR

Source	Quarts per Day
Construction materials first year	40
Standing water in basement	30
Damp basement or crawl space	25
Greenhouse connected to house	25
Humidifier - large	20
Drying 1 cord of firewood	16
Clothes dryer vented to inside	13
Respiration/perspiration - 4 people	4.7
Clothes washing	2.1
Unvented gas range	1.3
Cooking without lids	1.0
Houseplants - average number	0.5
Dish washing	0.5
Floor mopping	0.4
Showering/bathing	0.3

9 | WEATHERIZATION ASSISTANCE PROGRAM STANDARDIZED CURRICULUM – August 2010 eere.energy.gov

Important Terms and Concepts

U.S. DEPARTMENT OF
ENERGY | Energy Efficiency & Renewable Energy

MOISTURE ASSESSMENT

- **Condensation:** water vapor transformed to liquid water.
- **Evaporation:** liquid water transformed to water vapor.
- **Absolute Humidity** (vapor pressure): the ratio of water vapor to a given volume of air.
- **Relative Humidity (RH):** the ratio of the amount of moisture in the air compared to amount of moisture that the air can hold.
- **Dew Point:** the temperature at which condensation occurs.

10 | WEATHERIZATION ASSISTANCE PROGRAM STANDARDIZED CURRICULUM – August 2010 eere.energy.gov

Measuring Relative Humidity

U.S. DEPARTMENT OF
ENERGY | Energy Efficiency & Renewable Energy

MOISTURE ASSESSMENT

Sling Psychrometers

- Two thermometers side by side.
- One is wrapped in wet wick (wet bulb), the other is dry (dry bulb).
- Spinning it around speeds temperature stabilization.
- Plot wet bulb and dry bulb temperature on psychrometric chart to determine dew point and RH.



Bacharach Sling Psychrometer
<http://www.bacharach-inc.com/sling-psychrometer.htm>

11 | WEATHERIZATION ASSISTANCE PROGRAM STANDARDIZED CURRICULUM – August 2010
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Psychrometric Chart #1

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ENERGY | Energy Efficiency & Renewable Energy

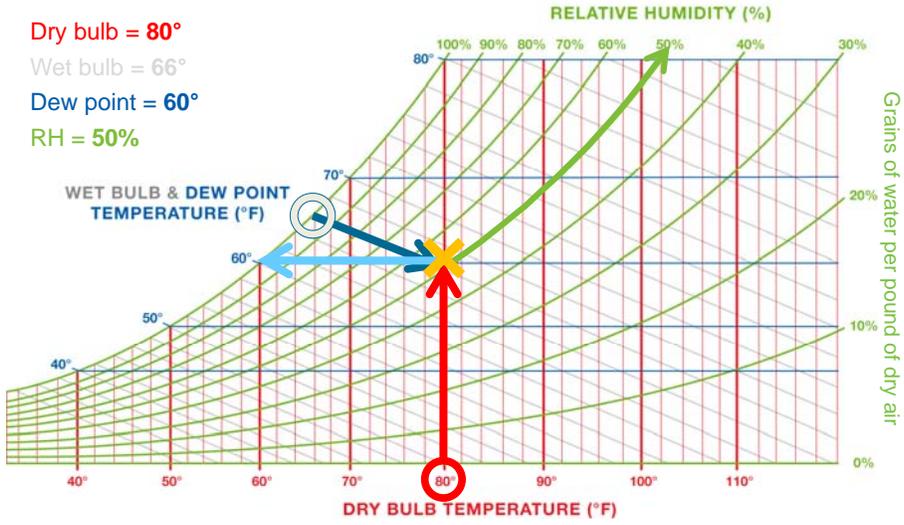
MOISTURE ASSESSMENT

Dry bulb = 80°

Wet bulb = 66°

Dew point = 60°

RH = 50%

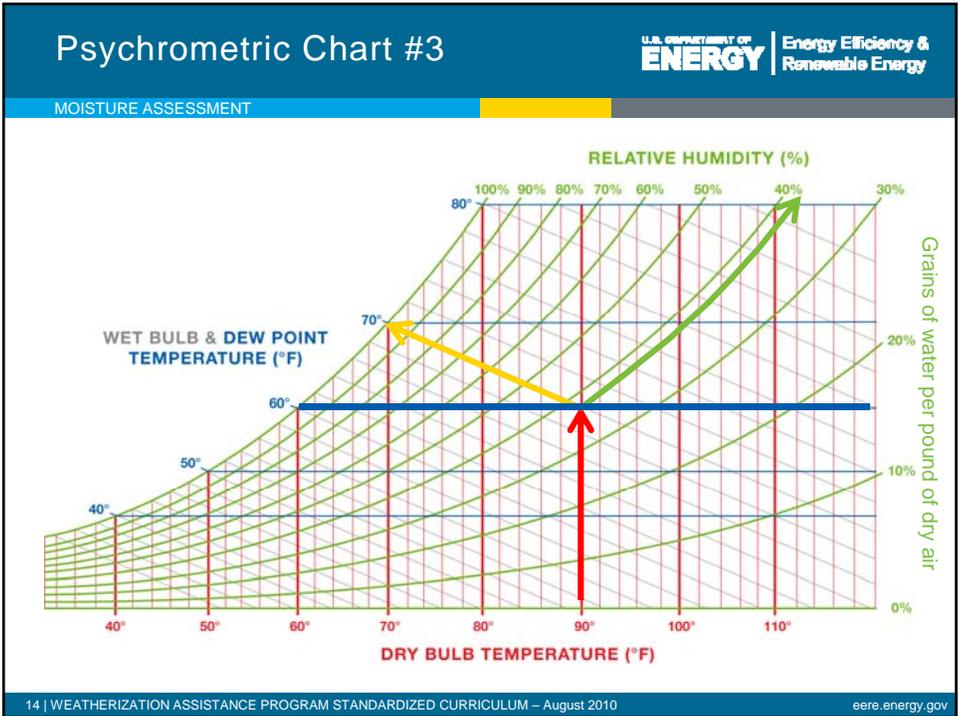
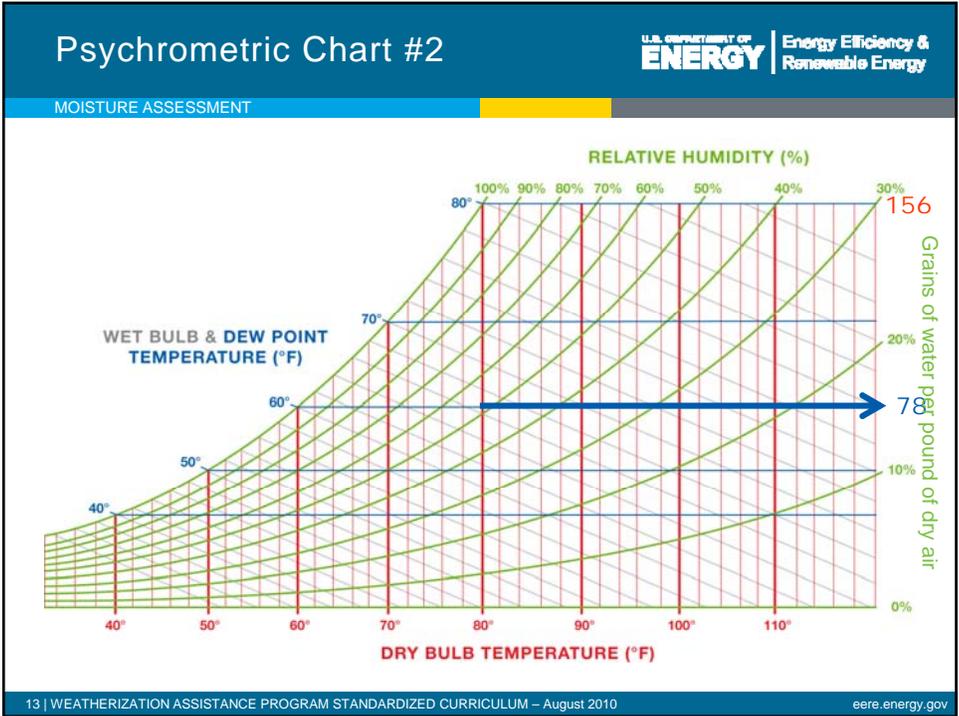


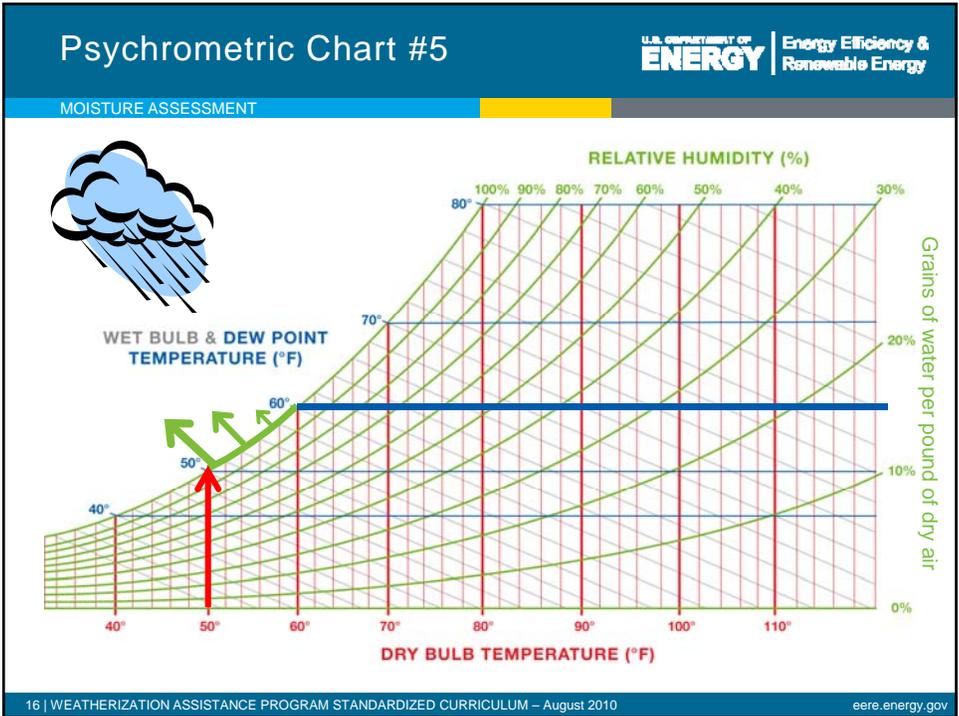
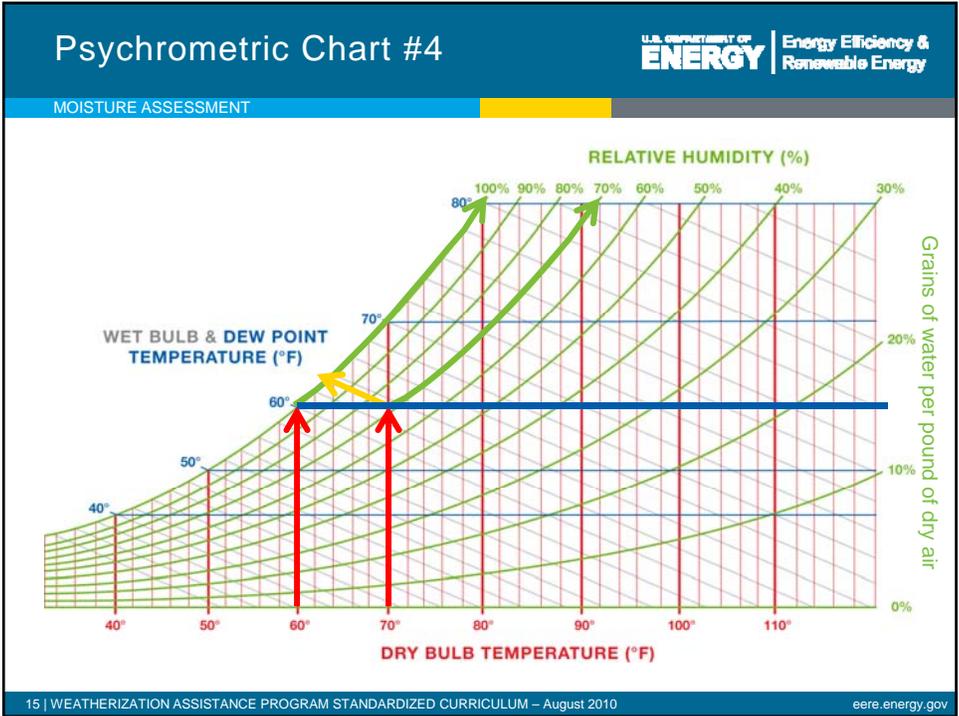
DRY BULB TEMPERATURE (°F)

RELATIVE HUMIDITY (%)

Grains of water per pound of dry air

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RH: Things to Remember

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MOISTURE ASSESSMENT

- Warm, wet air contacting cold surfaces creates condensation instantly.
- Cold winter air typically contains very little moisture and therefore has a low RH. When that air is heated, the RH drops even lower.
- RH below 15% can lead to respiratory problems, failure of furniture glue and other problems.

17 | WEATHERIZATION ASSISTANCE PROGRAM STANDARDIZED CURRICULUM – August 2010

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Attic Case Study #1

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MOISTURE ASSESSMENT

Floored Attic and First Condensing Surface



Photo courtesy of PA WTC

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Attic Case Study #2

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MOISTURE ASSESSMENT

- **Symptoms**
 - Condensation or mold growth on attic surfaces (rafters, sheathing or underside of flooring).
- **Possible Reasons**
 - Moderate to high interior moisture source.
 - Attic surface temps are below the dew point of the indoor air.
 - Air leaks to attic.
- **Control Strategies**
 - Source control.
 - Air seal the attic.

19 | WEATHERIZATION ASSISTANCE PROGRAM STANDARDIZED CURRICULUM – August 2010

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Basement Case Study #1

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MOISTURE ASSESSMENT

Symptom

- Condensation evident on basement walls.

Reason

- Light to moderate interior moisture source.
- Basement walls are below the dew point of the indoor air.



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Basement Case Study #2

U.S. DEPARTMENT OF
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MOISTURE ASSESSMENT

- Control moisture sources.
- Remove susceptible materials.

Educate occupants to:

- Mechanically dehumidify.
- Increase air flow in basement (fans).
- Close basement openings during hot humid periods.

Crawl Space Case Study #1

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Renewable Energy

MOISTURE ASSESSMENT

Symptoms

- Wet wood.
- Condensation on foundation surfaces.

Possible Reasons

- High ground moisture source.
- Warm humid air entering vents from outside.
- Crawl space surfaces are below the dew point of the outside air.



Water droplets of condensation on AC ducts.

Crawl Space Case Study #2

U.S. DEPARTMENT OF
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MOISTURE ASSESSMENT

- Install a ground vapor retarder.
- Control moisture sources and remove susceptible materials.
- Consider converting to a conditioned crawl space.



Conditioned crawlspace with air sealed and insulated walls.

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Tools of the Trade

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MOISTURE ASSESSMENT

- Clear understanding of moisture management principles.
- **Senses - Visual inspection**
 - Evidence of condensation.
 - Evidence of mold.
- **Communication Skills**
 - Know what questions to ask.
 - Documentation is vital.
- **Wood Moisture Meter**
 - To make quantitative assessments on wood moisture content.
- **Psychrometer**
 - To determine real time RH levels.
- **Digital Camera**

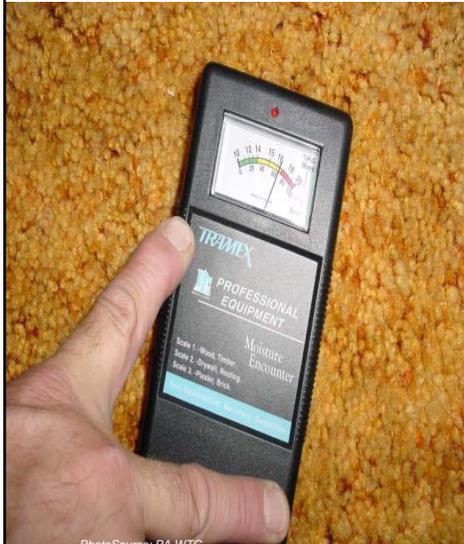
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Moisture Meters

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MOISTURE ASSESSMENT



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Summary

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MOISTURE ASSESSMENT

- The first step in doing a moisture assessment is to look for visible signs of moisture and moisture sources in the house.
- Plotting the wet bulb and dry bulb temperatures on a psychrometric chart gives dew point and relative humidity.
- Understanding the effects of temperature and vapor pressure on RH can help identify solutions.
- Source control, air sealing, ventilation, and thermal improvements are important moisture mitigation strategies.
- Photos and diagnostic equipment help document existing conditions.

26 | WEATHERIZATION ASSISTANCE PROGRAM STANDARDIZED CURRICULUM – August 2010

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Energy-Related Mold and Moisture
... awareness and impacts for weatherization



U.S. Department of Energy
Low-Income Weatherization Program

U.S. Department of Energy - Weatherization Assistance Program 1

Energy-Related Mold and Moisture
... awareness and impacts for weatherization



Training Overview & DOE Guidance

U.S. Department of Energy - Weatherization Assistance Program 2

Why Mold Training?

Effective November 12, 2004, the U.S. Department of Energy issued *Weatherization Program Notice 05-1*

Section 5.14 of WPN 05-1 titled **Energy-Related Mold and Moisture Impacts** require that *"weatherization crews receive specialized training in the recognition of conditions that promote mold growth they may encounter in their weatherization work and how best to prevent creating new mold conditions. At the same time, crews need training in how to treat less extensive mold conditions they may encounter in certain homes"*.

This training is provided by DOE to meet the training needs of Section 5.14

U.S. Department of Energy - Weatherization Assistance Program 3

DOE GUIDANCE regarding
"Mold-Related Weatherization"

Weatherization Program Notice 05-1
November 12, 2004

5.14 Energy-Related Mold and Moisture Impacts

"the WAP is not a mold remediation program"

"... DOE funds should not be used to test, abate, remediate, purchase insurance, or alleviate existing mold conditions identified during the audit, the work performance period or the quality control inspection ..."

"weatherization services may need to be delayed until the existing mold problem can be referred to another agency for funding of remedial action"

U.S. Department of Energy - Weatherization Assistance Program 4

DOE GUIDANCE regarding “Mold-Related Weatherization”

WPN 05-1 - November 12, 2004

5.14 Energy-Related Mold and Moisture Impacts – cont.

“In Program Year 2005, all States will be required to amend their health and safety plans to include a protocol for dealing with mold which will include a specific policy when encountering homes with mold growth.”

“Effective immediately, all States should ensure that their local agencies include some form of notification or disclaimer to the client upon the discovery of a mold condition and what specifically was done to the home that is expected to alleviate the condition and/or that the work performed should not promote new mold growth.”

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DOE GUIDANCE regarding “Mold-Related Weatherization”

WPN 05-1 - November 12, 2004

5.14 Energy-Related Mold and Moisture Impacts – cont.

“DOE funds may be used to correct energy-related conditions to allow for effective weatherization work and/or to assure the immediate health of workers and clients.”



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Summary of Mold Guidance

- ◆ **Training**
 - Understanding of conditions that promote mold growth
 - Prevention of mold
 - Treatment options
- ◆ **Assessment**
 - Client notification or disclaimer
- ◆ **Health of Workers and Clients**
- ◆ **State Protocol**
 - Each State will develop a protocol with specific policy.

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Basic Steps and Actions

```

    graph TD
      A[DOE Program Notice 05-1] --> B[Assessment]
      B --> C[Notification / Disclaimer]
      C --> D[State Protocol Determines Action]
      D --> E[Delay Work Until Conditions Are Corrected. Refer To Another Agency for Cleanup]
      D --> F[No Cleanup Needed Proceed]
      D --> G[Agency Cleanup of Energy Related Conditions and Proceed]
    
```

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Training Format

To provide crews with a comprehensive background of mold-related weatherization, this training is divided into 6 lessons plus resources:

- Lesson 1 - Molds Background and Health Effects
- Lesson 2 - Conditions of Mold Growth
- Lesson 3 - Mold Assessment & Client Disclosure
- Lesson 4 - Preventing Mold Growth – *Weatherization Best Practices*
- Lesson 5 - How to Treat Mold Conditions
- Lesson 6 - Optional Lesson - Mold Testing
- Mold Resources

While DOE recommends that crew training include all lessons, if training time or scope is limited, lessons 3, 4 and 5 are required.

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Energy-Related Mold and Moisture

... awareness and impacts for weatherization

What You Will Learn.

As a result of this training, crews will learn:

- what DOE requires regarding mold-related weatherization
- building science related to molds
- recognition of conditions that promote molds
- best weatherization practices to prevent molds
- client disclosure of molds
- how to treat less extensive mold conditions

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Energy-Related Mold and Moisture

... awareness and impacts for weatherization

Why Are Molds a Concern?

- While dormant mold spores are always present inside a home, active mold growth indoors is not normal.
- Molds can present health risks for crews and clients.
- Uncontrolled mold growth can cause severe and permanent structural problems.
- Failure to recognize conditions of mold growth may worsen existing mold cases or cause molds to actively grow.

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Energy-Related Mold and Moisture

... awareness and impacts for weatherization



Lesson 1 – molds background and health effects

Mold background – part 1

U.S. Department of Energy - Weatherization Assistance Program 12

What You Will Learn – Lesson 1

1. Where molds are generally found in a conventional and mobile home.
2. Why molds receive more attention today.
3. Terms related to molds.
4. Health Effects of molds.

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Home Molds they're real!



Mold on crawl space ceiling



Mold growing on a suitcase stored in a humid basement.

It is important to take precautions to **LIMIT YOUR EXPOSURE** to mold and mold spores.

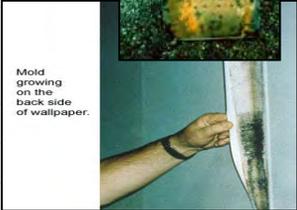


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Hidden Home Molds



Mold inside a furnace cabinet



Mold growing on the back side of wallpaper.



Mold behind a tub-surround.

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Where mold problems may be found in the home.

1. Dirty air conditioners
2. Dirty humidifiers
3. Bathroom without vents or windows
4. Kitchen without vents or windows
5. Dirty refrigerator drip pans
6. Laundry room with unvented dryer
7. Unventilated attic
8. Carpet on damp basement floor
9. Bedding
10. Closet on outside wall
11. Dirty heating/air conditioning system
12. Water damage (around windows, roof, or basement)



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Molds in Mobiles



- ◆ Small volume – less dilution of relative humidity
- ◆ Many cold surfaces for condensation
- ◆ Many sources of processed Wood – mold food
- ◆ Roofing
 - No ventilation or ventilation poorly distributed
- ◆ Crawl Space
 - No ventilation or poorly distributed/tight skirting
 - Plumbing leaks

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Mold - Why Today?

- Always outside “background” levels of mold
- Excessive Building Tightness?
 - (reduced infiltration, reduced ventilation)
- Poor construction practices
- Improper use of building materials
- More media and public awareness

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What are we talking about?

- ◆ **Fungi** – naturally occurring organisms that are essential to decay of organic matter.
- ◆ **Mold** and **Mildew** – terms used to describe fungi
- ◆ **Biologicals** - [water source](#) IAQ problems like fungi
- ◆ **Bio-Aerosols** (biological aerosols) – Airborne droplets containing mold spores, bacteria, and microbial volatile organic compounds (VOC)

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What are we talking about?

Mycotoxins – among most potent carcinogens
Produced by these and other fungi:

-  Aspergillus
-  Penicillium
-  Stachybotrys

Long-known as agricultural threat to livestock and humans from animal feed and grain dust.

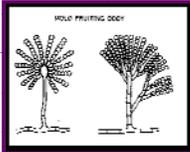
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Mold Growth



- ◆ Release tiny spores
- ◆ Spores travel in air, settle on surfaces and get into water
- ◆ Multiply in right conditions (see part 2)
- ◆ Problems occur when colonies or spore levels are large
- ◆ Active MOLD growth indoors is not normal and can present health risks to crews and clients.

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Health Effects - People React to:

- ◆ Spores (concentration), Fragments, Proteins
- ◆ Mycotoxins
- ◆ Microbial Volatile Organic Compounds
- ◆ People can react if mold is living or dead
- ◆ Mold must be dealt with before WX

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Mold: A Health Concern

Generally accepted ...

- ◆ Response Varies
- ◆ Young Children & Elderly More Susceptible
 - especially those with compromised immune systems
- ◆ Cumulative Effect

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For Crews and Clients – Symptoms Related to Mold Exposure

- ◆ Nasal & sinus congestion
- ◆ Sore throat, coughing
- ◆ Shortness of breath, chest tightness
- ◆ Eye irritation
- ◆ Headache
- ◆ Fatigue
- ◆ Rashes
- ◆ Known asthma trigger

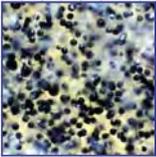


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Extreme Health Effect of a Mold

STACHYBOTRYS *atra/chartarum*
 “black-mold”, bloody-mold”

- Cleveland, Ohio – 1993-94
 - Impact resulting from flooding
 - Health effect on children
 - bloody ulcers
 - Death of 6 children
- ◆ First described in 1837/Prague
 - wallpaper
- ◆ Long-saturated cellulose
- ◆ Mold is slimy when active
- ◆ Mold spores released upon drying



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Questions for Discussion – Lesson 1

1. What are health symptoms of mold exposure?
2. What are characteristics of mobile homes that make them more susceptible to mold growth?
3. How does mold growth relate to weatherization?

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Energy-Related Mold and Moisture
 ... awareness and impacts for weatherization



Lesson 2 – Conditions that promote mold growth
 Mold background – part 2

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What You Will Learn? – Lesson 2

1. What factors influence the growth of mold in homes.
2. How factors that influence the growth of mold relate to weatherization.

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Conditions that Promote Mold Growth

- Clues to Mold Control -

Nine *conditions of mold growth* :

1. Mold spores present – they are everywhere
2. Food (organic materials)
3. Moisture
4. Building Tightness
5. Temperature
6. Oxygen Range
7. Time
8. Improper WX assessment, diagnostics & measures
9. Lack of home occupant knowledge & maintenance

Condition 1

Mold Growth

1. *Mold spores present*

- ◆ Fungi consists of approximately 25% of earth's biomass – spores are everywhere
- ◆ Estimated fungi species exceed 1.5 million
- ◆ Dormant spores can survive for many years without germinating and spreading

Bottom line ...
fungi spores will be in the homes you audit and weatherize!

Condition 1

Mold Growth

2. *ORGANIC MATERIAL – Nutrient Source*

Molds secrete digestive fluids that decompose the material substrate, making nutrients available

- processed wood/cellulose (sheetrock & insulation paper)
- natural fibers such as cotton and wool (carpet, rugs, upholstery)
- “dirty” water (i.e. sewage water) is full of organic material

Condition 2

Mold Growth

INORGANIC MATERIALS ...

Molds cannot get nutrients from inorganic materials (metal or glass) but can grow on the dust or soil present on the surfaces.

Condition 2

Nutrient Source Example

Inorganic material (rubber and synthetic carpet) – No mold!

Organic material (organic jute-backing on carpet and padding liner)– check out the mold

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Condition 3

3. MOISTURE

Control is the Key to Mold Control

Mold growing on a wooden headboard in a room with high humidity.

Moisture Sources:

1. Excessive Humidity
2. Water Intrusion

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Condition 3

Mold Growth

MOISTURE

Water Intrusion

Do not cover up water problems!

- Water from plumbing leaks, sewage back-up and flooding
- Foundational seepage from lawn watering, snow and rain run-off
- Capillary movement (wicking) onto organic materials
- “Dirty-water” is the worst

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Condition 3

Basement Mold

Why the mold?

- ◆ Cold surfaces causing condensation?
- ◆ Exterior water source?

Do not insulate or cover until moisture problem is dealt with!

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Condition 3

Ceiling Mold

Check for moisture from these sources:

1. Ice damming
2. Insulation drift
3. No insulation
4. Improper attic or exhaust venting
5. Roof leak
6. AC Condensation
7. Other ideas?



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Condition 3

Mold Growth

MOISTURE - Excessive Humidity

- ◆ 50% and greater RH is optimal for mold growth
 - an average family of four can generate over six gallons of moisture per day
- ◆ Humidity is Water Vapor
 - water vapor with cool surfaces is combo for creating condensation (dewpoint)
 - Water Vapor moves into walls and ceilings via diffusion and air leaks

Humid air + cold surface = condensation

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Condition 3

Moisture Flows...

WARM → **COLD**

MORE → **less**

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Condition 3

Mold Growth

MOISTURE - Excessive Humidity

Warm Humid air + cold surface = condensation

Hot Climate
outside warm humid air + cold surface on inside wall

Cold Climate
inside warm moist air + cold surface on outside wall



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Condition 3

Avoid negative pressures in the south

Infiltration of warm, humid air:

- ◆ Into walls
- ◆ Through chases
- ◆ Into rooms

Condensation on cool surfaces

Negative Pressure Caused by Leaky Ducts

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Condition 3

Sources of Home Moisture

An average family of four can generate over six gallons of moisture per day.

Shower (excludes towels & spillage)	1.0 pt / 10 minute shower
Clothes drying (vented indoors)	5.0 pt/ load
Combustion (unvented space heater)	7.6 pt/ gallon of kerosene
Cooking dinner (family of four)	1.2 pt(1.6 if gas cooking)
Floor mopping	1.5 pt/ 50 sq. ft.
Respiration (family of four)	0.4 pt/ hour
Desorption of materials: seasonal	6 to 17 pt/ day
New construction	10+ pt/day
Ground moisture migration	Up to 100 pt/day

1.0 pint can increase the RH by about 8% in a 1,500 sq. ft. single floor home.

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Condition 3

Optimum Indoor Relative Humidity Levels.

In cold climates maintain 35-50% RH.

In hot-humid climates maintain 40-60% RH.

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Condition 3

High Humidity – Window Condensation

The lower the window R-value the cooler the inside surface and greater chance of condensation.

Condensation on the inside of a windowpane.

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High humidity – Poor/No Ventilation Condition 3

Is the exhaust fan working properly?



Is the exhaust fan vented to the outside?

Is the fan operating long enough to remove moisture?

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Condition 4

Mold Growth

4. Building Tightness

Since the mid 1970's homes are built tighter, better weatherized and save energy!

Without controlled ventilation ...

- ...tighter = less air exchange
- ...tighter = less moisture evaporation
- ...tighter = less pollutant dilution
- ...tighter = greater chance of mold growth

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Condition 4

Mold Growth

Building Tightness



How tight is too tight?
Use Blower Door and Consider:

- number of occupants
- volume of air conditioned area
- mechanical ventilation

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Condition 5

Mold Growth

5. TEMPERATURE

Molds love household temps!

Molds germinate and grow best in warm temperatures

77 to 86 degrees Fahrenheit

At cooler temps (below 50 degrees) some molds will germinate but grow slower

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Condition 6

Mold Growth

6. OXYGEN

Molds require oxygen, but not light, for growth!

Think about mold growing inside walls!

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Condition 7

Mold Growth

7. TIME

- ◆ **Mold can grow fast ... some fungi can germinate in as short a period as 4 – 12 hours.**
- ◆ **Mold spores (likes seeds) are released and carried by air or water to new locations.**
- ◆ **If not dealt with, molds can spread in 24 to 48 hours.**

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Condition 8

Mold Growth

8. Improper WX Assessment, Diagnostics & Measures

The work you do may increase moisture levels and contribute to mold growth.

WX Examples:

- improper blower door diagnostics
- over-tightening the house – creating moisture build-up
- improper ventilation levels
- improper installation of exhaust fans
- failure to apply energy-related H & S measures

Can you think of more?

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Condition 9

Mold Growth

9. Home Occupant Awareness

Alert occupants of home mold growth and possible conditions that may create moisture problems and mold growth.

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Resource for the Public

A Brief Guide To
**MOLD, MOISTURE, AND
YOUR HOME**

EPA Publication #402-K-02-003

U.S. EPA, Office of Air and
Radiation Indoor
Environments Division
(6609J)
1200 Pennsylvania Ave., NW,
Washington, DC 20460

<http://www.epa.gov/iaq/molds/moldguide.html>

U.S. Department of Energy - Weatherization Assistance Program

53

Questions for Discussion – Lesson 2

How are each of these factors (that influence the growth and spread of molds) related to weatherization work?

1. **Mold spores**
2. **Organic materials**
3. **Moisture**
4. **Building Tightness**
5. **Temperature**
6. **Oxygen Range**
7. **Time**
8. **WX Assessment, Diagnostics & Measures**
9. **Occupant Knowledge & Maintenance**

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54

Energy-Related Mold and Moisture

... awareness and impacts for weatherization



Lesson 3 - mold assessment and WX applications

U.S. Department of Energy - Weatherization Assistance Program

55

What You Will Learn – Lesson 3

1. What is involved with an energy-related mold assessment.
2. Three steps of client disclosure.
3. Four categories of a home assessment
 - general building envelope
 - outside/site
 - HVAC
 - occupied space

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56

Mold Testing



Reminder ...

5.14 Energy-Related Mold and Moisture Impacts
"the WAP is not a mold remediation program"

"... DOE funds should not be used to test ... existing mold conditions identified during the audit, the work performance period or the quality control inspection ..."

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WX Building Assessment

As part of the energy audit a mold "assessment" should be done to ...

- to assure existing mold conditions are noted, documented and disclosed to client
- to assure existing building envelope conditions do not contribute to mold growth when weatherization measures are applied

Mold Assessment means:
 ... a visual building survey related to WX
 ... **WX assessment does not include testing**

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WX Building Assessment

Conduct energy-related mold assessment (using "checklist"*) as part of the wx energy audit

A non energy-related mold assessment is ...

- beyond the scope of weatherization
- not an allowable DOE cost
- implies to the client you are a "mold expert"

*see sample form enclosed with training materials

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WX Building Assessment

Protect Yourself!

Documentation of Current Situation

- Use Assessment Checklist
- Take Photos or Video
- Record in Client File

Disclose what you know **and** don't know
 Your business is weatherization not molds

- don't make claims you are not qualified to make
- provide EPA mold publication

U.S. Department of Energy - Weatherization Assistance Program 60

Client Disclosure*

*"Effective immediately, all States should ensure that their local agencies include some **form of notification or disclaimer to the client** upon the discovery of a mold condition and what specifically was done to the home that is expected to alleviate the condition and/or that the work performed should not promote new mold growth."*

*see sample form enclosed with training materials

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Client Disclosure

Step 1.

- **Don't Claim Mold Expertise**
- **Share Checklist results of "Observed" situation**
- **Share photos of findings**
- **Stress "no testing was done to verify findings"**
- **Obtain signature of disclosure on Checklist**

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Client Disclosure

Step 2. - If appropriate indicate that ...

"weatherization services may need to be delayed until the existing mold problem can be referred to another agency for funding of remedial action"

Weatherization Program Notice 05-1
November 12, 2004

U.S. Department of Energy - Weatherization Assistance Program 63

Client Disclosure

Step 3.

- **Provide EPA Publication**
- **Use Publication Distribution Verification Form**



EPA Publication #402-K-02-003

U.S. Department of Energy - Weatherization Assistance Program 64

Client Disclosure

Client tips to remedy molds

- ◆ Clean, disinfect, and dry surfaces
- ◆ Lower humidity levels
- ◆ Clean and disinfect humidifiers, dehumidifiers, refrigerator pans and air conditioning coils
- ◆ Exhaust the dryer to the outdoors
- ◆ Run a bathroom exhaust fan during bathing or showering
- ◆ Use a range-hood to exhaust cooking moisture
- ◆ Fix plumbing leaks and seepage
- ◆ Raise temp. of cold surfaces with insulation or storm windows
- ◆ Increase air circulation by opening closet doors and moving furniture away from walls

WX Building Assessment



FOLLOW YOUR NOSE!
FOLLOW YOUR EYES!

If you can see it or smell it, molds are likely present

WX Building Assessment

General examination of building

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

WX Building Assessment –

Outdoors

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

WX Building Assessment – HVAC System

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

WX Building Assessment - Occupied Space

- ✓ Plumbing leaks
- ✓ Water stains on walls, ceilings and around windows
- ✓ Musty odor
- ✓ Surface Condensation (especially during mild weather)
- ✓ Mold on Carpeting
- ✓ Humidifiers
- ✓ Window Air Conditioners
- ✓ Lack of bathroom, kitchen exhaust
- ✓ Clothes dryer not vented to outside
- ✓ Firewood stored indoors
- ✓ Wet clothes drying indoors

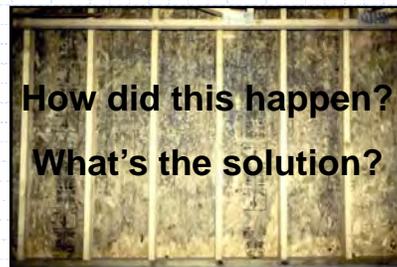
Questions for Discussion – Lesson 3

1. What is involved with an energy-related mold assessment.
2. Review the three steps of client disclosure.
3. When assessing a home for energy-related molds discuss four common areas of the home where mold problems may exist:
 - general building envelope
 - outside/site
 - HVAC
 - occupied space
4. Slides 70-81 provide you with an opportunity to assess home mold problems. The slides are divided into pairs – the 1st slide showing a problem situation and the 2nd slide identifying the cause of the mold problem.

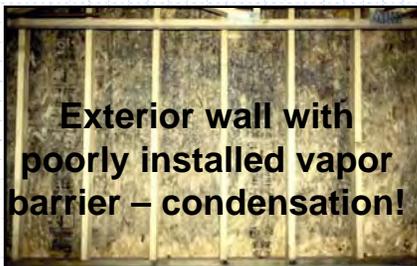
Review each pair of slides, discussing how they may relate to weatherization.

Exterior Wall Mold

test your assessment skills



Exterior Wall Mold



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73

Mold on Insulation

test your assessment skills



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74

Mold on Insulation



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75

Mold in Attic Problem and Solutions?

test your assessment skills



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76

Mold in Attic



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77

Mold in Bathroom – remember these pictures and tips?



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78

Carpet Mold

test your assessment skills



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79

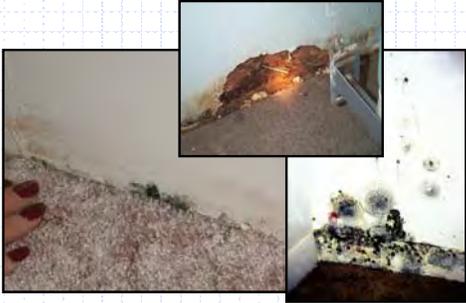
Carpet Mold



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80

Mold Evidence on Wall



U.S. Department of Energy - Weatherization Assistance Program 81

Extensive Mold in Wall Cavity



Just a simple pinhole pipe-leak.

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Is this mold?

test your assessment skills



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Energy-Related Mold and Moisture

... awareness and impacts for weatherization



Lesson 4 - preventing mold growth ...
weatherization best practices

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What You Will Learn – Lesson 4

1. The importance of controlling indoor moisture
2. Suggested humidity levels
3. Kitchen and bath moisture control and ventilation
4. Air tightness and pressures as it relates to moisture
5. Crawspace and attic ventilation
6. Structural drying

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Preventing mold is not rocket science ...
controlling moisture is the key!

NOTE: When controlling moisture and dealing with molds always refer to your State WX Standards.

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Why Clients Need to Control Indoor Home Moisture

an average family of four can generate over six gallons of moisture per day

Shower (excludes towels & spillage)	1.0 pt / 10 minute shower
Clothes drying (vented indoors)	5.0 pt/ load
Combustion (unvented space heater)	7.6 pt/ gallon of kerosene
Cooking dinner (family of four)	1.2 pt(1.6 if gas cooking)
Floor mopping	1.5 pt/ 50 sq. ft.
Respiration (family of four)	0.4 pt/ hour
Desorption of materials: seasonal	6 to 17 pt/ day
New construction	10+ pt/day
Ground moisture migration	Up to 100 pt/day

1.0 pint can increase the RH by about 8% in a 1,500 sq. ft. single floor home.

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Monitor Relative Humidity

recommended for greater accuracy

In cold climates maintain 35-50% RH.

In hot-humid climates maintain 40-60 % RH.

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Preventing Mold ... Kitchen & Bath Moisture Control

- ◆ Bathrooms, kitchens and utility areas should be vented to the “outside” – never to attic or crawl space.
- ◆ Exhaust vents rarely discharge rated cfm

NOTE: When controlling moisture and dealing with molds always refer to your State WX Standards.

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Exhaust Timer Options




NOTE: When controlling moisture and dealing with molds always refer to your State WX Standards.

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Clothes Dryer - a mold maker

- Lint = organic material
- Exhaust air = pounds of moisture
- Temperature = typically 70 to 100+ degrees F



NOTE: When controlling moisture and dealing with molds always refer to your State WX Standards.

U.S. Department of Energy - Weatherization Assistance Program 91

Clothes Dryer



Dryer Rules:

- Always vent to outside
- With mobiles vent beyond the skirting
- Do not vent into crawl spaces
- If possible direct vent to outside using smooth metal piping
- If elbows are needed, limit to two

NOTE: When controlling moisture and dealing with molds always refer to your State WX Standards.

U.S. Department of Energy - Weatherization Assistance Program 92

Exhaust Vent Rules

1. **Size correctly**
 - 50 cfm bathroom venting standard (*20 cfm)
 - 100 cfm kitchen venting standard (*25 cfm)
- * If venting is continuous
2. **Exhaust to outdoor – never into attic**
3. **Shortest vertical distance to outside or direct vent through wall**
4. **Control bathroom exhaust with timer or humidistat**
5. **Use aluminum piping without screws and taped joints**

NOTE: When controlling moisture and dealing with molds always refer to your State WX Standards.

Air sealing can keep humid air and moisture from entering the home however, over tightening can cause elevated relative humidity



Use your blower door to monitor air tightness

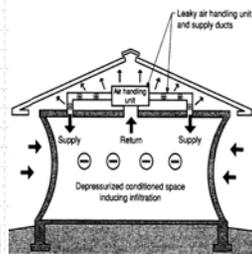
NOTE: When controlling moisture and dealing with molds always refer to your State WX Standards.

Avoid negative pressures in hot-humid climates

Infiltration of warm, humid air:

- ◆ Into walls
- ◆ Through chases
- ◆ Into rooms

Condensation on cool surfaces



Negative Pressure Caused by Leaky Ducts

Controlling Moisture ... Foundation Drainage

Where does foundation moisture come from?

- ◆ 1 inch of rain on 1,000 sq. ft. roof = 623 gallons
- ◆ High water table
- ◆ Foundation plants
- ◆ Leaking water spigot

*Recommend to Clients:
Install Gutters and Downspouts*

Extend downspouts

Slope ground 1 inch per foot away from the house

NOTE: When controlling moisture and dealing with molds always refer to your State WX Standards.

Preventing Mold ...

Air Cleaners – Inform Clients ...

- ◆ Molds spores are very tiny!
- ◆ Molds stay air-borne for days!
- ◆ Filters remove only some spores & do not remove proteins or VOCs
- ◆ Ozone units should not be used in an occupied space

Preventing Mold ...



Clients should be encouraged to reduce humidity with a dehumidifier

NOTE: When controlling moisture and dealing with molds always refer to your State WX Standards.

Structural Drying

- ◆ Open enclosed areas – like closets and cabinets
- ◆ Ambient temperature 68-72°F
- ◆ Circulate air across damp surfaces (use fans to move air)
- ◆ Exhaust moist air to outside
- ◆ Drying may take several days or longer

NOTE: When controlling moisture and dealing with molds always refer to your State WX Standards.

Questions for Discussion – Lesson 4

1. How does indoor relative humidity affect mold growth?
2. Discuss cases in which it might be useful to find out the indoor relative humidity.
3. Where should kitchen and bath fans be vented?
4. How much crawlspace and attic ventilation is generally suggested?
5. Do your state weatherization guidelines vary from these recommendations? Discuss the reasons this may be true.

Energy-Related Mold and Moisture

... awareness and impacts for weatherization



Lesson 5 – How to treat energy-related mold conditions.

U.S. Department of Energy - Weatherization Assistance Program 105

What Will You Learn – Lesson 5

1. DOE guidance pertaining to conditions that may be corrected by Wx agencies.
2. When cleanup is necessary prior to beginning work.
3. Basic sequence for cleanup
4. Cleanup guidelines
5. Personal protective equipment for level 1 cleanup
6. A commonly used biocide and how to use it.
7. Four steps to respond to a mold problem.

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Energy-Related Mold and Moisture

... awareness and impacts for weatherization

WPN 05-1 - November 12, 2004

5.14 Energy-Related Mold and Moisture Impacts

*"DOE funds may be used to correct **energy-related** conditions to allow for effective weatherization work and/or to assure the immediate health of workers and clients".*

"crews need training in how to treat less extensive mold conditions they may encounter in certain homes".

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Treatment of energy-related conditions ...

... refers to stabilizing an energy-related situation so effective WX can be done.

In some energy-related situations, clean-up may also be necessary in-order to effectively weatherize. DOE

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Treatment of energy-related conditions...

How should you proceed?

Each State WX Program must determine the extent of treatment allowable to safely and effectively weatherize homes versus work to be referred to the homeowner or other agencies before WX is done.

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WX Case



WX Need
-Insulate Attic

Problem
-Wet insulation, damp and moldy drywall

Determine Cause
-Leaking roof

Treatment
-Patch roof
-Remove wet insulation
-Replace section of drywall
-Apply proper insulation

U.S. Department of Energy - Weatherization Assistance Program 110

WX Case



WX Need
-Insulate Attic and Ventilate

Problem
-Wet insulation and wet rafters

Determine Cause
-Bathroom fan exhausted into attic, no attic ventilation

Treatment
-Remove wet insulation
-Provide proper attic venting
-Dry area by circulating air with fans
-Correctly vent exhaust fan to outside
-Apply proper insulation

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WX Case



WX Need
-Vent and Insulate Crawl Space

Problem
-Standing Water in Crawl Space
-Light Mold on Floor Joists

Determine Cause
-Flood Water

Control/Treatment*
-Pump out water
-Remove/dispose of debris
-Structural Dry Crawl Space
-Treat mold with biocide
-Insulate and Vent Crawl Space

*Who's responsibility is it?

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In some energy-related situations, clean-up may also be necessary in-order to effectively weatherize.



If you already have a mold problem -
ACT QUICKLY.
 Mold damages what it grows on. The longer it grows, the more damage it can cause.

Leaky window - mold is beginning to rot the wooden frame and windowsill.

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Mold Cleanup GUIDELINES

- ◆ New York City Department of Health
 "Guidelines on Assessment and Recommendation of Fungi in Indoor Environment"
- ◆ American Conference of Governmental Industrial Hygienists (ACGIH) - "Bioaerosols: Assessment and Control"
- ◆ The Institute for Inspection, Cleaning, and Remedial Certification (IICRC) IICRC S500
 "Standard and Reference Guide for Professional Water Damage Restoration"
- ◆ EPA - "Mold Remediation in Schools and Commercial Buildings"

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Clean-up Criteria

based on mold area to be cleaned

- Level 1 - small isolated areas (10 sq.ft. or less)
- Level 2 - mid-sized areas (10-30 sq.ft)
- Level 3 - large isolated areas (30-100 sq.ft)
- Level 4 - extensive contamination (> 100 sq.ft.)
- Level 5 - remediation of HVAC systems

"from Guidelines on Assessment and Recommendation of Fungi in Indoor Environment" -- New York City Department of Health

U.S. Department of Energy - Weatherization Assistance Program 115

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- Level 5 - remediation of HVAC systems

"Guidelines on Assessment and Recommendation of Fungi in Indoor Environment" -- New York City Department of Health

Do It Yourself

Greater expertise required

Beyond Level 1 - You Are Doing Abatement/Remediation

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Personal Protection Equipment

- ◆ Less than 10 sq. ft.
 - N-95 respirator, gloves, goggles
- ◆ Between 10 and 100 sq. ft.
 - N-95 or half face respirator with HEPA filter, gloves, disposable overalls, goggles
- ◆ Greater than 100 sq. ft.
 - Full-face respirator with HEPA filter, gloves, disposable full body clothing, head gear, foot coverings and containment

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117

Mold Cleanup – Level 1



- Household non-ammonia detergent and brush – for cleaning
- Biocide – kills mold
- N-95 face mask
- Leak-proof eye protection
- Rubber hand & arm gloves

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118

What is a Biocide?

- ◆ “Proven chemicals that kill molds”
 - Alcohol, sodium hypochlorite (chlorine bleach), hydrogen peroxide, iodine, quaternary ammonium chloride, synthesized phenolic compound*
- ◆ Must be used according to label
- ◆ Must be applied to **clean** surface
- ◆ Must have required exposure time
- ◆ Must use PPE

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119

Most Common Biocide Used ...

5.25 percent sodium hypochlorite
Household chlorine bleach

Never Mix
Chlorine
Bleach and
Ammonia

The
fumes
are toxic



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120

Level 1 Mold Cleanup

- ◆ Surface molds
 - 5.25 percent sodium hypochlorite (household chlorine bleach)
 - No fragrance please
 - Typical use – 1/10 ratio (one cup bleach in 10 cups water)

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121

Level 1 Mold Cleanup Procedure

- ◆ Scrub with a brush and detergent solution.
- ◆ Ventilate the work area.
- ◆ Disinfect with a chlorine bleach solution.
- ◆ Leave bleach solution on surface for 15 minutes, then rinse with water and dry quickly.

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122

Clean-Up Will Also Depend on Type of Surface

- ◆ Non-porous surfaces (ceramic tile)
 - Clean with HEPA Vacuum
 - Disinfect/kill mold
 - Wash surface with a detergent (biocide) solution
 - Thorough drying, repainting
- ◆ Porous Materials - (ceiling tiles, carpeting, upholstered furniture, wallboard)
Remove and replace
- ◆ Semi-porous (floor joist, sill plates)
Remove mold (sanding), disinfect, wash, dry and seal

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123

Clean-up – other criteria

Category of Water

- ◆ Clean Water – Category 1
 - Broken water pipes, rainwater, etc.
- ◆ Gray Water – Category 2
 - Domestic wastewater from kitchen sinks, clothes washers, etc.
- ◆ Black Water – Category 3
 - Contains pathogenic agents
 - Sewage, surface water flooding, pesticides

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124

Other Mold Clean-up Guidance for Clients

Contaminated Water Clean up

- ◆ Discard carpet saturated with category 3 water
- ◆ Category 2 water carpet contamination may be cleaned with hot water extraction and biocide
- ◆ Remove floor if water reached subflooring
 - Subflooring must be cleaned, disinfected, dried

Other Mold Clean-up Guidance for Clients

Basic Four Steps for Responding to Mold Problems

1. Respond quickly to stop moisture/mold damage and limit exposure to occupants.

Other Mold Clean-up Guidance for Clients

Basic Four Steps for Responding to Mold Problems

2. Identify:
 1. Cause of the moisture problem
 2. Extent and size of contamination
 3. Type of surface with mold
 4. Safety precautions for clean-up

Other Mold Clean-up Guidance for Clients

Four steps for Responding to Mold Problems

3. Implement clean-up (based on surface type):
Remove and properly dispose damaged materials that cannot be effectively cleaned.

Clean and salvage materials that are not severely damaged

Other Mold Clean-up Guidance for Clients

Four steps for Responding to Mold Problems

4. Repair and replace removed materials incorporating the necessary changes to correct the underlying moisture problem.
 - Dry out the area before closing up a wall or ceiling.

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Other Mold Clean-up Guidance for Clients

Mold Remediation

- ◆ Trained Personnel
- ◆ Area "MUST" be Contained
- ◆ Negative Pressurization
 - HVAC System sealed-off
 - HEPA Vacuum
- ◆ Minimize Dispersal
 - Bagging of all debris
 - Control Tracking
 - Control Equipment





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Other Mold Clean-up Guidance for Clients

Professional Personal Protection

Personal Protective Equipment

- Respirator with HEPA & organic vapor cartridges
- Rubber gloves
- Eye protection
- Protective suit
- Rubber boots



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Questions for Discussion – Lesson 5

1. Discuss conditions in which mold would be cleaned up using Wx funds.
2. Explain the basic cleanup sequence.
3. Describe the personal protective equipment required for level 1 cleanup
4. What is the most commonly used biocide, how is it mixed and how long should it be left on the surface?
5. Discuss examples when cleanup is beyond the scope of Wx work and how these situations are handled.

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LESSON 6 – OPTIONAL LESSON

Mold Testing

background for crews



Reminder ...

5.14 Energy-Related Mold and Moisture Impacts
“the WAP is not a mold remediation program”

“... DOE funds should not be used to test ... existing mold conditions identified during the audit, the work performance period or the quality control inspection ... ”

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Testing for Mold

let clients know ...

- ◆ **No Federal Threshold Mold Limits or Standards**
- ◆ No criteria or requirements for inspectors
- ◆ False negative evaluation
 - Compare quantity and types at various locations
 - Compare to outside types and levels
- ◆ **Quality** mold testing requires special training, special equipment, is expensive AND **is not the job of weatherization**

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What Clients Can Expect from Professional Testing

Use professional trained and experienced using sample and analytical methods of the *American Conference of Governmental Industrial Hygienists (ACGIH)* or the *American Industrial Hygiene Association (AIHA)*.

Justification for Testing:

- ◆ Verification
 - Real estate, insurance and clean-up
- ◆ Documentation of type and concentrations of molds
- ◆ Documentation of physical conditions
- ◆ Medical Investigation

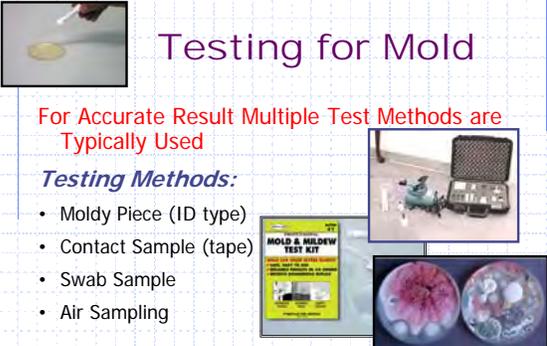
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Testing for Mold

For Accurate Result Multiple Test Methods are Typically Used

Testing Methods:

- Moldy Piece (ID type)
- Contact Sample (tape)
- Swab Sample
- Air Sampling



Do Not Recommend DIY Testing to Clients!

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Moisture Meters

used to measure moisture on/in building envelope (i.e. wall surface and cavity)

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Testing Interpretation Is Tricky

- ◆ Remember there are no standards
- ◆ Mold spores are everywhere – compare indoor levels to outdoors
- ◆ Consider “non-microbial Particulate debris”
 - can mask presence of spores
 - actual spore values could be up to 10 X higher than reported.

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Energy-Related Mold and Moisture

... awareness and impacts for weatherization

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Mold and Moisture Resources

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Mold and Moisture Resources

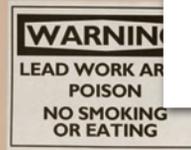
- www.healthyindoorair.org
- www.affordablecomfort.org
- www.buildingscience.com
- www.homemositure.org

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THE LEAD-SAFE CERTIFIED GUIDE TO RENOVATE RIGHT



CAUTION CAUTION CAUTION CAUTION CAUTION CAUTION



1-800-424-LEAD (5323)

epa.gov/getleadsafe

EPA-740-K-10-001

Revised September 2011



This document may be purchased through the U.S. Government Printing Office online at bookstore.gpo.gov or by phone (toll-free): 1-866-512-1800.

Important lead hazard information for families, child care providers and schools.



IT'S THE LAW!

Federal law requires contractors that disturb painted surfaces in homes, child care facilities and schools built before 1978 to be certified and follow specific work practices to prevent lead contamination. Always ask to see your contractor's certification.

Federal law requires that individuals receive certain information before renovating more than six square feet of painted surfaces in a room for interior projects or more than twenty square feet of painted surfaces for exterior projects or window replacement or demolition in housing, child care facilities and schools built before 1978.

- Homeowners and tenants: renovators must give you this pamphlet before starting work.
- Child care facilities, including preschools and kindergarten classrooms, and the families of children under six years of age that attend those facilities: renovators must provide a copy of this pamphlet to child care facilities and general renovation information to families whose children attend those facilities.

WHO SHOULD READ THIS PAMPHLET?

This pamphlet is for you if you:

- Reside in a home built before 1978.
- Own or operate a child care facility, including preschools and kindergarten classrooms, built before 1978, or
- Have a child under six years of age who attends a child care facility built before 1978.

You will learn:

- Basic facts about lead and your health.
- How to choose a contractor, if you are a property owner.
- What tenants, and parents/guardians of a child in a child care facility or school should consider.
- How to prepare for the renovation or repair job.
- What to look for during the job and after the job is done.
- Where to get more information about lead.

This pamphlet is not for:

- **Abatement projects.** Abatement is a set of activities aimed specifically at eliminating lead or lead hazards. EPA has regulations for certification and training of abatement professionals. If your goal is to eliminate lead or lead hazards, contact the National Lead Information Center at **1-800-424-LEAD (5323)** for more information.
- **“Do-it-yourself”** projects. If you plan to do renovation work yourself, this document is a good start, but you will need more information to complete the work safely. Call the National Lead Information Center at **1-800-424-LEAD (5323)** and ask for more information on how to work safely in a home with lead-based paint.
- **Contractor education.** Contractors who want information about working safely with lead should contact the National Lead Information Center at **1-800-424-LEAD (5323)** for information about courses and resources on lead-safe work practices.



RENOVATING, REPAIRING, OR PAINTING?



- Is your home, your building, or the child care facility or school your children attend being renovated, repaired, or painted?
- Was your home, your building, or the child care facility or school where your children under six years of age attend built before 1978?

If the answer to these questions is YES, there are a few important things you need to know about lead-based paint.

This pamphlet provides basic facts about lead and information about lead safety when work is being done in your home, your building or the child care facility or school your children attend.

The Facts About Lead

- Lead can affect children's brains and developing nervous systems, causing reduced IQ, learning disabilities, and behavioral problems. Lead is also harmful to adults.
 - Lead in dust is the most common way people are exposed to lead. People can also get lead in their bodies from lead in soil or paint chips. Lead dust is often invisible.
 - Lead-based paint was used in more than 38 million homes until it was banned for residential use in 1978.
 - Projects that disturb painted surfaces can create dust and endanger you and your family. Don't let this happen to you. Follow the practices described in this pamphlet to protect you and your family.
-

LEAD AND YOUR HEALTH

Lead is especially dangerous to children under six years of age.

Lead can affect children's brains and developing nervous systems, causing:

- Reduced IQ and learning disabilities.
- Behavior problems.

Even children who appear healthy can have dangerous levels of lead in their bodies.

Lead is also harmful to adults. In adults, low levels of lead can pose many dangers, including:

- High blood pressure and hypertension.
- Pregnant women exposed to lead can transfer lead to their fetuses. Lead gets into the body when it is swallowed or inhaled.
- People, especially children, can swallow lead dust as they eat, play, and do other normal hand-to-mouth activities.
- People may also breathe in lead dust or fumes if they disturb lead-based paint. People who sand, scrape, burn, brush, blast or otherwise disturb lead-based paint risk unsafe exposure to lead.



What should I do if I am concerned about my family's exposure to lead?

- A blood test is the only way to find out if you or a family member already has lead poisoning. Call your doctor or local health department to arrange for a blood test.
- Call your local health department for advice on reducing and eliminating exposures to lead inside and outside your home, child care facility or school.
- Always use lead-safe work practices when renovation or repair will disturb painted surfaces.

For more information about the health effects of exposure to lead, visit the EPA lead website at epa.gov/lead/pubs/leadinfo or call 1-800-424-LEAD (5323).

There are other things you can do to protect your family every day.

- Regularly clean floors, window sills, and other surfaces.
- Wash children's hands, bottles, pacifiers, and toys often.
- Make sure children eat a healthy, nutritious diet consistent with the USDA's dietary guidelines, that helps protect children from the effects of lead.
- Wipe off shoes before entering the house.

WHERE DOES THE LEAD COME FROM?

Dust is the main problem.

The most common way to get lead in the body is from dust. Lead dust comes from deteriorating lead-based paint and lead-contaminated soil that gets tracked into your home. This dust may accumulate to unsafe levels. Then, normal hand-to-mouth activities, like playing and eating (especially in young children), move that dust from surfaces like floors and window sills into the body.

Home renovation creates dust.

Common renovation activities like sanding, cutting, and demolition can create hazardous lead dust and chips.

Proper work practices protect you from the dust.

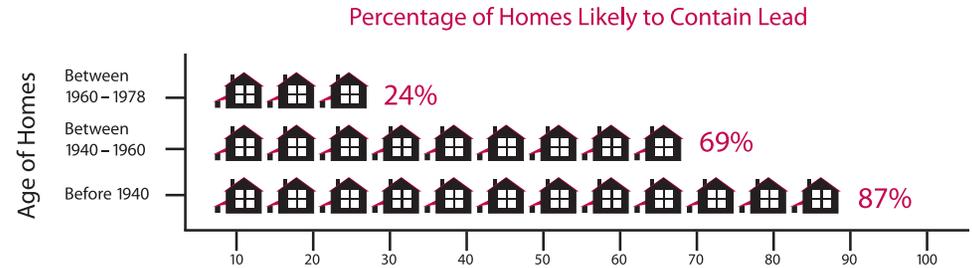
The key to protecting yourself and your family during a renovation, repair or painting job is to use lead-safe work practices such as containing dust inside the work area, using dust-minimizing work methods, and conducting a careful cleanup, as described in this pamphlet.

Other sources of lead.

Remember, lead can also come from outside soil, your water, or household items (such as lead-glazed pottery and lead crystal). Contact the National Lead Information Center at 1-800-424-LEAD (5323) for more information on these sources.



CHECKING YOUR HOME FOR LEAD-BASED PAINT



Older homes, child care facilities, and schools are more likely to contain lead-based paint.

Homes may be single-family homes or apartments. They may be private, government-assisted, or public housing. Schools are preschools and kindergarten classrooms. They may be urban, suburban, or rural.

You have the following options:

You may decide to assume your home, child care facility, or school contains lead.

Especially in older homes and buildings, you may simply want to assume lead-based paint is present and follow the lead-safe work practices described in this brochure during the renovation, repair, or painting job.

You can hire a certified professional to check for lead-based paint.

These professionals are certified risk assessors or inspectors, and can determine if your home has lead or lead hazards.

- A certified inspector or risk assessor can conduct an inspection telling you whether your home, or a portion of your home, has lead-based paint and where it is located. This will tell you the areas in your home where lead-safe work practices are needed.
- A certified risk assessor can conduct a risk assessment telling you if your home currently has any lead hazards from lead in paint, dust, or soil. The risk assessor can also tell you what actions to take to address any hazards.
- For help finding a certified risk assessor or inspector, call the National Lead Information Center at 1-800-424-LEAD (5323).

You may also have a certified renovator test the surfaces or components being disturbed for lead by using a lead test kit or by taking paint chip samples and sending them to an EPA-recognized testing laboratory. Test kits must be EPA-recognized and are available at hardware stores. They include detailed instructions for their use.

FOR PROPERTY OWNERS

You have the ultimate responsibility for the safety of your family, tenants, or children in your care.

This means properly preparing for the renovation and keeping persons out of the work area (see p. 8). It also means ensuring the contractor uses lead-safe work practices.

Federal law requires that contractors performing renovation, repair and painting projects that disturb painted surfaces in homes, child care facilities, and schools built before 1978 be certified and follow specific work practices to prevent lead contamination.

Make sure your contractor is certified, and can explain clearly the details of the job and how the contractor will minimize lead hazards during the work.

- You can verify that a contractor is certified by checking EPA's website at epa.gov/getleadsafe or by calling the National Lead Information Center at 1-800-424-LEAD (5323). You can also ask to see a copy of the contractor's firm certification.
- Ask if the contractor is trained to perform lead-safe work practices and to see a copy of their training certificate.
- Ask them what lead-safe methods they will use to set up and perform the job in your home, child care facility or school.
- Ask for references from at least three recent jobs involving homes built before 1978, and speak to each personally.

Always make sure the contract is clear about how the work will be set up, performed, and cleaned.

- Share the results of any previous lead tests with the contractor.
- You should specify in the contract that they follow the work practices described on pages 9 and 10 of this brochure.
- The contract should specify which parts of your home are part of the work area and specify which lead-safe work practices will be used in those areas. Remember, your contractor should confine dust and debris to the work area and should minimize spreading that dust to other areas of the home.
- The contract should also specify that the contractor will clean the work area, verify that it was cleaned adequately, and re-clean it if necessary.

If you think a worker is not doing what he is supposed to do or is doing something that is unsafe, you should:

- Direct the contractor to comply with regulatory and contract requirements.
- Call your local health or building department, or
- Call EPA's hotline 1-800-424-LEAD (5323).

If your property receives housing assistance from HUD (or a state or local agency that uses HUD funds), you must follow the requirements of HUD's Lead-Safe Housing Rule and the ones described in this pamphlet.

FOR TENANTS AND FAMILIES OF CHILDREN UNDER SIX YEARS OF AGE IN CHILD CARE FACILITIES AND SCHOOLS

You play an important role ensuring the ultimate safety of your family.

This means properly preparing for the renovation and staying out of the work area (see p. 8).

Federal law requires that contractors performing renovation, repair and painting projects that disturb painted surfaces in homes built before 1978 and in child care facilities and schools built before 1978, that a child under six years of age visits regularly, to be certified and follow specific work practices to prevent lead contamination.

The law requires anyone hired to renovate, repair, or do painting preparation work on a property built before 1978 to follow the steps described on pages 9 and 10 unless the area where the work will be done contains no lead-based paint.

If you think a worker is not doing what he is supposed to do or is doing something that is unsafe, you should:

- Contact your landlord.
- Call your local health or building department, or
- Call EPA's hotline 1-800-424-LEAD (5323).

If you are concerned about lead hazards left behind after the job is over, you can check the work yourself (see page 10).



PREPARING FOR A RENOVATION

The work areas should not be accessible to occupants while the work occurs.

The rooms or areas where work is being done may need to be blocked off or sealed with plastic sheeting to contain any dust that is generated. Therefore, the contained area may not be available to you until the work in that room or area is complete, cleaned thoroughly, and the containment has been removed. Because you may not have access to some areas during the renovation, you should plan accordingly.

You may need:

- Alternative bedroom, bathroom, and kitchen arrangements if work is occurring in those areas of your home.
- A safe place for pets because they too can be poisoned by lead and can track lead dust into other areas of the home.
- A separate pathway for the contractor from the work area to the outside in order to bring materials in and out of the home. Ideally, it should not be through the same entrance that your family uses.
- A place to store your furniture. All furniture and belongings may have to be moved from the work area while the work is being done. Items that can't be moved, such as cabinets, should be wrapped in plastic.
- To turn off forced-air heating and air conditioning systems while the work is being done. This prevents dust from spreading through vents from the work area to the rest of your home. Consider how this may affect your living arrangements.

You may even want to move out of your home temporarily while all or part of the work is being done.

Child care facilities and schools may want to consider alternative accommodations for children and access to necessary facilities.



DURING THE WORK

Federal law requires contractors that are hired to perform renovation, repair and painting projects in homes, child care facilities, and schools built before 1978 that disturb painted surfaces to be certified and follow specific work practices to prevent lead contamination.

The work practices the contractor must follow include these three simple procedures, described below:

1. Contain the work area. The area must be contained so that dust and debris do not escape from that area. Warning signs must be put up and plastic or other impermeable material and tape must be used as appropriate to:

- Cover the floors and any furniture that cannot be moved.
- Seal off doors and heating and cooling system vents.
- For exterior renovations, cover the ground and, in some instances, erect vertical containment or equivalent extra precautions in containing the work area.

These work practices will help prevent dust or debris from getting outside the work area.

2. Avoid renovation methods that generate large amounts of lead-contaminated dust. Some methods generate so much lead-contaminated dust that their use is prohibited.

They are:

- Open flame burning or torching.
- Sanding, grinding, planing, needle gunning, or blasting with power tools and equipment not equipped with a shroud and HEPA vacuum attachment.
- Using a heat gun at temperatures greater than 1100°F.



There is no way to eliminate dust, but some renovation methods make less dust than others. Contractors may choose to use various methods to minimize dust generation, including using water to mist areas before sanding or scraping; scoring paint before separating components; and prying and pulling apart components instead of breaking them.

3. Clean up thoroughly. The work area should be cleaned up daily to keep it as clean as possible. When all the work is done, the area must be cleaned up using special cleaning methods before taking down any plastic that isolates the work area from the rest of the home. The special cleaning methods should include:

- Using a HEPA vacuum to clean up dust and debris on all surfaces, followed by
- Wet wiping and wet mopping with plenty of rinse water.

When the final cleaning is done, look around. There should be no dust, paint chips, or debris in the work area. If you see any dust, paint chips, or debris, the area must be re-cleaned.

FOR PROPERTY OWNERS: AFTER THE WORK IS DONE

When all the work is finished, you will want to know if your home, child care facility, or school where children under six attend has been cleaned up properly.

EPA Requires Cleaning Verification.

In addition to using allowable work practices and working in a lead-safe manner, EPA's RRP rule requires contractors to follow a specific cleaning protocol. The protocol requires the contractor to use disposable cleaning cloths to wipe the floor and other surfaces of the work area and compare these cloths to an EPA-provided cleaning verification card to determine if the work area was adequately cleaned. EPA research has shown that following the use of lead-safe work practices with the cleaning verification protocol will effectively reduce lead-dust hazards.

Lead-Dust Testing.

EPA believes that if you use a certified and trained renovation contractor who follows the LRRP rule by using lead-safe work practices and the cleaning protocol after the job is finished, lead-dust hazards will be effectively reduced. If, however, you are interested in having lead-dust testing done at the completion of your job, outlined below is some helpful information.

What is a lead-dust test?

- Lead-dust tests are wipe samples sent to a laboratory for analysis. You will get a report specifying the levels of lead found after your specific job.

How and when should I ask my contractor about lead-dust testing?

- Contractors are not required by EPA to conduct lead-dust testing. However, if you want testing, EPA recommends testing be conducted by a lead professional. To locate a lead professional who will perform an evaluation near you, visit EPA's website at epa.gov/lead/pubs/locate or contact the National Lead Information Center at **1-800-424-LEAD (5323)**.
- If you decide that you want lead-dust testing, it is a good idea to specify in your contract, before the start of the job, that a lead-dust test is to be done for your job and who will do the testing, as well as whether re-cleaning will be required based on the results of the test.
- You may do the testing yourself. If you choose to do the testing, some EPA-recognized lead laboratories will send you a kit that allows you to collect samples and send them back to the laboratory for analysis. Contact the National Lead Information Center for lists of EPA-recognized testing laboratories.



FOR ADDITIONAL INFORMATION

You may need additional information on how to protect yourself and your children while a job is going on in your home, your building, or child care facility.

The National Lead Information Center at **1-800-424-LEAD (5323)** or epa.gov/lead/nlic can tell you how to contact your state, local, and/or tribal programs or get general information about lead poisoning prevention.

- State and tribal lead poisoning prevention or environmental protection programs can provide information about lead regulations and potential sources of financial aid for reducing lead hazards. If your state or local government has requirements more stringent than those described in this pamphlet, you must follow those requirements.
- Local building code officials can tell you the regulations that apply to the renovation work that you are planning.
- State, county, and local health departments can provide information about local programs, including assistance for lead-poisoned children and advice on ways to get your home checked for lead.



The National Lead Information Center can also provide a variety of resource materials, including the following guides to lead-safe work practices. Many of these materials are also available at epa.gov/lead/pubs/brochure

- Steps to Lead Safe Renovation, Repair and Painting.
- Protect Your Family from Lead in Your Home
- Lead in Your Home: A Parent's Reference Guide



For the hearing impaired, call the Federal Information Relay Service at 1-800-877-8339 to access any of the phone numbers in this brochure.

EPA CONTACTS

EPA Regional Offices

EPA addresses residential lead hazards through several different regulations. EPA requires training and certification for conducting abatement and renovations, education about hazards associated with renovations, disclosure about known lead paint and lead hazards in housing, and sets lead-paint hazard standards.

Your Regional EPA Office can provide further information regarding lead safety and lead protection programs at epa.gov/lead.

Region 1

(Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont)
Regional Lead Contact
U.S. EPA Region 1
Suite 1100
One Congress Street
Boston, MA 02114-2023
(888) 372-7341

Region 2

(New Jersey, New York, Puerto Rico, Virgin Islands)
Regional Lead Contact
U.S. EPA Region 2
2890 Woodbridge Avenue
Building 205, Mail Stop 225
Edison, NJ 08837-3679
(732) 321-6671

Region 3

(Delaware, Maryland, Pennsylvania, Virginia, Washington, DC, West Virginia)
Regional Lead Contact
U.S. EPA Region 3
1650 Arch Street
Philadelphia, PA
19103-2029
(215) 814-5000

Region 4

(Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee)
Regional Lead Contact
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303-8960
(404) 562-9900

Region 5

(Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin)
Regional Lead Contact
U.S. EPA Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3507
(312) 886-6003

Region 6

(Arkansas, Louisiana, New Mexico, Oklahoma, Texas)
Regional Lead Contact
U.S. EPA Region 6
1445 Ross Avenue,
12th Floor
Dallas, TX 75202-2733
(214) 665-7577

Region 7

(Iowa, Kansas, Missouri, Nebraska)
Regional Lead Contact
U.S. EPA Region 7
901 N. 5th Street
Kansas City, KS 66101
(913) 551-7003

Region 8

(Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming)
Regional Lead Contact
U.S. EPA Region 8
1595 Wynkoop Street
Denver, CO 80202
(303) 312-6312

Region 9

(Arizona, California, Hawaii, Nevada)
Regional Lead Contact
U.S. Region 9
75 Hawthorne Street
San Francisco, CA 94105
(415) 947-8021

Region 10

(Alaska, Idaho, Oregon, Washington)
Regional Lead Contact
U.S. EPA Region 10
1200 Sixth Avenue
Seattle, WA 98101-1128
(206) 553-1200

OTHER FEDERAL AGENCIES

CPSC

The Consumer Product Safety Commission (CPSC) protects the public from the unreasonable risk of injury or death from 15,000 types of consumer products under the agency's jurisdiction. CPSC warns the public and private sectors to reduce exposure to lead and increase consumer awareness. Contact CPSC for further information regarding regulations and consumer product safety.

CPSC

4330 East West Highway
Bethesda, MD 20814
Hotline 1-(800) 638-2772
cpsc.gov

CDC Childhood Lead Poisoning Prevention Branch

The Centers for Disease Control and Prevention (CDC) assists state and local childhood lead poisoning prevention programs to provide a scientific basis for policy decisions, and to ensure that health issues are addressed in decisions about housing and the environment. Contact CDC Childhood Lead Poisoning Prevention Program for additional materials and links on the topic of lead.

CDC Childhood Lead Poisoning Prevention Branch

4770 Buford Highway, MS F-40
Atlanta, GA 30341
(770) 488-3300
cdc.gov/nceh/lead

HUD Office of Healthy Homes and Lead Hazard Control

The Department of Housing and Urban Development (HUD) provides funds to state and local governments to develop cost-effective ways to reduce lead-based paint hazards in America's privately-owned low-income housing. In addition, the office enforces the rule on disclosure of known lead paint and lead hazards in housing, and HUD's lead safety regulations in HUD-assisted housing, provides public outreach and technical assistance, and conducts technical studies to help protect children and their families from health and safety hazards in the home. Contact the HUD Office of Healthy Homes and Lead Hazard Control for information on lead regulations, outreach efforts, and lead hazard control research and outreach grant programs.

U.S. Department of Housing and Urban Development

Office of Healthy Homes and Lead Hazard Control
451 Seventh Street, SW, Room 8236
Washington, DC 20410-3000
HUD's Lead Regulations Hotline
(202) 402-7698
hud.gov/offices/lead/



SAMPLE PRE-RENOVATION FORM

This sample form may be used by renovation firms to document compliance with the Federal pre-renovation education and renovation, repair, and painting regulations.

Occupant Confirmation

Pamphlet Receipt

- I have received a copy of the lead hazard information pamphlet informing me of the potential risk of the lead hazard exposure from renovation activity to be performed in my dwelling unit. I received this pamphlet before the work began.

Printed Name of Owner-occupant

Signature of Owner-occupant

Signature Date

Renovator's Self Certification Option (for tenant-occupied dwellings only)

Instructions to Renovator: If the lead hazard information pamphlet was delivered but a tenant signature was not obtainable, you may check the appropriate box below.

- Declined** – I certify that I have made a good faith effort to deliver the lead hazard information pamphlet to the rental dwelling unit listed below at the date and time indicated and that the occupant declined to sign the confirmation of receipt. I further certify that I have left a copy of the pamphlet at the unit with the occupant.
- Unavailable for signature** – I certify that I have made a good faith effort to deliver the lead hazard information pamphlet to the rental dwelling unit listed below and that the occupant was unavailable to sign the confirmation of receipt. I further certify that I have left a copy of the pamphlet at the unit by sliding it under the door or by (fill in how pamphlet was left).

Printed Name of Person Certifying Delivery

Attempted Delivery Date

Signature of Person Certifying Lead Pamphlet Delivery

Unit Address

Note Regarding Mailing Option — As an alternative to delivery in person, you may mail the lead hazard information pamphlet to the owner and/or tenant. Pamphlet must be mailed at least seven days before renovation. Mailing must be documented by a certificate of mailing from the post office.



A Citizen's Guide To Radon

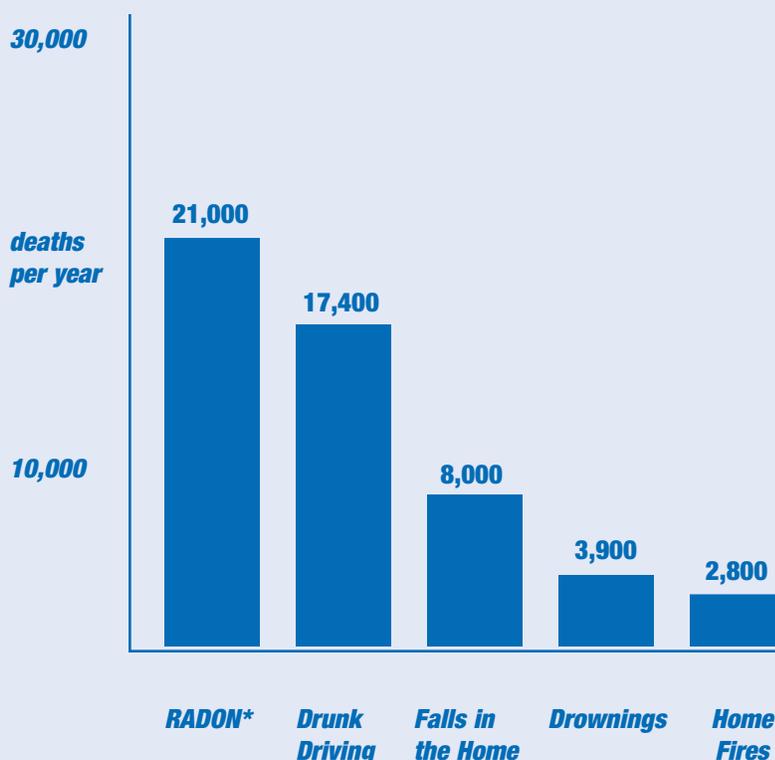
The Guide To Protecting
Yourself And Your Family From
Radon



EPA Recommends:

- ▼ **Test your home for radon—it's easy and inexpensive.**
- ▼ **Fix your home if your radon level is 4 picocuries per liter (pCi/L) or higher.**
- ▼ **Radon levels less than 4 pCi/L still pose a risk, and in many cases may be reduced.**

Radon is estimated to cause thousands of lung cancer deaths in the U.S. each year.



**Radon is estimated to cause about 21,000 lung cancer deaths per year, according to EPA's 2003 Assessment of Risks from Radon in Homes (EPA 402-R-03-003). The numbers of deaths from other causes are taken from the Centers for Disease Control and Prevention's 1999-2001 National Center for Injury Prevention and Control Report and 2002 National Safety Council Reports.*

OVERVIEW

Radon is a cancer-causing, radioactive gas.

You can't see radon. And you can't smell it or taste it. But it may be a problem in your home.

Radon is estimated to cause many thousands of deaths each year. That's because when you breathe air containing radon, you can get lung cancer. In fact, the Surgeon General has warned that radon is the second leading cause of lung cancer in the United States today. Only smoking causes more lung cancer deaths. **If you smoke and your home has high radon levels, your risk of lung cancer is especially high.**

Radon can be found all over the U.S.

Radon comes from the natural (radioactive) breakdown of uranium in soil, rock and water and gets into the air you breathe. Radon can be found all over the U.S. It can get into any type of building—homes, offices, and schools—and result in a high indoor radon level. But you and your family are most likely to get your greatest exposure at home, where you spend most of your time.

You should test for radon.

Testing is the only way to know if you and your family are at risk from radon. EPA and the Surgeon General recommend testing all homes below the third floor for radon. EPA also recommends testing in schools.

Testing is inexpensive and easy—it should only take a few minutes of your time. Millions of Americans have already tested their homes for radon (see page 5).

You can fix a radon problem.

Radon reduction systems work and they are not too costly. Some radon reduction systems can reduce radon levels in your home by up to 99%. Even very high levels can be reduced to acceptable levels.

New homes can be built with radon-resistant features.

Radon-resistant construction techniques can be effective in preventing radon entry. When installed properly and completely, these simple and inexpensive techniques can help reduce indoor radon levels in homes. In addition, installing them at the time of construction makes it easier and less expensive to reduce radon levels further if these passive techniques don't reduce radon levels to below 4 pCi/L.

Every new home should be tested after occupancy, even if it was built radon-resistant. If radon levels are still in excess of 4 pCi/L, the passive system should be activated by having a qualified mitigator install a vent fan. For more explanation of radon resistant construction techniques, refer to EPA publication, *Building Radon Out: A Step-by-Step Guide on How to Build Radon-Resistant Homes* (see page 15).

HOW DOES RADON GET INTO YOUR HOME?

Any home may have a radon problem.

Radon is a radioactive gas. It comes from the natural decay of uranium that is found in nearly all soils. It typically moves up through the ground to the air above and into your home through cracks and other holes in the foundation. Your home traps radon inside, where it can build up. Any home may have a radon problem. This means new and old homes, well-sealed and drafty homes, and homes with or without basements.

Radon from soil gas is the main cause of radon problems. Sometimes radon enters the home through well water (see page 8). In a small number of homes, the building materials can give off radon, too. However, building

RADON GETS IN THROUGH:

- 1. Cracks in solid floors.**
- 2. Construction joints.**
- 3. Cracks in walls.**
- 4. Gaps in suspended floors.**
- 5. Gaps around service pipes.**
- 6. Cavities inside walls.**
- 7. The water supply.**



materials rarely cause radon problems by themselves.

Nearly 1 out of every 15 homes in the U.S. is estimated to have elevated radon levels. Elevated levels of radon gas have been found in homes in your state. Contact your state radon office (www.epa.gov/radon/wherelive.html) for general information about radon in your area. While radon problems may be more common in some areas, any home may have a problem. The only way to know about your home is to test.

Radon can also be a problem in schools and workplaces. Ask your state radon office (www.epa.gov/radon/wherelive.html) about radon problems in schools, daycare and childcare facilities, and workplaces in your area (also visit www.epa.gov/radon).

HOW TO TEST YOUR HOME

You can't see radon, but it's not hard to find out if you have a radon problem in your home. All you need to do is test for radon. Testing is easy and should only take a few minutes of your time.

The amount of radon in the air is measured in "picocuries per liter of air," or "pCi/L." There are many kinds of low-cost "do it yourself" radon test kits you can get through the mail and in some hardware stores and other retail outlets. If you prefer, or if you are buying or selling a home, you can hire a qualified tester to do the testing for you. You should first contact your state radon office about obtaining a list of qualified testers. You can also contact a private radon proficiency program for lists of privately certified radon professionals serving your area. For links and more information, visit www.epa.gov/radon/radontest.html.

There are Two General Ways to Test for Radon:

SHORT-TERM TESTING:

The quickest way to test is with short-term tests. Short-term tests remain in your home for two days to 90 days, depending on the device. "Charcoal canisters," "alpha track," "electret ion chamber," "continuous monitors," and "charcoal liquid scintillation" detectors are most commonly used for short-term testing. Because radon levels tend to vary from day to day and season to season, a short-term test is less likely than a long-term test to tell you your year-round average radon level. If you need results quickly, however, a short-term test followed by a second short-term test may be used to decide whether to fix your home (see also page 7 under Home Sales).

LONG-TERM TESTING:

Long-term tests remain in your home for more than 90 days. "Alpha track" and "electret" detectors are commonly used for this type of testing. A long-term test will give you a reading that is more likely to tell you your home's year-round average radon level than a short-term test.

How To Use a Test Kit:

Follow the instructions that come with your test kit. If you are doing a short-term test, close your windows and outside doors and keep them closed as much as possible during the test. Heating and air conditioning system fans that re-circulate air may be operated. Do not operate fans or other machines which bring in air from outside. Fans that are part of a radon-reduction system or small exhaust fans operating only for short periods of time may run during the test. If you are doing a short-term test lasting just 2 or 3 days, be sure to close your windows and outside doors at least 12 hours **before** beginning the test, too. You should not conduct

**Testing is easy
and should only
take a few
minutes of
your time.**

HOW TO TEST YOUR HOME *continued*

short-term tests lasting just 2 or 3 days during unusually severe storms or periods of unusually high winds. The test kit should be placed in the lowest lived-in level of the home (for example, the basement if it is frequently used, otherwise the first floor). It should be put in a room that is used regularly (like a living room, playroom, den, or bedroom) but **not** your kitchen or bathroom. Place the kit at least 20 inches above the floor in a location where it won't be disturbed—away from drafts, high heat, high humidity, and exterior walls. Leave the kit in place for as long as the package says. Once you've finished the test, reseal the package and send it to the lab specified on the package right away for analysis. You should receive your test results within a few weeks.

EPA Recommends the Following Testing Steps:

Step 1. *Take a short-term test. If your result is 4 pCi/L or higher, take a follow-up test (Step 2) to be sure.*

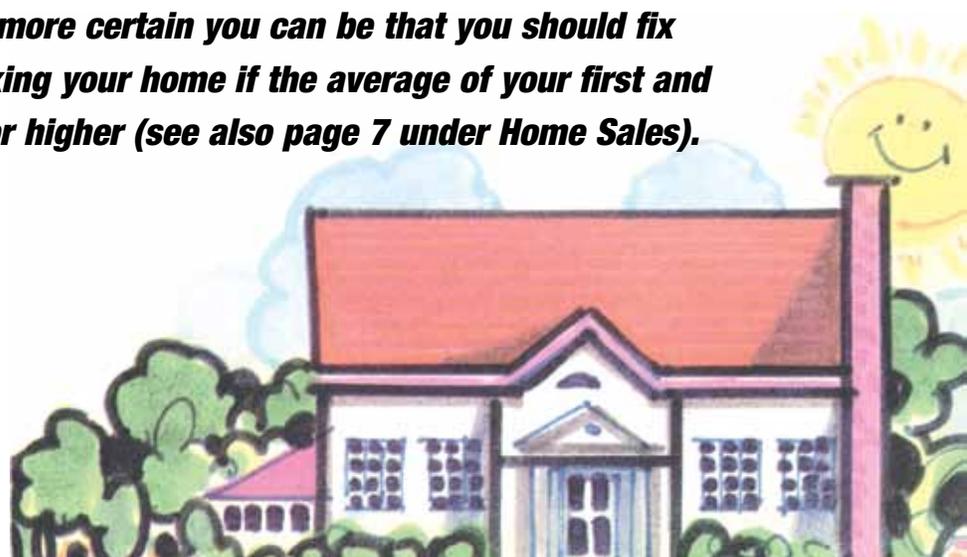
Step 2. *Follow up with either a long-term test or a second short-term test:*

- *For a better understanding of your year-round average radon level, take a long-term test.*
- *If you need results quickly, take a second short-term test.*

The higher your initial short-term test result, the more certain you can be that you should take a short-term rather than a long-term follow up test. If your first short-term test result is more than twice EPA's 4 pCi/L action level, you should take a second short-term test immediately.

Step 3. • *If you followed up with a long-term test: Fix your home if your long-term test result is 4 pCi/L or more.*

- *If you followed up with a second short-term test: The higher your short-term results, the more certain you can be that you should fix your home. Consider fixing your home if the average of your first and second test is 4 pCi/L or higher (see also page 7 under Home Sales).*



WHAT YOUR TEST RESULTS MEAN

The average indoor radon level is estimated to be about 1.3 pCi/L, and about 0.4 pCi/L of radon is normally found in the outside air. The U.S. Congress has set a long-term goal that indoor radon levels be no more than outdoor levels. While this goal is not yet technologically achievable in all cases, most homes today *can* be reduced to 2 pCi/L or below.

Sometimes short-term tests are less definitive about whether or not your home is above 4 pCi/L. This can happen when your results are close to 4 pCi/L. For example, if the average of your two short-term test results is 4.1 pCi/L, there is about a 50% chance that your year-round average is somewhat below 4 pCi/L. However, EPA believes that any radon exposure carries some risk—no level of radon is safe. Even radon levels below 4 pCi/L pose some risk, and you can reduce your risk of lung cancer by lowering your radon level.

If your living patterns change and you begin occupying a lower level of your home (such as a basement) you should retest your home on that level.

Even if your test result is below 4 pCi/L, you may want to test again sometime in the future.

Test your home now and save your results. If you find high radon levels, fix your home before you decide to sell it.

RADON AND HOME SALES

More and more, home buyers and renters are asking about radon levels before they buy or rent a home. Because real estate sales happen quickly, there is often little time to deal with radon and other issues. The best thing to do is to test for radon NOW and save the results in case the buyer is interested in them. Fix a problem if it exists so it won't complicate your home sale. If you are planning to move, review EPA's pamphlet "Home Buyer's and Seller's Guide to Radon," which addresses some common questions (www.epa.gov/radon/pubs/realstate.html). You can also use the results of two short-term tests done side-by-side (four inches apart) to decide whether to fix your home.

During home sales:

- *Buyers often ask if a home has been tested, and if elevated levels were reduced.*
- *Buyers frequently want tests made by someone who is not involved in the home sale. Your state radon office (www.epa.gov/radon/wherelive.html) can assist you in identifying a qualified tester.*
- *Buyers might want to know the radon levels in areas of the home (like a basement they plan to finish) that the seller might not otherwise test.*

Today many homes are built to help prevent radon from coming in. Building codes in your state or local area may require these radon-resistant construction features. If you are buying or renting a new home, ask the owner or builder if it has radon-resistant features. The EPA recommends building new homes with radon-resistant features in high radon potential (Zone 1) areas. Even if built radon-resistant, every new home should be tested for radon after occupancy. If you have a test result of 4 pCi/L or more, consult a qualified mitigator (<http://www.epa.gov/radon/fixyourhome.html>) to estimate the cost of upgrading to an active system by adding a vent fan to reduce the radon level. In an existing home, the cost to install a radon mitigation system is about the same as for other common home repairs.

RADON IN WATER

There are two main sources for the radon in your home's indoor air, the soil and the water supply. Compared to radon entering the home through water, radon entering your home through the soil is usually a much larger risk.

The radon in your water supply poses an inhalation risk and an ingestion risk. Research has shown that your risk of lung cancer from breathing radon in air is much larger than your risk of stomach cancer from swallowing water with radon in it. Most of your risk from radon in water comes from radon released into the air when water is used for showering and other household purposes.

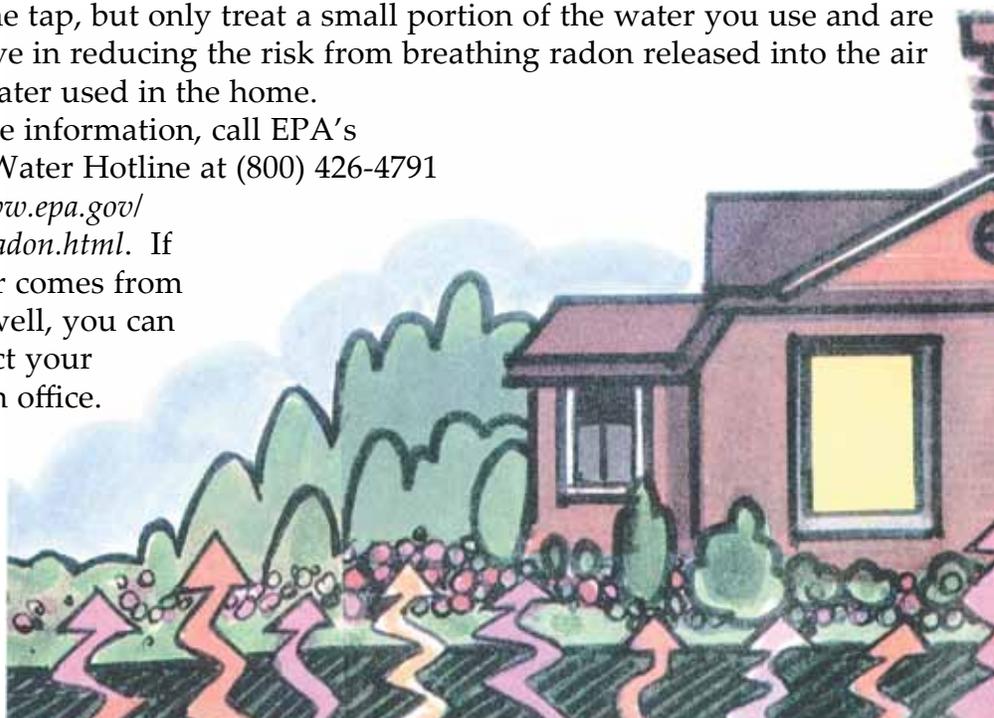
Radon in your home's water is not usually a problem when its source is surface water. A radon in water problem is more likely when its source is ground water, e.g., a private well or a public water supply system that uses ground water. If you are concerned that radon may be entering your home through the water and your water comes from a public water supply, contact your water supplier.

If you've tested your private well and have a radon in water problem, it can be fixed. Your home's water supply can be treated in two ways. Point-of-entry treatment can effectively remove radon from the water before it enters your home. Point-of-use treatment devices remove radon from your water at the tap, but only treat a small portion of the water you use and are not effective in reducing the risk from breathing radon released into the air from all water used in the home.

For more information, call EPA's Drinking Water Hotline at (800) 426-4791 or visit www.epa.gov/safewater/radon.html. If your water comes from a private well, you can also contact your state radon office.



If you've tested the air in your home and found a radon problem, and your water comes from a well, have your water tested.



HOW TO LOWER THE RADON LEVEL IN YOUR HOME

Since there is no known safe level of radon, there can always be some risk. But the risk can be reduced by lowering the radon level in your home.

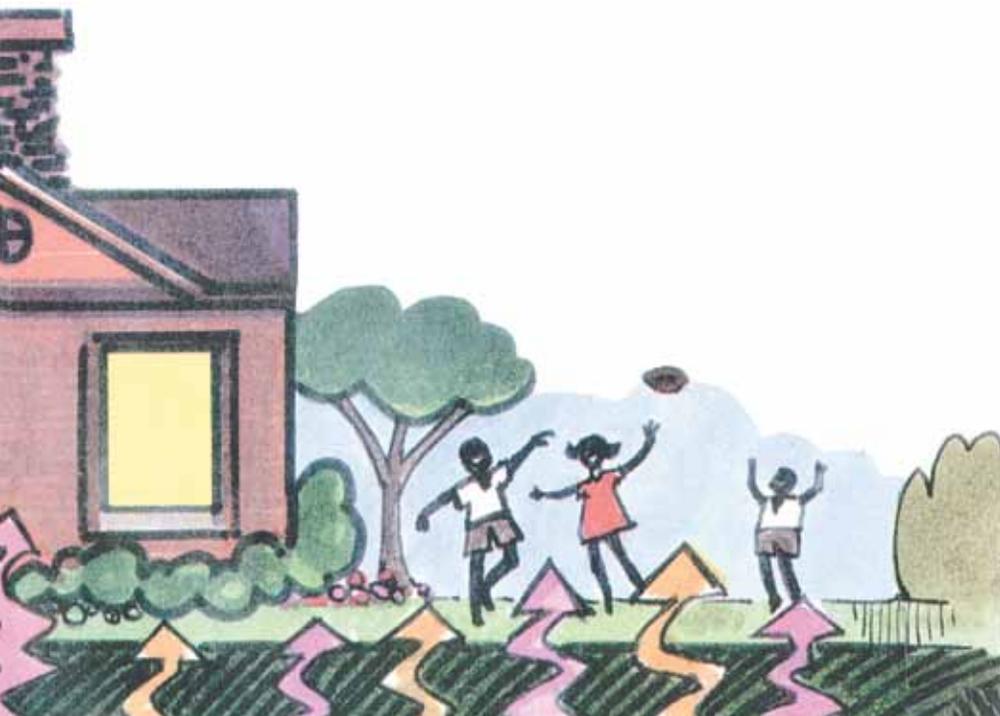
There are several proven methods to reduce radon in your home, but the one primarily used is a vent pipe system and fan, which pulls radon from beneath the house and vents it to the outside. This system, known as a soil suction radon reduction system, does not require major changes to your home. Sealing foundation cracks and other openings makes this kind of system more effective and cost-efficient. Similar systems can also be installed in houses with crawl spaces. Radon contractors can use other methods that may also work in your home. The right system depends on the design of your home and other factors.

Ways to reduce radon in your home are discussed in EPA's *Consumer's Guide to Radon Reduction*. You can get a copy at www.epa.gov/radon/pubs.

The cost of reducing radon in your home depends on how your home was built and the extent of the radon problem. Most homes can be fixed for about the same cost as other common home repairs. The cost to fix can vary widely; consult with your state radon office or get one or more estimates from qualified mitigators. The cost is much less if a passive system was installed during construction.

RADON AND HOME RENOVATIONS

If you are planning any major structural renovation, such as converting an unfinished basement area into living space, it is especially important to test the area for radon before you begin the renovation. If your test results indicate a radon problem, radon-resistant techniques can be inexpensively included as part of the renovation. Because major renovations can change the level of radon in any home, always test again after work is completed.



HOW TO LOWER THE RADON LEVEL IN YOUR HOME *continued*

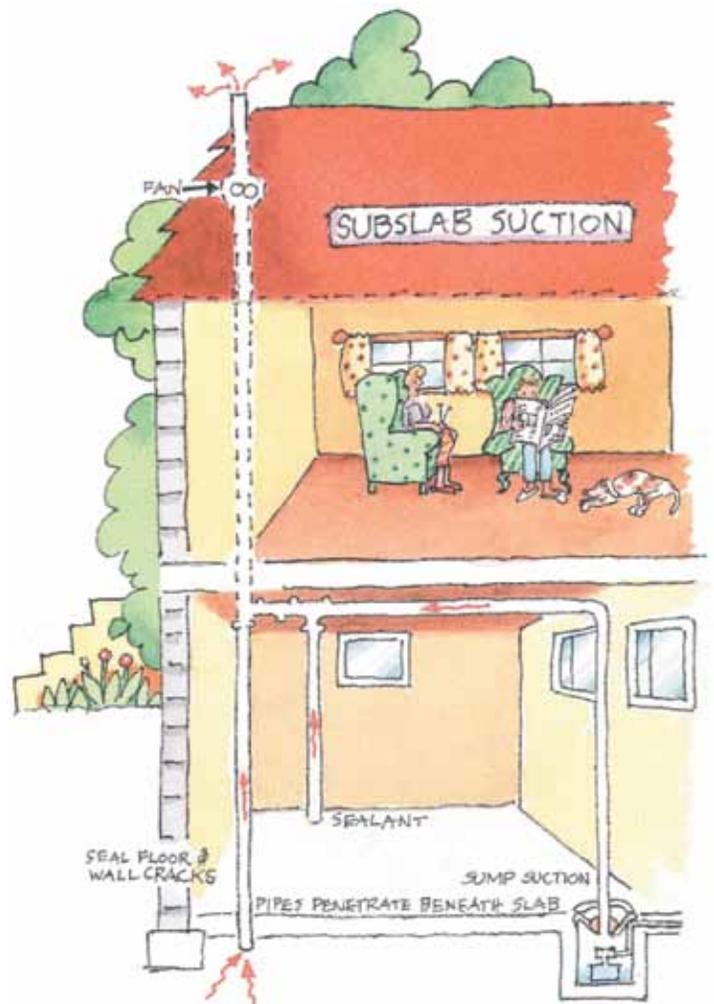
Lowering high radon levels requires technical knowledge and special skills. You should use a contractor who is trained to fix radon problems. A qualified contractor can study the radon problem in your home and help you pick the right treatment method.

Check with your state radon office for names of qualified or state certified radon contractors in your area. You can also contact private radon proficiency programs for lists of privately certified radon professionals in your area. For more information on private radon proficiency programs, visit www.epa.gov/radon/radontest.html. Picking someone to fix your radon problem is much like choosing a contractor for other home repairs—you may want to get references and more than one estimate.

If you are considering fixing your home's radon problem yourself, you should first contact your state radon office for guidance and assistance (www.epa.gov/radon/wherelive.html).

You should also test your home again after it is fixed to be sure that radon levels have been reduced. Most soil suction radon reduction systems include a monitor that will indicate whether the system is operating properly. In addition, it's a good idea to retest your home every two years to be sure radon levels remain low.

Most homes can be fixed for about the same cost as other common home repairs.



Note: This diagram is a composite view of several mitigation options. The typical mitigation system usually has only one pipe penetration through the basement floor; the pipe may also be installed on the outside of the house.

THE RISK OF LIVING WITH RADON

Radon gas decays into radioactive particles that can get trapped in your lungs when you breathe. As they break down further, these particles release small bursts of energy. This can damage lung tissue and lead to lung cancer over the course of your lifetime. Not everyone exposed to elevated levels of radon will develop lung cancer. And the amount of time between exposure and the onset of the disease may be many years.

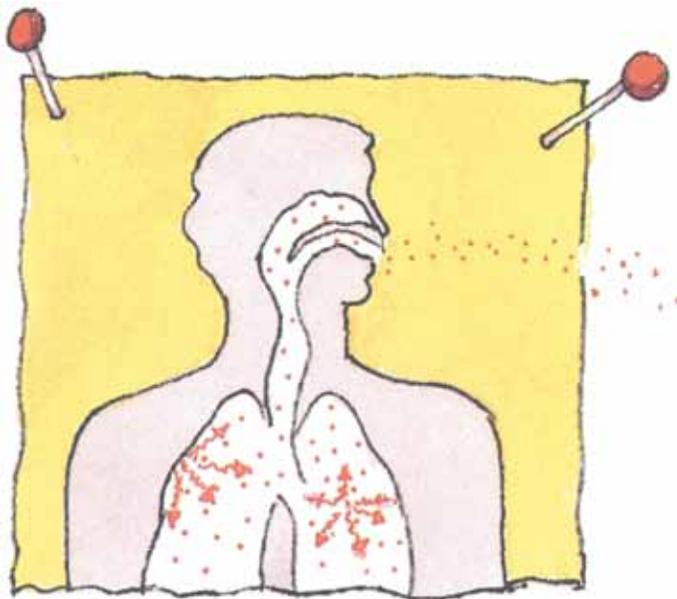
Like other environmental pollutants, there is some uncertainty about the magnitude of radon health risks. However, we know more about radon risks than risks from most other cancer-causing substances. This is because estimates of radon risks are based on studies of cancer in humans (underground miners).

Smoking combined with radon is an especially serious health risk. Stop smoking and lower your radon level to reduce your lung cancer risk.

Children have been reported to have greater risk than adults of certain types of cancer from radiation, but there are currently no conclusive data on whether children are at greater risk than adults from radon.

Your chances of getting lung cancer from radon depend mostly on:

- ***How much radon is in your home***
- ***The amount of time you spend in your home***
- ***Whether you are a smoker or have ever smoked***



Scientists are more certain about radon risks than risks from most other cancer-causing substances.

RADON RISK IF YOU SMOKE

Radon Level	If 1,000 people who smoked were exposed to this level over a lifetime* . . .	The risk of cancer from radon exposure compares to** . . .	WHAT TO DO: Stop Smoking and . . .
20 pCi/L	About 260 people could get lung cancer	↳ 250 times the risk of drowning	Fix your home
10 pCi/L	About 150 people could get lung cancer	↳ 200 times the risk of dying in a home fire	Fix your home
8 pCi/L	About 120 people could get lung cancer	↳ 30 times the risk of dying in a fall	Fix your home
4 pCi/L	About 62 people could get lung cancer	↳ 5 times the risk of dying in a car crash	Fix your home
2 pCi/L	About 32 people could get lung cancer	↳ 6 times the risk of dying from poison	Consider fixing between 2 and 4 pCi/L
1.3 pCi/L	About 20 people could get lung cancer	(Average indoor radon level)	(Reducing radon levels below 2 pCi/L is difficult)
0.4 pCi/L		(Average outdoor radon level)	

Note: If you are a former smoker, your risk may be lower.

It's never too late to reduce your risk of lung cancer. Don't wait to test and fix a radon problem. If you are a smoker, stop smoking.

RADON RISK IF YOU'VE NEVER SMOKED

Radon Level	If 1,000 people who never smoked were exposed to this level over a lifetime* . . .	The risk of cancer from radon exposure compares to** . . .	WHAT TO DO:
20 pCi/L	About 36 people could get lung cancer	↳ 35 times the risk of drowning	Fix your home
10 pCi/L	About 18 people could get lung cancer	↳ 20 times the risk of dying in a home fire	Fix your home
8 pCi/L	About 15 people could get lung cancer	↳ 4 times the risk of dying in a fall	Fix your home
4 pCi/L	About 7 people could get lung cancer	↳ The risk of dying in a car crash	Fix your home
2 pCi/L	About 4 people could get lung cancer	↳ The risk of dying from poison	Consider fixing between 2 and 4 pCi/L
1.3 pCi/L	About 2 people could get lung cancer	(Average indoor radon level)	(Reducing radon levels below 2 pCi/L is difficult)
0.4 pCi/L		(Average outdoor radon level)	

Note: If you are a former smoker, your risk may be higher.

*Lifetime risk of lung cancer deaths from EPA Assessment of Risks from Radon in Homes (EPA 402-R-03-003).

**Comparison data calculated using the Centers for Disease Control and Prevention's 1999-2001 National Center for Injury Prevention and Control Reports.

RADON MYTHS AND FACTS

MYTH: Scientists aren't sure radon really is a problem.

FACT: Although some scientists dispute the precise number of deaths due to radon, all major health organizations (like the Centers for Disease Control, the American Lung Association and the American Medical Association) agree with estimates that radon causes thousands of preventable lung cancer deaths every year. This is especially true among smokers, since the risk to smokers is much greater than to non-smokers.

MYTH: Radon testing is difficult, time consuming and expensive.

FACT: Radon testing is easy. You can test your home yourself or hire a qualified radon test company. Either approach takes only a small amount of time and effort.

MYTH: Homes with radon problems can't be fixed.

FACT: There are simple solutions to radon problems in homes. Hundreds of thousands of homeowners have already fixed radon problems in their homes. Most homes can be fixed for about the same cost as other common home repairs; check with one or more qualified mitigators. Call your state radon office (www.epa.gov/radon/whereyoulive.html) for help in identifying qualified mitigation contractors.

MYTH: Radon only affects certain kinds of homes.

FACT: House construction can affect radon levels. However, radon can be a problem in homes of all types: old homes, new homes, drafty homes, insulated homes, homes with basements, homes without basements. Local geology, construction materials, and how the home was built are among the factors that can affect radon levels in homes.

MYTH: Radon is only a problem in certain parts of the country.

FACT: High radon levels have been found in every state. Radon problems do vary from area to area, but the only way to know your radon level is to test.

MYTH: A neighbor's test result is a good indication of whether your home has a problem.

FACT: It's not. Radon levels can vary greatly from home to home. The only way to know if your home has a radon problem is to test it.

RADON MYTHS AND FACTS *continued*

MYTH: Everyone should test their water for radon.

FACT: Although radon gets into some homes through water, it is important to first test the air in the home for radon. If your water comes from a public water system that uses ground water, call your water supplier. If high radon levels are found and the home has a private well, call the Safe Drinking Water Hotline at (800) 426-4791 for information on testing your water.

MYTH: It's difficult to sell homes where radon problems have been discovered.

FACT: Where radon problems have been fixed, home sales have not been blocked or frustrated. The added protection is sometimes a good selling point.

MYTH: I've lived in my home for so long, it doesn't make sense to take action now.

FACT: You will reduce your risk of lung cancer when you reduce radon levels, even if you've lived with a radon problem for a long time.

MYTH: Short-term tests can't be used for making a decision about whether to fix your home.

FACT: A short-term test followed by a second short-term test* can be used to decide whether to fix your home. However, the closer the average of your two short-term tests is to 4 pCi/L, the less certain you can be about whether your year-round average is above or below that level. Keep in mind that radon levels below 4 pCi/L still pose some risk. Radon levels can be reduced in most homes to 2 pCi/L or below.

**If the radon test is part of a real estate transaction, the result of two short-term tests can be used in deciding whether to mitigate. For more information, see EPA's "Home Buyer's and Seller's Guide to Radon."*

FOR FURTHER INFORMATION

EPA Radon Website

www.epa.gov/radon

EPA's radon page includes links to publications, hotlines, private proficiency programs and more.

Frequent Questions:

<http://iaq.supportportal.com>

Radon Hotlines

1-800-SOS-RADON (767-7236)*

Purchase radon test kits by phone.

1-800-55RADON (557-2366)*

Get live help for your radon questions.

1-800-644-6999*

Radon Fix-It Hotline. For general information on fixing or reducing the radon level in your home.

1-866-528-3187*

Línea Directa de Información sobre Radón en Español. Hay operadores disponibles desde las 9:00 AM hasta las 5:00 PM para darle información sobre radón y como ordenar un kit para hacer la prueba de radón en su hogar.

1-800-426-4791

Safe Drinking Water Hotline. For general information on drinking water, radon in water, testing and treatment, and standards for radon in drinking water. Operated under a contract with EPA.

*Operated by Kansas State University in partnership with EPA.

EPA Regional Offices

www.epa.gov/radon/whereyoulive.html

Check the above website for a listing of your EPA regional office.

Ordering Radon Publications

Many EPA radon publications are available from www.epa.gov/radon/pubs

Radon publications may be ordered through the National Service Center for Environmental Publications (NSCEP) by calling 1-800-490-9198, by visiting the NSCEP website at www.epa.gov/ncepihom, or by email at nscep@bps-lmit.com



Surgeon General Health Advisory

“Indoor radon is the second-leading cause of lung cancer in the United States and breathing it over prolonged periods can present a significant health risk to families all over the country. It’s important to know that this threat is completely preventable. Radon can be detected with a simple test and fixed through well-established venting techniques.”

January 2005

U.S. EPA Assessment of Risks from Radon in Homes

In June 2003, the EPA revised its risk estimates for radon exposure in homes. EPA estimates that about 21,000 annual lung cancer deaths are radon related. EPA also concluded that the effects of radon and cigarette smoking are synergistic, so that smokers are at higher risk from radon. EPA’s revised estimates are based on the National Academy of Sciences 1998 BEIR VI (Biological Effects of Ionizing Radiation) Report which concluded that radon is the second leading cause of lung cancer after smoking.



Indoor Environments Division (6609J)
EP 402/K-12/002 | May 2012 | www.epa.gov/radon

Tennessee Housing Development Agency

WAP Health and Safety Plan

POLICY SUBMITTED WITH PLAN

1.0 – GENERAL INFORMATION

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

- **If a sub-grantee is unsure how to handle a Health and Safety measure, the sub-grantee will contact THDA for additional guidance on a case by case basis.**
Examples of case by case guidance may include: non-visible knob and tube wiring, hazardous or non-functioning water heaters, suspected asbestos containing materials and other unique situations. THDA will offer additional guidance based on review of documentation or a site visit if needed. If THDA is unable to reach a conclusion, THDA will seek additional guidance from DOE. Health and Safety measures that are beyond the scope of the WAP may be addressed using LIHEAP Wx funds, if determined allowable by THDA.
- **Major Health and Safety Repairs: Repair costs that meet or exceed \$1,131.00.**
 - This figure is determined by 2019 Program Year DOE WAP budget cap of \$7,541 / 15%
- Examples of major health and safety repairs include, but not limited to: large areas of mold removal, structural repair, extensive roof repair, pest control, faulty wiring and major moisture issues. Repairs such as these are beyond the scope of weatherization.
- Agencies are encouraged to seek alternative funding sources to conduct major repairs. Dwelling units needing repairs that are beyond the scope of weatherization *must be deferred* until the issues are corrected.
 - If an agency is unsure how to handle a major repair health and safety issue, they will contact THDA for additional guidance.
- **Minor Health and Safety Repairs: Repair costs below \$1,131.00.**
- Examples of minor health and safety repairs include, but not limited to: minor water leak repair, electrical junction boxes and outlet repair, and small areas of mold removal. These examples may be addressed with DOE Health and Safety funds.
 - If an agency is unsure how to handle a minor repair health and safety issue, they will contact THDA for additional guidance.
- A number of resources relating to the categories listed in the 2019 Health and Safety Plan can be found at the [Tennessee Department of Health's Healthy Homes Program](#) site.
- Partial Weatherization of a unit is not allowed. Units that have health and safety issues that are beyond the scope of WAP *must be deferred*.
- Health and safety measure justification with photo documentation must be included in the client file. ***This includes all Lead Safe Practices.***

2.0 – BUDGETING

Grantees are encouraged to budget Health & Safety (H&S) costs as a separate category and, thereby, exclude such costs from the average cost per unit cost (ACPU) limitation. This separate category also allows these costs to be isolated from energy efficiency costs in program evaluations. Grantees are reminded that, if H&S costs are budgeted and reported under the program operations category rather than the H&S category, the related H&S costs must be included in the calculation of the ACPU and cost-justified through the approved energy audit.

Select which option is used below.

Separate Health and Safety Budget

Contained in Program Operations

3.0 – HEALTH AND SAFETY EXPENDITURE LIMITS

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

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

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

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

Should a Grantee request to have more than 15 percent of Program Operations used for health and safety purposes, DOE will conduct a secondary level of review. DOE strongly encourages use of this H&S template and matrix to help expedite this process

Per-Unit Average Percent: 15%

Each unit is unique and offers different challenges, there is not a specific amount per unit. The Grantee will provide each sub-grantee with the maximum amount of their funding which they can use to address eligible Health and Safety measures as defined in the Tennessee Health and Safety Plan for WAP. The Grantee will limit such expenditures to *no more than 15%* of total DOE funds allocated to program operations in the annual plan budget, although the amount used by an individual agency may be less than 15% of their funding, depending on the need of their housing stock. The Sub-Grantee will be allowed the flexibility to use their funds across the units they weatherize, provided they are also installing energy conservation measures. There will not be a specific cap on the amount of health and safety funding allowed per unit, but rather the Sub-Grantee agency may not exceed the total health and safety funding allocation for their agency as defined by the Grantee for that program year.

Tennessee housing stock includes a high incident of unvented space heaters. Per DOE policy, these unvented space heaters that serve as the primary heating source must be addressed in order for weatherization to proceed. The expense associated with replacing unvented spaced heaters, along with costs associated with complying with the requirements of this health and safety plan and the implementation of ASHRAE 62.2 -

2016 to the fullest extent possible, require Tennessee to request that a minimum of 15% of the funds available be used to address health and safety issues.

4.0 – INCIDENTAL REPAIR MEASURES

If Grantees choose to identify any H&S measures as incidental repair measures (IRMs), they must be implemented as such under the Grantee's weatherization program in all cases – meaning, they can never be applied to the H&S budget category. In order to be considered IRMs, the measure must fit the following definition and be cost justified along with the associated efficiency measure;

Incidental Repairs means those repairs necessary for the effective performance or preservation of weatherization materials. Such repairs include, but are not limited to, framing or repairing windows and doors which could not otherwise be caulked or weather-stripped and providing protective materials, such as paint, used to seal materials installed under this program. ([10 CFR 440 "Definitions"](#))

All measures included within Tennessee's 2019 Health and Safety Plan, in accordance with WPN 17-7, will be funded as health and safety measures *unless specified otherwise*. No measures included in this plan will be funded as an Incidental Repair with ties to a specific Energy Conservation Measure.

5.0 – DEFERRAL/REFERRAL POLICY

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

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

Yes No

Where can this deferral/referral policy be accessed?

[The Tennessee WAP Manual](#) - Chapter 5

6.0 – HAZARD IDENTIFICATION AND NOTIFICATION FORM(S)

Documentation forms must be developed that include at a minimum: the client's name and address, dates of the audit/assessment and when the client was informed of a potential H&S issue, a clear description of the problem, a statement indicating if, or when weatherization could continue, and the client(s) signature(s) indicating that they understand and have been informed of their rights and options.

Documentation Form(s) have been developed and comply with guidance?

Yes No

[The Tennessee WAP Manual](#) – Refer to templates found in chapters 18 & 19.

- Deferral Notice – Single Family
- Deferral Notice – Multi Family
- Mold and Moisture Inspection and Release Form
- Client Education Checklist
- Radon Informed Consent Form
- Repair, Renovation, and Painting Pamphlet – Client acknowledgment

7.0 – HEALTH AND SAFETY CATEGORIES

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

- Explain whether you concur with existing guidance from WPN 17-06 and how that guidance will be implemented in your Program, if you are proposing an alternative action/allowability, or if the identified category will not be addressed and will always result in deferral. Alternatives must be comprehensively explained and meet the intent of DOE guidance.
- Where an Action/Allowability or Testing is “required” or “not allowed” through WPN 17-06, Grantees must concur, or choose to defer all units where the specific category is encountered.
- “Allowable” items under WPN 17-06 leave room for Grantees to determine if the category, or testing, will be addressed and in what circumstances.
- Declare whether DOE funds or alternate funding source(s) will be used to address the particular category.
- Describe the explicit methods to remedy the specific category.
- Describe what testing protocols (if any) will be used.
- Define minimum thresholds that determine minor and major repairs
- Identify minimum documentation requirements for at-risk occupants
- Discuss what explicit steps will be taken to educate the client, if any, on the specific category if this is not explained elsewhere in the Plan. Some categories, like mold and moisture, require client education.
- Discuss how training and certification requirements will be provided for the specific category. Some categories, like Lead Based Paint, require training.
- Describe how occupant health and safety concerns and conditions will be solicited and documented

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

7.1 – Air Conditioning and Heating Systems

Concurrence, Alternative, or Deferral

Concurrence with Guidance Alternative Guidance Results in Deferral

Air Conditioning Unallowable Measure Heating Unallowable Measure

Funding

DOE LIHEAP State Utility Other

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

Unsafe primary heating and cooling systems must be repaired, replaced and removed, or rendered inoperable, or *deferral is required*.

“Red tagged,” inoperable, or nonexistent primary heating system may be replaced, repaired, or installed where climate conditions warrant, consistent with this guidance.

If a system has CO readings that are above acceptable levels, the sub-grantee representative must advise the occupant of the dangers and the problem must be corrected prior to any weatherization work being performed, unless the excess CO will be addressed during the work scheduled to be performed under the program.

If the customer cannot correct the problem or the agency is unable to address the problem using guidance in the [Tennessee Weatherization Field Guide](#) and within program guidelines, the unit must be deferred until further action can occur.

An attempt to cost-justify the HVAC measure must be made prior to replacing/repairing with health and safety funds.

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

NOTE: Replacement or installation of secondary units is not allowed.

Unsafe secondary units, including space heaters, must be repaired, removed or rendered inoperable, or deferral is required.

The sub-grantee will clean, tune, or remove secondary *unvented space heaters* if they pose a health and safety concern.

No secondary unvented heating source will be replaced using DOE funds and the secondary unit must meet DOE guidance on British Thermal Units (BTU) limitations.

Limitations are defined:

- **40,000 BTUs max:** Living space
- **10,000 BTUs max:** Bedroom
- **6,000 BTUs max:** Bathroom

Additional information can be found later in this plan within section: *Unvented Gas and Liquid Fueled Space Heaters Attachment A*

Indicate Documentation Required for At-Risk Occupants

At risk clients are defined as individuals who are under age 6, age 60 years or older, disabled, or have a specific health condition that is exacerbated by the lack of air conditioning in the home.

Acceptable documentation includes eligibility verification forms and doctor's notes regarding health condition.

Testing Protocols

Use proper sizing protocols (Manual J, State Approved sizing protocols, NEAT/MHEA outputs, etc.) based on post-weatherization housing characteristics, including installed mechanical ventilation, when installing or replacing a heating or cooling appliance.

Combustion appliances will be tested for both efficiency and safe operation of the unit. Tennessee currently follows [BPI's 1200 – S - 2017 Combustion Appliance and Fuel Distribution System Inspection](#) protocol. Chapter 7 of the standard practices document outlines the protocol. Carbon monoxide levels, draft, and other safety features are included in the testing protocol.

The appliances to be tested include furnaces, boilers, space heaters, gas stoves, and gas fireplaces. Gas appliances that exceed the acceptable levels for CO must be addressed. These levels and corrective actions are defined in the [Tennessee Weatherization Field Guide](#).

Make sure primary systems are present, operable, and performing correctly.

- Verify within the Weatherization Assistant audit tool to determine if the system can be installed as an energy conservation measure (ECM) prior to replacement as an H&S measure.
- Determine and document presence of “at-risk” current occupants when installing air-conditioning as a Health and Safety (H&S) measure.
- On combustion equipment, inspect chimney and flue and test for Combustion Appliance Zone (CAZ) depressurization.
- For solid fuel appliances look for visual evidence of soot on the walls, mantel or ceiling or creosote staining near the flue pipe.

Client Education

Client education, including information on the proper operation of the equipment, shall be provided.

Checks shall be made to insure that other components, like electrical wiring and chimneys, are in good condition and that no obvious building code violations or other safety hazards related to the space heating are evident.

When deferral is necessary, provide information to the client, in writing, describing conditions that must be met in order for weatherization to commence. A copy of this notification must also be placed in the client file.

- Discuss appropriate use and maintenance of units.
- Provide all paperwork and manuals for any installed equipment.
- Discuss and provide information on proper disposal of bulk fuel tanks when not removed as part of the weatherization work.
- Where combustion equipment is present, provide safety information including how to recognize depressurization.

Training

The State trains the proper use of combustion appliance testing through regular Energy Auditor, QCI, contractor, RIT, and Crew Leader training, and via technical memorandums. The State requires licensed contractors to remain up to date for all training requirements of the weatherization program.

Additional training resources:

[Tennessee Weatherization Field Guide](#) serves as an additional resource. Additional training and technical assistance may be provided on an as- needed basis.

Licensing and/or certification for HVAC installers as required by authority having jurisdiction (AHJ).

[HVAC Fundamentals](#) – training course

Additional training and technical assistance may be provided on an as- needed basis.

7.2 - Asbestos - All

What is the blower door testing policy when suspected Asbestos Containing Material (ACM) is identified?

NOTE: When friable asbestos containing materials are present, unless testing determines otherwise, take precautionary measures as if the material contains asbestos AND take all reasonable and necessary precautions not to damage suspected asbestos containing materials (ACMs). Proper respiratory equipment must be used.

BLOWER DOOR TESTING: Where blower door tests are performed, it is a best practice to perform pressurization instead of depressurization diagnostics.

DEFINITIONS:

- **Friable** - the ACM can be crumbled, pulverized, or reduced to powder by the pressure of an ordinary human hand.
- **Encapsulation** - the treatment of ACM (Asbestos Containing Material) with a material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent the release of fibers, as the encapsulant creates a membrane over the surface (bridging encapsulant) or penetrates the material and binds its components together (penetrating encapsulant).

7.2a – Asbestos - in siding, walls, ceilings, etc.

Concurrence, Alternative, or Deferral

Concurrence with Guidance Alternative Guidance Results in Deferral

Funding

DOE LIHEAP State Utility Other

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

Major asbestos problems should be referred to the appropriate state or federal agency.

- [Tennessee Department of Environment and Conservation](#)
- [US Environmental Protection Agency](#)

Removal and reinstallation of siding: is allowed to perform energy conservation measures. *This will be included as part of the ECM cost.*

- The existence of asbestos siding that is in good condition does not prevent installing dense-pack insulation from the exterior.
- Some siding may be removed and reinstalled in order to perform the ECM, and the associated costs may be charged as part of the ECM.
- The cost of removing asbestos siding will be included in the wall installation measure as an ECM and must have a SIR of 1 or more to be justified.

NOTE: General abatement of asbestos siding or replacement with *new* siding is *not* an allowable health and safety cost. All precautions must be taken not to damage siding.

Never cut or drill suspected ACM in siding, or on floor, wall, and ceiling coverings.

Cutting or boring through asbestos siding is prohibited. Contractors must take all precautions to ensure that no inhalation of dust takes place.

Safety equipment must be worn at all times during the handling of asbestos materials.

Testing Protocols

Visually inspect exterior wall surface and subsurface, floors, walls, and ceilings for suspected ACM prior to drilling or cutting.

Auditors and contractors in Tennessee are not required to be certified asbestos testers or abatement specialists.

Asbestos Hazard Emergency Response Act of 1986 (AHERA) sample collection and testing must be conducted by a certified tester.

Client Education

Clients are informed in writing that suspected ACMs are present and what precautions will be taken to ensure the occupants' and workers' safety during weatherization.

Formally notify client in writing of results if ACM testing was performed.

- Refer clients with known asbestos issues to the [US Environmental Protection Agency](#)

When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.

Occupant must provide documentation that a certified professional performed the remediation before work continues.

Training and Certification Requirements

Energy Auditors, QCIs, contractors, RITs, and Crew Leaders are trained to identify possible asbestos conditions.

Training resources :

- [U.S. Environmental Protection Agency](#)
- [Tennessee Department of Environment and Conservation](#)

7.2b – Asbestos - in vermiculite				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input checked="" type="checkbox"/>	Alternative Guidance <input type="checkbox"/>	Results in Deferral <input type="checkbox"/>		
Funding				
DOE <input checked="" type="checkbox"/>	LIHEAP <input checked="" type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>
<p>NOTE: Vermiculite <i>removal</i> is <i>not</i> allowed using DOE health and safety funds.</p> <ul style="list-style-type: none"> • DOE funds may be used to encapsulate asbestos by an appropriately trained professional, if applicable. 				
How do you address suspected ACM’s in vermiculite that will be disturbed through the course of weatherization work?				
<p>When vermiculite is present, assume it contains asbestos unless testing determines otherwise.</p> <p>BLOWER DOOR TESTING: Where blower door tests are performed, ensure it does not disturb asbestos and become airborne.</p> <ul style="list-style-type: none"> • Conduct blower door diagnostic using pressurization instead of depressurization. <p>If vermiculite is present, it will follow the same protocols as asbestos.</p>				
Testing Protocols				
<p>BLOWER DOOR TESTING: Where blower door tests are performed, ensure it does not disturb asbestos.</p> <ul style="list-style-type: none"> • Conduct blower door diagnostic using pressurization instead of depressurization. <p>Auditors and contractors in Tennessee are not required to be certified asbestos testers or abatement specialists.</p>				
Client Education				

Clients are informed regarding the possibility and hazards regarding asbestos. Clients will be instructed in writing not to disturb suspected ACM.

- Refer clients to the [US Environmental Protection Agency](#)

Additionally, clients will be informed of asbestos testing results, if testing was conducted.

When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence. Occupant must provide documentation that a certified professional performed the remediation before work continues.

Training and Certification Requirements

Energy auditors, QCIs, contractors, RITS, and Crew Leaders are trained to identify possible asbestos conditions. Weatherization workers must use proper respiratory protection while in areas containing vermiculite.

Additional training resources:

- [US Environmental Protection Agency](#)

7.2c – Asbestos - on pipes, furnaces, other small covered surfaces

Concurrence, Alternative, or Deferral

Concurrence with Guidance Alternative Guidance Results in Deferral

Funding

DOE LIHEAP State Utility Other

NOTE: Asbestos removal on *pipes, furnaces, and/or other small covered surfaces* is allowed using DOE health and safety funds.

- Subgrantees must notify the state prior to funding such actions.
- Charge only those costs directly associated with the testing, encapsulation, or removal to the H&S budget category.
- DOE funds may be used to encapsulate asbestos by an appropriately trained professional, if appropriate.
- See categories below for additional details.

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

Assume asbestos is present in suspect covering materials.

DEFINITIONS:

Friable - means the material can be crumbled, pulverized, or reduced to powder by the pressure of an ordinary human hand.

Encapsulation is defined as the treatment of ACBM (Asbestos Containing Building Material) with a material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent the release of fibers, as the encapsulant creates a membrane over the surface (bridging encapsulant) or penetrates the material and binds its components together (penetrating encapsulant).

NOTE: Weatherization workers may address ACMs such as asbestos tape on ductwork and HVAC systems as long as it is not observed to be in such a state of degradation-meeting the definition of friable. See above.

- The encapsulation of this type of material can be completed by using an approved duct mastic to completely cover and seal the tape where friability is no longer a concern.

BLOWER DOOR TESTING: Where blower door tests are performed, ensure it does not disturb asbestos.

- Conduct blower door diagnostic using pressurization instead of depressurization.

As stated in the above Funding category:

- DOE funds *can* be used to remove asbestos insulation as a health and safety measure if requested and approved by the State.
- The removal can only be performed by an AHERA asbestos control professional. This applies only to the removal of asbestos on *pipes, furnaces, and other small covered areas.*

Testing Protocols

Assess whether suspected ACMs are present.

AHERA sample collection and testing is allowed and must be conducted by a certified tester.

Client Education

Clients are informed regarding the possibility and hazards regarding asbestos.

Clients will be instructed in writing not to disturb suspected ACM.

- Refer clients to the [US Environmental Protection Agency](#)

Additionally, clients will be informed of asbestos testing results, if testing was conducted.

When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.

Occupant must provide documentation that a certified professional performed the remediation before work continues.

Training and Certification Requirements

Energy auditors, QCIs, contractors, RITs, and Crew Leaders are trained to identify possible asbestos conditions.

Additional training:

[U.S. Environmental Protection Agency](#)

7.5 – Biologicals and Unsanitary Conditions (odors, mustiness, bacteria, viruses, raw sewage, rotting wood, etc.)				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input checked="" type="checkbox"/>	Alternative Guidance <input type="checkbox"/>		Results in Deferral <input type="checkbox"/>	
Unallowable Measure <input type="checkbox"/>				
Funding				
DOE <input checked="" type="checkbox"/>	LIHEAP <input checked="" type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>
What guidance do you provide Subgrantees for dealing with biological and/or unsanitary conditions in homes slated for weatherization?				
<p>NOTE: Remediation of conditions that <i>may lead to or promote</i> biological concerns and unsanitary conditions is allowed.</p> <ul style="list-style-type: none"> Addressing bacteria and viruses is <i>not</i> an allowable cost. <p>Deferral may be necessary in cases where a known agent is present in the home that may create a serious risk to occupants or weatherization workers. If any issues are identified that are beyond the scope of WAP, alternate funding sources will be considered if available.</p> <p>Units with severe issues identified by the energy auditor or contractor will be deferred. The sub grantee will carefully evaluate the whole house situation and make the determination if deferral is necessary.</p> <p><i>See Mold and Moisture section for more information.</i></p>				
Testing Protocols				
<p>Auditors and contractors utilize primarily sensory inspections to identify issues related to biological and unsanitary conditions. These conditions can include: moisture issues, rotten wood, and raw sewage.</p> <p>The Tennessee Weatherization Field Guide offers basic information on these types of occurrences</p>				
Client Education				

The auditor informs the client in writing of any observed conditions and potential hazards.

When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.

[The Tennessee Department of Health](#) offers information how a client can maintain a sanitary home.

[The US Department of Housing and Urban Development](#) also offers valuable information to train what constitutes a healthy home.

[The US Environmental Protection Agency](#) describes biological pollutants’ impact on indoor air quality and provides tips for reducing biological pollutants.

Training

Energy auditors, QCIs, contractors, RITS, and Crew Leaders are trained to identify issues related to biologicals and unsanitary conditions.

[Tennessee Department of Health](#) offers information how to maintain a healthy home. It is encouraged auditors, QCIs, contractors, and so forth are familiar with this information to better guide their observations in a home.

[The US Department of Housing and Urban Development](#) also offers valuable information to train what constitutes a healthy home

[The US Environmental Protection Agency](#) describes biological pollutants’ impact on indoor air quality and provides tips for reducing biological pollutants.

[Tennessee Weatherization Field Guide](#) offers additional training concepts.

7.6 – Building Structure and Roofing				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input type="checkbox"/>		Alternative Guidance <input checked="" type="checkbox"/>		Results in Deferral <input type="checkbox"/>
Funding				
DOE <input checked="" type="checkbox"/>	LIHEAP <input checked="" type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>
What guidance do you provide Subgrantees for dealing with structural issues (e.g., roofing, wall, foundation) in homes slated for weatherization?				

<p>Building rehabilitation is beyond the scope of the Weatherization Assistance Program. Homes that require more than minor repairs must be deferred.</p> <p>NOTE: Minor building and roof repairs will be addressed as health and safety measures.</p> <p>DOE health and safety funds may be used for allowing safe access to areas being weatherized, as necessary to protect weatherization workers. All other minor building and roof repairs will be considered an ECM/Incidental Repair if WA recommends it with a SIR or cumulative SIR of 1 or greater.</p>
<p>How do you define “minor” or allowable structure and roofing repairs, and at what point are repairs considered beyond the scope of weatherization?</p>
<p>A minor repair shall remain under the cost of \$1,131.00</p> <ul style="list-style-type: none"> Minor roof repairs include, but not limited to: patching loose or removed roofing materials, flashing near roof penetrations, etc. <p>Minor building repairs include, but are not limited to: crawlspace and attic access repair which are necessary for safe entry.</p> <p>Sub-grantees will seek prior approval from THDA if uncertain whether or not the repair is considered “minor”.</p> <p>Sub-grantees are strongly encouraged to leverage funds from outside programs to repair major structural and roofing repairs that are beyond the scope of weatherization.</p>
<p>If priority lists are used, and these repairs are designated as Incidental Repairs, at what point is a site-specific audit required?</p>
<p>N/A</p>
<p>Client Education</p>
<p>Client will be notified of structurally compromised areas when resulting in a deferral.</p> <p>When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.</p>
<p>Training</p>
<p>Energy auditors, QCIs, contractors, RITs, and Crew Leaders receive training to identify building and roofing issues. The above weatherization roles primarily rely on visual inspections when determining structural or roofing issues.</p> <p>The following is a helpful resource to help identify common roof related issues:</p> <p>Checklist for Routine Inspection of Buildings – Kansas State Historical Society</p>

7.7 – Code Compliance		
Concurrence, Alternative, or Deferral		
Concurrence with Guidance <input checked="" type="checkbox"/>	Alternative Guidance <input type="checkbox"/>	Results in Deferral <input type="checkbox"/>

Funding				
DOE <input checked="" type="checkbox"/>	LIHEAP <input checked="" type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>
What guidance do you provide Subgrantees for dealing with code compliance issues in homes receiving weatherization measures?				
<p>Correction of preexisting code compliance issues is not an allowable cost unless triggered by weatherization measures being installed in a specific room or area of the home.</p> <ul style="list-style-type: none"> When correction of preexisting code compliance issues is triggered and paid for with WAP funds, <i>cite specific code requirements</i> with reference to the weatherization measure(s) that triggered the code compliance issue in the client file. <p>State, local, or the authority having jurisdiction (AHJ) codes must be followed while installing weatherization measures, including health and safety measures.</p> <p>Condemned properties and properties where “red tagged” health and safety conditions exist that cannot be corrected under this guidance should be deferred.</p> <p>When correction of preexisting code compliance issues is triggered and paid for with WAP funds, cite specific code requirements with reference to the weatherization measure(s) that triggered the code compliance issue in the client file.</p>				
What specific situations commonly trigger code compliance work requirements for your network? How are they addressed?				
<p>Code compliance related to a specific weatherization measure that is being installed would not lead to deferral unless code compliance would lead to expensive rehabilitation of the home and/or available funding for such compliance is not available.</p> <p>Examples of code compliance situations beyond the scope would be the complete re-wiring of a home, or hard wiring all smoke and CO detectors, etc.</p>				
Client Education				
<p>Client will be informed in writing of observed code compliance issues when resulting in a deferral.</p> <p>When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.</p>				
Training				

It is the responsibility of the sub-grantee to have knowledge, or ready access to, local codes in their service territory. It is encouraged each sub-grantee keep open communication with local building officials to prepare inspectors of Tennessee’s weatherization program standard work specifications.

The [Tennessee Weatherization Field Guide](#) addresses *some* code compliance scenarios.

The Contract to Provide Services found in [Tennessee’s WAP Manual](#) includes a clause that requires contractors to comply with local code. Each contractor awarded a bid on a single job must sign this document. Therefore, it is also the contractor’s responsibility to be aware of local code.

[Tennessee Building Codes](#) – State site which lists all residential and building code, including county exemptions.

7.8 – Combustion Gases				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input checked="" type="checkbox"/>	Alternative Guidance <input type="checkbox"/>		Results in Deferral <input type="checkbox"/>	
Funding				
DOE <input checked="" type="checkbox"/>	LIHEAP <input checked="" type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>
DOE funds will be used for health and safety related issues related to the proper venting of combustion appliances, testing of combustion gases, and any resulting repair or replacement of the combustion appliance.				
Testing Protocols				

Combustion safety testing is required when combustion appliances are present. Documentation of this testing must be included in the client file.

If unsafe conditions whose remediation is necessary to perform weatherization cannot be remedied by repair or tuning, replacement of the combustion appliance is an allowable H&S measure unless prevented by other guidance herein.

- Maintain documentation justifying the replacement with a cost comparison between replacement and repair in the client file.

Replacement HVAC and Appliances: Must meet manufacturer safety guidelines and those specified in the [BPI’s 1200 Combustion Safety Standards](#) and the [Tennessee Weatherization Field Guide](#).

- Auditors will verify within the Weatherization Assistant to determine if the appliance can be justified as an ECM prior to replacement as an H&S measure.
- **NOTE:** Replacement of gas ovens/stovetops/ranges is *not allowed* under DOE health and safety funding. See section *Gas Ovens/Stovetops/Ranges*

See *Air-Conditioning and Heating Systems section and Attachment A for more information.*

Common Combustion Safety Diagnostics:

- Test naturally drafting appliances for spillage and CO during CAZ depressurization testing pre- and post-weatherization and before leaving the home on any day when work has been done that could affect draft (e.g., tightening the home, adding exhaust).
- Inspect venting of combustion appliances and confirm adequate clearances.
- Inspect for proper clearances of surrounding combustibles.
- Proper venting to the outside for combustion appliances, including gas dryers and refrigerators, furnaces, vented space heaters and water heaters is required.
- Correction of venting will be completed when testing indicates a problem.

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

If CO is above 9ppm and is linked to a malfunctioning combustion appliance within the living space, clients must be notified immediately and a follow up must be made in writing to the client. This information is contained in the [Tennessee Weatherization Field Guide](#).

Client Education

The client will be notified of any danger related to combustion gases as discovered.

Provide client with combustion safety and hazards information.

Training

Tennessee currently follows [BPI's 1200 – S - 2017 Combustion Appliance and Fuel Distribution System Inspection](#) Protocol.

All WAP energy auditors and QCI inspectors are trained to these standards during the certification process.

Additional information for auditors and contractors is located in the [Tennessee Weatherization Field Guide](#). Combustion analysis definitions, diagnostic procedures, and health effects of excessive CO are some of the subjects covered in the guide.

7.9 – Electrical				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input checked="" type="checkbox"/>	Alternative Guidance <input type="checkbox"/>	Results in Deferral <input type="checkbox"/>		
Funding				
DOE <input checked="" type="checkbox"/>	LIHEAP <input checked="" type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>
Minor electrical repairs are funded as health and safety measures.				
What guidance do you provide Subgrantees for dealing with electrical hazards, including knob & tube wiring, in homes slated for weatherization?				
Evaluate and if necessary, provide sufficient over-current protection and damming (if required) prior to insulating building components containing knob and tube wiring, as required by the AHJ.				
Electrical hazards are primarily determined through visual inspection. Auditors and weatherization contractors will check for: <ul style="list-style-type: none"> • Presence and condition of knob-and-tube wiring. • Alterations that may create an electrical hazard. Voltage drop and voltage detection testing are allowed.				
NOTE: Knob and Tube wiring will <i>not</i> be replaced using DOE health and safety funds. Replacing electrical wiring due to its age and condition may be beyond the scope of WAP. These units will be deferred if the presence of knob and tube wiring prohibits weatherization from proceeding.				
How do you define “minor” or allowable electrical repairs, and at what point are repairs considered beyond the scope of weatherization?				

<p>A minor repair shall remain under the cost of \$1,131.00</p> <p>Minor electrical repairs includes items such as installing junction boxes where electrical wires are spliced together and the installation of properly sized breakers for weatherization related measures.</p> <p>Major wiring issues and electrical problems may be beyond the scope of WAP. If it is discovered that major issues are present with the existing electrical system, the unit will be deferred. Such items could include, but is not limited to: replacement of service panels, replacement of all wiring, overloaded electrical circuits, etc.</p>
<p>If priority lists are used, and these repairs are designated as Incidental Repairs, at what point is a site-specific audit required?</p>
<p>N/A</p>
<p>Client Education</p> <p>Clients will be notified in writing of imminent dangers, hazards, and code compliance issues related to electrical systems when resulting in a deferral.</p> <p>When electrical issues are the cause of a deferral, provide information to client on over-current protection, overloading circuits, and basic electrical safety/risks.</p> <p>When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.</p>
<p>Training</p> <p>Energy auditors, QCIs, contractors, RITs, and Crew Leaders are trained in identifying electrical hazards and the related code compliance. Guidance is available in the Tennessee Weatherization Field Guide.</p> <p>Additional training resources:</p> <ul style="list-style-type: none"> • Electrical Safety Foundation • OSHA Electrical Safety Presentation • Existing Wiring Evaluation – Old House Web <p><i>Refer to Code Compliance section for more details.</i></p>

7.10 – Formaldehyde, Volatile Organic Compounds (VOCs), Flammable Liquids, and other Air Pollutants				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input checked="" type="checkbox"/>	Alternative Guidance <input type="checkbox"/>		Results in Deferral <input type="checkbox"/>	
Funding				
DOE <input checked="" type="checkbox"/>	LIHEAP <input checked="" type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>

What guidance do you provide Subgrantees for dealing with formaldehyde, VOCs, flammable liquids, and other air pollutants identified in homes slated for weatherization?
<p>Removal of pollutants is allowed and is required if they pose a risk to workers. If pollutants pose a risk to workers and removal cannot be performed or is not allowed by the client, the unit must be deferred.</p> <p><i>Refer to Hazardous Materials Disposal section for more information.</i></p>
Testing Protocols
<p>Formaldehyde, VOCs and other air pollutants are discovered mainly through sensory inspection.</p> <p>Formaldehyde vapors may be slowly released by new carpets, waferboard, plywood, etc. VOCs are also emitted by some household cleaning agents. The sensory inspection will take place during all visits to the dwelling.</p> <p>During the pre-audit, the auditor will note if there will be a recommendation for remediation or deferral.</p>
Client Education
<p>Clients will be notified in writing of observed hazardous conditions and associated risks.</p> <p>Tennessee Department of Health offers information how to maintain a healthy home. It is encouraged auditors, QCIs, contractors, and so forth are familiar with this information to better guide their observations in a home.</p> <p>When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.</p>
Training
<p>Energy auditors, QCIs, contractors, RITs, and Crew Leaders are trained to recognize potential hazards and when removal is necessary.</p> <p>The US Environmental Protection Agency offers information how to recognize and reduce effects of VOCs inside a home.</p>

7.11 – Fuel Leaks				
<i>(please indicate specific fuel type if policy differs by type)</i>				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input type="checkbox"/>	Alternative Guidance <input type="checkbox"/>	Results in Deferral <input checked="" type="checkbox"/>		
Funding				
DOE <input type="checkbox"/>	LIHEAP <input type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>
Remediation Protocols				

<p>Fuel leak remediation is not permitted under DOE Health and Safety funding.</p> <p>Test exposed gas lines for fuel leaks from utility coupling into, and throughout, the home. This is conducted through the use of a gas sniffer.</p> <p>Conduct sensory inspection on bulk fuels to determine if leaks exist.</p> <p>If a fuel leak is discovered, appropriate actions must take place.</p> <ul style="list-style-type: none"> • When a minor gas leak is found on the utility side of service, the utility service or gas company must be contacted before work may proceed. • Fuel leaks that are the responsibility of the client (vs. the utility) must be repaired before weatherizing a unit. <p>NOTE: If a fuel leak is discovered <i>after</i> weatherization is complete during post audit or quality assurance inspection, the utility service or gas company must be contacted to further test and repair the leak.</p>
<p>How do you define allowable fuel leak repairs, and at what point are repairs considered beyond the scope of weatherization?</p>
<p>All fuel leak repairs are beyond the scope of weatherization.</p>
<p>Client Education</p>
<p>Clients will be informed of any fuel leaks determined by the auditor. Potential hazards of these leaks will be explained to the client.</p> <p>A written deferral notice will be provided to the client.</p>
<p>Training</p>
<p>The State trains the proper use of combustion appliance testing through regular auditor, contractor, RIT, and Crew Leader training and via technical bulletin memorandums. The State requires licensed contractors to remain up to date for all training requirements of the weatherization program.</p> <p>Tennessee currently follows BPI's 1200 – S - 2017 Combustion Appliance and Fuel Distribution System Inspection Protocol.</p> <p>All WAP energy auditors and QCI inspectors are trained to these standards during the certification process.</p> <p>The Tennessee Weatherization Field Guide serves as an additional resource.</p>

7.12 – Gas Ovens / Stovetops / Ranges				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input checked="" type="checkbox"/>	Alternative Guidance <input type="checkbox"/>	Results in Deferral <input type="checkbox"/>		
Funding				
DOE <input checked="" type="checkbox"/>	LIHEAP <input checked="" type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>

What guidance do you provide Subgrantees for addressing unsafe gas ovens/stoves/ranges in homes slated for weatherization?
<p>When CO testing indicates a problem, standard maintenance or repair of gas cooktops and ovens is allowed.</p> <p>NOTE: Replacement of gas ovens/stovetops/ranges is <i>not allowed</i> under DOE health and safety funding.</p> <p>Appliances that exceed the acceptable levels for CO and/or determined unsafe as defined in the Tennessee Weatherization Field Guide must be addressed if not deferred.</p> <p>The agency will clean, tune, and repair the appliance when appropriate and as allowed per program guidelines.</p>
Testing Protocols
<p>NOTE: Stovetop CO <i>testing</i> IS optional.</p> <p>Gas ovens will be tested for both efficiency and safe operation of the unit. The agency is allowed to perform a clean/tune/repair is allowed where appropriate.</p> <p>Both ovens and stovetops will be visually inspected for operability and flame quality.</p> <p>Gas ovens will be tested in accordance to Tennessee SWS Field Guide and BPI's 1200 Combustion Safety Standards.</p> <p>CO diagnostics must be recorded in the client file.</p>
Client Education
<p>Clients will be informed of unsafe gas ovens/stoves/ranges determined by the auditor. This includes informing clients to the importance of using exhaust ventilation when cooking and the importance of keeping burners clean to limit the production of CO.</p> <p>The auditor will explain how potential hazards associated with these appliances affect the client and the dwelling's indoor air quality.</p> <p>Additional resources:</p> <ul style="list-style-type: none">• Tennessee Department of Health offers information how to maintain a healthy home.• Prevent Fire includes resources how clients can safely operation gas ovens and stoves, reducing risk of injury.
Training

The State educates on the proper use of combustion appliance testing through regular Energy Auditor, QCI, contractor, RIT, and Crew Leader training and via technical bulletins memorandums.

The State requires licensed contractors to remain up to date for all training requirements of the weatherization program.

Auditors, QCIs, and all associated weatherization contractors may refer to the:

- [Tennessee Weatherization Field Guide](#)
- [BPI 1200 Combustion Safety Standards](#)
- [R.J. Karg Associates](#) – Protocol for gas range CO testing, *if auditor determines to perform this diagnostic.*

Additional training and technical assistance may be provided on an as- needed basis.

7.13 – Hazardous Materials Disposal [Lead, Refrigerant, Asbestos, Mercury (including CFLs/fluorescents), etc.] <i>(please indicate material where policy differs by material)</i>				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input checked="" type="checkbox"/>	Alternative Guidance <input type="checkbox"/>	Results in Deferral <input type="checkbox"/>		
Funding				
DOE <input checked="" type="checkbox"/>	LIHEAP <input checked="" type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>
Client Education				
Inform client in writing of hazards associated with hazardous waste materials being generated and/or handled in the home.				
Training				
Auditors, contractors, RITs, and Crew Leaders receive hazardous material disposal training covering the following topics:				
<ul style="list-style-type: none"> • Tennessee Weatherization Field Guide – Chapter 1.9.6 Appropriate Personal Protective Equipment (PPE) for working with hazardous waste materials. • Disposal requirements and locations – See disposal procedures below. • Tennessee Department of Health - Risks related to hazardous materials. 				
Additional training can be found through OSHA Hazard Communication Standards				
It is also required all weatherization contractors keep all relevant Safety Data Sheets (SDS) readily available.				
Disposal Procedures and Documentation Requirements				

Hazardous Waste Materials generated in the course of weatherization work shall be disposed of according to all local laws, regulations and/or Federal guidelines, as applicable.

Document proper disposal requirements in contract language with responsible party.

Lead and Asbestos – Refer to these sections in this health and safety plan for more information on proper disposal.

Mercury Disposal – Mercury containing materials will be disposed of according to Tennessee Department of Environment and Conservation and the Tennessee Department of Health’s Communicable and Environmental Disease Services.
Such common mercury containing materials associated with weatherization include but not limited to: thermostats, lightbulbs, and batteries.

The attached links provide additional resources how to dispose of specific mercury containing materials.

- [Tennessee Department of Environment and Conservation](#)
- [Tennessee Department of Health](#)
 - [Mercury Factsheet](#)

Refrigerant Disposal – Disposal of refrigerants will comply with **EPA Regulations 40 CFR Part 82, Subpart F** under [Section 608](#) of the Clean Air Act.

7.14 – Injury Prevention of Occupants and Weatherization Workers (Measures such as repairing stairs and replacing handrails)				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input checked="" type="checkbox"/>	Alternative Guidance <input type="checkbox"/>	Results in Deferral <input type="checkbox"/>		
Funding				
DOE <input checked="" type="checkbox"/>	LIHEAP <input checked="" type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>
<p>NOTE: DOE funds will only be used to make minor repairs that are <i>necessary in order to effectively weatherize the home</i>.</p>				
<p>What guidance do you provide Subgrantees regarding allowable injury-related repairs (e.g., stairs, handrails, porch deck board)?</p>				

Workers must take all reasonable precautions against performing work on homes that will subject workers or occupants to health and safety risks.

Minor repairs and installation may be conducted only when necessary to effectively weatherize the home; otherwise these measures are not allowed.
Repairs necessary to allow safe access to areas necessary for weatherization may be performed using DOE health and safety funds.

The case file must document the need for the repair/replacement and its connection to the weatherization work being performed.

NOTE: Under no other circumstance will DOE health and safety funds be used to replace porches, stairs, handrails, or lighting *on the exterior of the home*.

If weatherization work cannot be completed because the lack of these safety devices, deferral may be necessary.

Clients shall be informed of these observed hazards and provided with recommendations and referral options.

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

A minor repair shall remain under the cost of \$1,131.00

Minor repairs such as the installation of interior stairs and handrails that are necessary in order to effectively weatherize the home are allowed. Without the repair or installation, the weatherization worker would be subject to possible injury.

Training

Energy Auditors, QCIs, contractors, RITs, and Crew Leaders receive certification in [OSHA-10](#) and [OSHA-30](#).
Additional resources can be found using the [Tennessee Weatherization Field Guide](#).

7.15 – Lead Based Paint				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input checked="" type="checkbox"/>	Alternative Guidance <input type="checkbox"/>	Results in Deferral <input type="checkbox"/>		
Funding				
DOE <input checked="" type="checkbox"/>	LIHEAP <input checked="" type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>

<p>DOE health and safety funds may be used to address weatherization related costs associated with working in homes where lead based paint may exist and weatherization work may disturb the paint.</p> <ul style="list-style-type: none">• Only those costs directly associated with the testing and lead safe practices for surfaces directly disturbed during weatherization activities are allowable. <p>NOTE: Deferral is required when the extent and condition of lead-based paint in the house would potentially create further health and safety hazards.</p>
Safe Work Protocols
<p>Crews must follow EPA's Lead; Renovation, Repair and Painting Program (RRP) when working in pre-1978 housing unless testing confirms the work area to be free.</p>
Testing Protocols
<p>Testing to determine the presence of lead in paint that will be disturbed by WAP measure installation is allowed with EPA-approved testing methods.</p> <ul style="list-style-type: none">• If not tested, then all work in pre-1978 units must be completed by an RRP certified contractor and Lead Safe work practices must be followed. <p>Testing methods must be economically feasible and justified.</p> <p>Job site set up and cleaning verification by a Certified Renovator is required.</p> <p>Subgrantees will keep on file verification crews are following lead safe practices through proper documentation. See Documentation category below.</p>
Client Education
<p>As required under the RRP rule, targeted clients will be provided a copy of the EPA booklet "Renovate Right – Important Lead Hazard Information for Families, Child Care Providers and Schools". This document is found in the Tennessee WAP Manual.</p> <p>When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.</p>
Training and Certification Requirements

All Energy Auditors, QCIs, contractors, RITs, and Crew Leaders working in pre-1978 units are required to have Renovation, Repair and Painting Program (RRP) Certification training and be a certified firm.

All employees and contractors working on pre-1978 homes must receive training to install measures in a lead-safe manner in accordance with the SWS and EPA protocols.

[RRP Training Information](#)
[Tennessee Weatherization Field Guide](#)

A certified renovator must be present on jobs as required under RRP. Documentation that certification has been completed will be retained by the sub-grantee.

It will be the Contractor’s responsibility to train members of their crew.
 It will be the Contractor’s responsibility to ensure his company is a certified firm and are in full compliance with EPA’s requirements and following lead safe weatherization practices.

Documentation Requirements

The Certified Renovator must provide proof that they followed the RRP and Lead Safe procedures. They are to provide the Pre-Renovation form signed by the client and photographs to document that the procedures were followed.

Documentation in the client file must include:

- Certified Renovator certification
- Any training provided on-site;
- Description of specific actions taken;
- Lead testing and assessment documentation
- Photos of site and containment set up. Include the location of photos referenced if not in file.

7.16 – Mold and Moisture

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

Concurrence, Alternative, or Deferral

Concurrence with Guidance Alternative Guidance Results in Deferral

Funding

DOE LIHEAP State Utility Other

<p>A major repair is one that meets or exceeds the cost of \$1,131.00</p> <p>Major drainage issues are beyond the scope of the Weatherization Assistance Program.</p> <p>Housing with conditions that may create a serious health concern requiring more than cost justified incidental repairs will be deferred.</p> <p>NOTE: Mold testing is not an allowable cost.</p>
<p>What guidance do you provide Subgrantees for dealing with moisture related issues (e.g., drainage, gutters, down spouts, moisture barriers, dehumidifiers, vapor barrier on bare earth floors) in homes slated for weatherization?</p>
<p>NOTE: Source control is the first step in solving moisture problems.</p> <p>Examples of source control repairs include:</p> <ul style="list-style-type: none">• Site drainage/run off modifications - Regrading along a foundation wall to keep water away from building.• Gutter repair or minor replacement• Down spouts repair/replacement - to reduce water pooling,• Flashing - for windows and doors to eliminate or reduce water entry,• Sump pumps - for removal of water in a basement or crawl space• Vapor barriers – to cover exposed earth in crawlspaces and cellars.• Ventilation – to remove water vapor. See Ventilation category. <p>Limited water damage repairs that can be addressed by weatherization workers and correction of moisture and mold creating conditions, including ground barriers, are allowed under Health and Safety.</p> <p>Where severe Mold and Moisture issues cannot be addressed, deferral is required.</p>
<p>How do you define “minor” or allowable moisture-related measures, and at what point is work considered beyond the scope of weatherization?</p>

A minor repair shall remain under the cost of \$1,131.00

Minor mold and moisture repairs are considered repairs that can be completed with hand tools. Foundation repair that require heavy machinery are considered outside of the scope of weatherization.

Surface preparation where weatherization measures are being installed (e.g., cleaning mold off window trim in order to apply caulk) must be charged as part of the ECM, not to the H&S budget category.

Mold Remediation Protocols:

If the area containing mold is less than 10 square feet total (about 3 ft. by 3 ft.), the job will be assigned to the weatherization contractors. Health and Safety funds will be used to alleviate moisture related issues that have the potential to promote mold growth or have a negative effect on the indoor air quality. Health and Safety funds cannot be used to remove mold greater than 10 square feet, but may be used to provide ventilation.

The job should be deferred and the client should contact professionals when:

- The mold covers more than 10 square feet;
- There is evidence of extensive water damage;
- It is suspected that the HVAC system may be contaminated, i.e. there is mold near the intake of the system. The HVAC is not to be run, as it could spread mold throughout the house;
- The water and/or mold damage was caused by sewage or other contaminated water
- There is a health concern and alleviation of the concern is beyond the scope of the WAP.

Client Education

All WAP clients are provided a mold and moisture pamphlet titled, "A Brief Guide to Mold, Moisture, and Your Home" issued by the EPA. This can be found in the [Tennessee WAP Manual](#).

[Tennessee Department of Health](#) offers additional resources concerning cleaning/maintaining drainage systems and proper landscape design.

[Department of Energy](#) also offers information on moisture control in the home.

When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.

Training

The [Tennessee Weatherization Field Guide](#) addresses preventing moisture problems.

Auditors and QCIs will include visual assessment of potential moisture concerns. Diagnostics such as moisture meters are recommended at pre - and post - audit, but not required.

The [EPA](#) offers training how to prevent and remediate mold.

[WxTV](#) offers a 14 minute episode on mold and moisture concerns

In addition, Energy Auditors, QCIs, contractors, RITs, and Crew Leaders are trained regarding moisture issues and how they can best be addressed within the program’s scope during annual technical training.

7.17 – Pests				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input type="checkbox"/>	Alternative Guidance <input checked="" type="checkbox"/>	Results in Deferral <input type="checkbox"/>		
Funding				
DOE <input type="checkbox"/>	LIHEAP <input checked="" type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>
What guidance do you provide Subgrantees for dealing with pests and pest intrusion prevention in homes slated for weatherization?				
<p>NOTE: Pest removal is not allowed using DOE health and safety funds.</p> <ul style="list-style-type: none"> Screening of windows and points of access into <i>air sealing practices</i> is allowed to prevent pest intrusion <p>Infestation of pests may be cause for deferral where it poses health and safety concern for workers.</p>				
Define Pest Infestation Thresholds, Beyond Which Weatherization Is Deferred				
<p>Infestation of pests may be cause for deferral when it cannot be reasonably removed by the client or poses health and safety concern for workers.</p> <p>Sub-grantees will refer clients to alternative programs for assistance to the best extent possible.</p>				
Testing Protocols				
No DOE health and safety funds will be used to test for pests outside of visual inspection.				
Client Education				
<p>Clients will be informed of potential health and safety risks and notified according to the deferral standards found in the Tennessee WAP Manual.</p> <p>The Tennessee Department of Health offers additional information how to keep a home pest free.</p> <p>When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.</p>				

Training
<p>Training regarding deferrals is addressed during annual training for Energy Auditors, QCIs, contractors, RITs, and Crew Leaders.</p> <p>The Tennessee Department of Health offers additional information how to keep a home pest free.</p> <p>US Environmental Protection Agency pest control practices.</p>

7.18 – Radon				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input checked="" type="checkbox"/>	Alternative Guidance <input type="checkbox"/>	Results in Deferral <input type="checkbox"/>		
Funding				
DOE <input checked="" type="checkbox"/>	LIHEAP <input checked="" type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>
NOTE: Radon mitigation is not an allowable health and safety cost.				
What guidance do you provide Subgrantees around radon?				
<p>NOTE: <i>Whenever site conditions permit</i>, exposed dirt shall be covered with a vapor barrier except for mobile homes. Mobile homes may have a vapor barrier if the home is on a permanent foundation. Otherwise, the vapor barrier will not be installed in a mobile home.</p> <p>Because radon migrates through the soil, mitigation strategies include the following:</p> <ul style="list-style-type: none"> • Installing plastic ground barrier and sealing seams. • Sealing the walls and floor of the basement. • Installing sealed sump pump covers <p>Installing ventilation and ground covers/vapor barriers are allowable Health and Safety expenses.</p>				
Testing Protocols				
If known radon issues are above an acceptable level (4 pCi/l) the unit will be deferred.				
Client Education				

The client will be provided with the EPA’s Citizen’s Guide to Radon. Confirmation that this guide was received and discussed with the client must be retained in the case file.

- This guide will be found in the [Tennessee WAP Manual](#) or [EPA’s Publications about Radon](#)

NOTE: All clients must sign the Radon Informed Consent Form.

The form explains results from the Indoor Air Quality Study show there is a small risk of increasing radon levels when building tightness is improved. The form also includes a list of precautionary measures WAP may install based on EPA Healthy Indoor Environment Protocols;

In conjunction with this consent form, the client must receive education on the benefits of weatherization including energy savings, energy cost savings, improved home comfort, and increased safety.

[Radon Zone Map](#)

Training and Certification Requirements

Radon is addressed in the Tennessee Weatherization Field Guide and through auditor and contractor training. Additional training on radon can be found at:

- [Tennessee Department of Health](#)
- [US Environmental Protection Agency](#)

Documentation Requirements

If the unit is tested for radon, the test results must be included in the client file.

7.19 – Safety Devices: Smoke and Carbon Monoxide Alarms, Fire Extinguishers				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input checked="" type="checkbox"/>	Alternative Guidance <input type="checkbox"/>	Results in Deferral <input type="checkbox"/>		
Funding				
DOE <input checked="" type="checkbox"/>	LIHEAP <input checked="" type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>
What is your policy for installation or replacement of the following:				
Smoke Alarms: There must be an operable smoke alarm in every bedroom and at least one in the common space on every floor of the unit. Smoke alarms may be installed where not present or are inoperable.				
Carbon Monoxide Alarms: All units are required to have an operable Carbon Monoxide Alarm.				
Fire Extinguishers: Providing fire extinguishers is an allowable using DOE health and safety funds when solid fuel is present.				
Testing Protocols				
Auditors and QCIs shall test smoke and carbon monoxide alarms to ensure they are operable.				
Client Education				

<p>Clients are instructed regarding installation of smoke detectors and carbon monoxide detectors if applicable.</p> <p>Client education materials can also be found in the Training category.</p>
Training
<p>Energy Auditors, QCIs, contractors, RITs, and Crew Leaders receive instruction on where to install smoke/CO alarms and compliance with local codes.</p> <p>Training resources include:</p> <p>NFPA Smoke Alarms NFPA Carbon Monoxide Alarms NFPA Fire Extinguishers</p> <p>The Tennessee Weatherization Field Guide provides additional information.</p>

7.20 – Occupant Health and Safety Concerns and Conditions				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input checked="" type="checkbox"/>	Alternative Guidance <input type="checkbox"/>	Results in Deferral <input type="checkbox"/>		
Funding				
DOE <input checked="" type="checkbox"/>	LIHEAP <input type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>
What guidance do you provide Subgrantees for soliciting the occupants’ health and safety concerns related to components of their homes?				
<p>When a person’s health may be at risk and/or WAP work activities could constitute a health and safety hazard, the occupant will be required to take appropriate action based on severity of risk.</p> <p>Failure or the inability to take appropriate actions must result in deferral.</p> <p>Subgrantees shall seek knowledge of outside funding and programs for services to help address occupant health and safety concerns and conditions. The client will be referred to these programs if applicable.</p>				
What guidance do you provide Subgrantees for determining whether occupants suffer from health conditions that may be negatively affected by the act of weatherizing their home?				
<p>Screen occupants to reveal known or suspected health concerns either as part of the initial application for weatherization, during the audit, or both.</p> <ul style="list-style-type: none"> • NOTE: The intent is not to solicit specific medical conditions that clients may have, but to inform the client of how certain aspects of weatherizing the client’s home may affect them if they have certain medical conditions. 				
What guidance do you provide Subgrantees for dealing with potential health concerns when they are identified?				

Client Education
<p>Provide client with information on function, use, and maintenance (including location of service switch and cleaning instructions) of ventilation system and components.</p> <p>Provide client with equipment manuals for installed equipment. Include disclaimer that ASHRAE 62.2 does not account for high polluting sources or guarantee indoor air quality.</p>
Training
<p>Energy Auditors, QICs, contractors, RITs, and Crew Leaders receive ASHRAE 62.2-2016 training which includes proper sizing, and the evaluation of existing and new systems.</p> <p>Additional training resources:</p> <p>ASHRAE 62.2-2016 – read only version DOE WAP Health and Safety FAQ – Pages 26 through 35 provide descriptive answers to a number of ventilation questions.</p>

7.22 – Window and Door Replacement, Window Guards				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input checked="" type="checkbox"/>	Alternative Guidance <input type="checkbox"/>	Results in Deferral <input type="checkbox"/>		
Funding				
DOE <input type="checkbox"/>	LIHEAP <input type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>
NOTE: Replacement, repair, or installation is not an allowable H&S cost.				
What guidance do you provide to Subgrantees regarding window and door replacement and window guards?				
<p>DOE funds will not be used for replacement or repair of windows, doors or window guards under the health and safety category.</p> <ul style="list-style-type: none"> Window and door replacement or repair will be determined by the energy audit tool either as an energy conservation measure or meet the definition of an incidental repair. <p>Deferral may be necessary if windows or doors are in such a state of disrepair that they would prevent weatherization. When deferral is necessary, provide information in writing describing conditions that must be met in order for weatherization to commence.</p>				
Testing Protocols				
N/A				
Client Education				
Provide written information on lead risks wherever issues are identified.				
Training				

Sub grantees have been informed through a memorandum that window and door replacement is not allowed under health and safety.

Lead Safe [RRP](#) contractors must be used if windows and doors are being replaced as ECMs in pre-1978 homes.

7.23 – Worker Safety (OSHA, etc.)				
Concurrence, Alternative, or Deferral				
Concurrence with Guidance <input checked="" type="checkbox"/>	Alternative Guidance <input type="checkbox"/>		Results in Deferral <input type="checkbox"/>	
Funding				
DOE <input checked="" type="checkbox"/>	LIHEAP <input type="checkbox"/>	State <input type="checkbox"/>	Utility <input type="checkbox"/>	Other <input type="checkbox"/>
How do you verify safe work practices? What is your policy for in-progress monitoring?				
<p>Workers must follow OSHA standards where required and take precautions to ensure the health and safety of themselves and other workers.</p> <p>All Subgrantees and contractors must maintain compliance with the current OSHA Hazard Communication Standards, including on-site organized Safety Data Sheets (SDS) (formerly called MSDS).</p>				
Training and Certification Requirements				
<p>Energy Auditors, QCIs, contractors, RITs, and Crew Leaders receive training on the use and importance of PPE and safety training appropriate for job requirements.</p> <p>Training resources include:</p> <p>Tennessee Weatherization Field Guide OSHA-10 OSHA Hazard Communication Standards</p>				

**WAP WPN 17-7 Attachment A:
Additional Health and Safety Guidance Related to Heating Systems**

- Budget Category Decisions
- Code Compliance and Inspection
- Electric Space Heaters
- Fireplaces – Special Considerations
- Manufactured Homes – Special Considerations
- Masonry Chimneys
- Solid Fuel-Fired Heaters
- Unvented Gas- and Liquid-Fueled Space Heaters
- Vented Gas- and Liquid-Fueled Space Heaters

Budget Category Decisions: Perform a full DOE-approved energy audit prior to deciding how to categorize the cost of space heater repair or replacement. If the measure is an approved WAP expenditure and the audit justifies the costs with an SIR equal to or greater than 1.0, the measure must be performed and costs charged as an Energy Conservation Measure (ECM). If the measure is not an eligible ECM, the measure may be charged as either a Health and Safety (H&S) measure if included in the DOE approved Grantee Annual Health and Safety Plan. More information is available in the DOE Health and Safety Guidance and Incidental Repair Guidance to assist with this decision.

Code Compliance and Inspection Requirements: Installation of space heaters requires knowledge of appropriate industry standards and comply with the applicable building code(s) in the municipality where installation is taking place. Building permits shall be secured, where required for all space heater work. This is a program operations cost. The manufacturer approved initial start-up procedures must be followed before any heater is put into operation. States are reminded that even licensed heating contractors may not be aware of the stringent requirements of the Weatherization Program, so their work should be reviewed by Program staff. Safety inspections related to the space heater should include, but not be limited to, a check for adequate floor protection, and code-compliant clearances to walls and other combustible materials. Even though many vented space heaters are manufactured with spill switches, it is still a requirement that a worst-case depressurization draft test be performed on all vented units.

Electric Space Heaters: DOE will not permit any DOE-funded weatherization work other than minor repairs on electric space heaters. This does not preclude the use of other funding sources for the replacement or major repair of electric space heaters, but the Department does not encourage it because of:

- Lower output ratings (size);
- Risk of fire hazards; and,
- Inadequate electrical systems in older homes, which frequently cannot safely carry the power required to operate an electric heater.

Work on such systems may make local agencies liable for inadequate electric wiring and any damages that result.

Fireplaces – Special Considerations: Fireplaces present special hazards that are affected by weatherization. If draft is poor, smoke may downdraft into the living space causing poor indoor air quality. It is likely the occupants will ventilate in these situations. Near the end of a wood fire, glowing coals will remain, radiating heat, while the draft lowers and allows the top of the chimney to cool, further reducing draft. The reduced oxygen available to the glowing coals causes production of CO without the smoke that encourages space ventilation. This is a dangerous situation as the CO enters the living space due to the lowered draft, causes drowsiness of occupants, and sometimes worse. For this reason it is extremely important to make sure there is a CO alarm installed in this combustion zone and occupants are educated to the danger signs and what to do.

Inspection/Evaluation:

Assessing solid fuel fired appliances involves inspecting the venting/chimney and the overall installation to ensure it adheres to the applicable code: NFPA 211 or other as determined by the authority having jurisdiction. Appliances should be inspected pre- and post-weatherization.

Conduct pre- and post- weatherization worst case CAZ depressurization testing in spaces having a fireplace. Since there is no consensus method for verifying safe operation of fireplaces, Grantees can propose testing policies and limits (e.g., one Grantee uses a depressurization limit of -5 in the CAZ of any wood-burning combustion appliances, including fireplaces). If the Grantee does not propose a policy and fireplaces are left operational, the vent must meet code or the home cannot be weatherized.

To evaluate operation of *other* combustion appliances, the blower door can be set to run at 300 CFM (set up as for depressurization testing), or other Grantee-approved flow, to mimic the airflow dynamics likely when the fireplace is in use.

Manufactured Homes – Special Considerations: The Manufactured Home Construction and Safety Standards (<https://portal.hud.gov/hudportal/HUD?src=/hudprograms/mhcss>) require all fuel-burning, heat-producing appliances in mobile homes, except ranges and ovens, to be vented to the outside.

All fuel-burning appliances in mobile homes, except ranges, ovens, illuminating appliances, clothes dryers, solid fuel-burning fireplaces and solid fuel-burning stoves, 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).

Masonry Chimneys: Masonry chimneys used by vented space heaters should be properly lined in compliance with the International Fuel Gas Code (IFGC). When WAP installs new equipment it must meet local code requirements. Masonry chimneys that have been retired (i.e. not being used by existing equipment) should be assessed for energy savings opportunities such as air sealing and capping to reduce thermal bypass.

Solid-Fueled Space Heaters: Solid fueled space heaters include wood stoves, coal stoves, pellet stoves, and fireplaces. Wood, coal, and pellet fired furnace and boiler systems should be treated as vented heating systems and are not covered here.

Assess solid fuel-fired appliances to ensure safe installation prior to weatherization activities taking place. Repair or removal is an allowed H&S measure for primary and secondary solid fuel-fired heating appliances. Replacement is allowed for *primary* solid fuel heating appliances but replacement is not allowed for secondary heating appliances. Repair of flues and proper installation (e.g. protection of combustibles), is required for both primary and secondary solid fuel heating appliances. Install replacement primary heaters and/or flues according to applicable codes, standards and manufacturer's instructions. Provide adequate combustion air.

Unvented Gas- and Liquid-Fueled Space Heaters: This policy applies to unvented space heaters fueled by natural gas, propane or kerosene. This policy is consistent with the IRC and the IFGC and is divided to address primary and secondary heat sources.

Primary Heat Sources:

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

Secondary Heat Sources:

Secondary unvented units that conform to the safety standards of ANSI Z21.11.2 may remain as back-up heat sources. DOE is allowing this flexibility primarily to provide low-income clients an emergency back-up source of heat in the event of electrical power outages. When selecting items to leave behind, give preference to code-compliant units that do not require electricity.

Secondary unvented units that do not meet ANSI Z21.11.2 must be removed and properly disposed of prior to weatherization but may remain until a replacement heating system is in place. Repair of secondary unvented units is not allowed. Secondary unvented units that meet the ANSI Z21.11.2, but are not operating safely, must be removed and properly disposed of.

An unvented gas- and liquid-fueled space heaters that remains in a completed single-family house after weatherization shall:

- Not have an input rating in excess of 40,000 Btu/hour;
- Not be located in, or obtain combustion air from sleeping rooms, bathrooms, toilet rooms, or storage closets, except:
 - One listed wall-mounted space heater in a bathroom if permitted by the authority having jurisdiction which --:
 - Has an input rating that does not exceed 6,000 Btu/hour;

- Is equipped with an oxygen-depletion sensing safety shut-off system; and
- The bathroom has adequate combustion air;
- One listed wall-mounted space heater in a bedroom if permitted by the authority having jurisdiction, which --:
 - Has an input rating that does not exceed 10,000 Btu/hour;
 - Is equipped with an oxygen-depletion sensing safety shut-off system; and
 - The bedroom has adequate combustion air.

Vented Gas- and Liquid-Fueled Space Heaters: Treat vented gas- and liquid-fueled space heaters the same as furnaces in terms of combustion safety testing, repair and replacement. This policy applies to vented space heaters fueled by natural gas, propane, or oil.