2018 – 2019 Wisconsin Weatherization Assistance Program Program Manual

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DEHCR
Division of Energy, Housing and Community Resources

Weatherization Works

The Wisconsin Weatherization Assistance program mission is to reduce energy costs for eligible low-income households by improving the energy efficiency of their homes while ensuring their health and safety.

PY2018 - 2019 Weatherization Program Manual

Foreward

The federal Weatherization Assistance Program (WAP) was created in 1976 to assist low-income families who lacked resources to invest in energy efficiency. The Weatherization Assistance Program is operated in all 50 states, the District of Columbia, Native American tribes, and U.S. territories. Funds are used to improve the energy efficiency of homes occupied by low-income households, using the most advanced technologies and testing protocols available in the housing industry. The energy conservation resulting from the efforts of state and local agencies helps our country reduce its dependence on foreign oil and decrease the cost of energy for families in need while improving the health and safety of their homes.

Wisconsin's Weatherization Assistance Program is funded with a combination of state and federal funds including U.S. Department of Energy (DOE), Low Income Home Energy Assistance Program (LIHEAP or EAP), and state Public Benefits (PB) funding. PB funding may only be used on buildings served by a participating electric utility.

Home Energy Plus (HE+) includes the Wisconsin Home Energy Assistance Program (WHEAP), Home Energy Plus Furnace Program, and the Weatherization Assistance Program (WAP), and is administered by the Wisconsin Department of Administration (DOA), Division of Energy, Housing and Community Resources (DEHCR) or 'the Division'), through a network of county agencies, tribal governments, community-based organizations, and housing authorities. The Home Energy Plus website provides information for the general public, weatherization and energy assistance program agencies.

Table of Contents

Foreward....ii
Table of Contents....iv
1. Definitions and Acronyms.... 1
2. General Management 10
2.1 Program Management 10
2.1.1 Conflict of Interest....10
2.1.2 Local Coordination....11
2.1.3 Priority of Service....12
2.1.4 Home Energy Plus Logo 12
2.1.5 Customer Notifications and Education 12
2.1.6 Quality Control System 13
2.1.7 Final Inspections....14
2.1.8 Reworks....14
2.1.9 Corrections 15
2.1.10 Training and Technical Assistance....15
2.1.11 Basic Energy Auditor Certification....15
2.2 Documentation and Record Keeping 15
2.2.1 IT System Requirements 15
2.2.2 Timely WisWAP Data Entry 16
2.2.3 Customer Files....16
2.2.4 Historic Review....18
2.2.5 Record Retention....19
2.2.6 Open Records/Public Records....19
2.3 Handling Sensitive Data....20
2.3.1 Non-Disclosure Agreement....20
2.3.2 Sensitive Data Tiers....20
2.3.3 Desktops....21
2.3.4 Portable Computing Devices....21
2.3.5 Portable Media....22
2.3.6 General Electronic File Creation and Storage 22
2.3.7 Shared Network Drive....22

2.3.8 File Transfer Protocol (FTP) Sites 22
2.3.9 Email 22
2.3.10 Hard Copies 22
2.3.11 Quality Assurance 23
3. Eligibility 25
3.1 General Eligibility 25
3.2 Household Eligibility 25
3.2.1 Eligibility Timeline 25
3.2.2 Multi-unit Eligibility 25
3.2.3 WHEAP Applications for Multi-family (5+) Buildings 26
3.3 Building Eligibility 26
3.3.1 Group Homes 26
3.3.2 Temporary Shelters 27
3.3.3 Buildings Containing Commercial Property 27
3.3.4 Owner Occupied Multi-unit Buildings – Condominiums 28
3.3.5 Limitations and Exceptions to Building Eligibility 28
3.4 Proof of Ownership 28
3.4.1 Manufactured Homes 28
3.5 Denial of Weatherization Services 29
3.6 Deferral of Weatherization Services 29
3.6.1 Deferral Notification Requirements 30
3.7 Appeal Process 31
3.8 Tenant Notification 31
3.9 Owner Contributions 31
3.9.1 Multi-family (5+) Unit Buildings 31
4. Baseload Services 33
4.1 General Policy 33
4.1.1 Eligibility and Priority of Service 33
4.1.2 Assessments and Work Agreements 33
4.1.3 Documentation and Customer Files 33
4.2 Allowable Measures 34
4.2.1 Refrigerator Replacement and Removal 34
4.2.2 Freezer Replacement and Removal 34

4.2.3 Refrigerator and Freezer Specifications 34
4.2.4 Water Heater 34
4.3 Reported Units and Quality Control 35
4.4 Future Full Weatherization 35
4.5 Warranty Requirements 35
4.6 Expenditures, Budget Lines and Direct Labor Rate 35
5. Financial Standards 36
5.1 Procedures and Documentation 36
5.1.1 Source Documentation 36
5.1.2 Expenditure Documentation 36
5.1.3 Cash 37
5.1.4 Financial Audits 37
5.1.5 Interest Income 38
5.1.6 Material Purchasing 38
5.2 Disallowed Costs 39
5.3 Allowable Costs 39
5.3.1 Administration 40
5.3.2 Operations 41
5.3.3 Program Support 43
5.3.4 Health and Safety 45
5.3.5 Liability Insurance 45
5.3.6 Financial Audit 46
5.3.7 Training and Technical Assistance (T&TA) 46
5.3.8 Blending Funds (DOE, PB and EAP) 48
5.3.9 Average Unit Cost 48
5.4 Reporting Requirements 48
5.4.1 Monthly Financial Reports 48
5.4.2 Unit Reporting 49
5.4.3 Final Program Review (Close-Out Report) 49
6. Procurement 52
6.1 Procurement Requirements 52
6.2 Code of Conduct 52
6.3 Annual Procurement Planning 52

6.4 Competition....53
6.5 Cost Analysis....53
6.6 Procurement Method and Contract Cost....53
6.7 Purchases up to $50,000....55
6.7.1 Best Judgment Purchases $3,500 or Less....55
6.7.2 Simplified Bid Purchases $3,501 to $50,000....55
6.8 Sealed Bid Purchases over $50,000....56
6.8.1 Bid Procedures....56
6.8.2 Cost Sheet Requirements....57
6.8.3 Contract Renewal....58
6.9 Price Increases....58
6.10 Vehicle Lease or Purchase....58
6.10.1 Modified Simplified Bid for Vehicle Lease or Purchase $3,501 to $50,000....59
6.10.2 Sealed Bid Vehicle Lease or Purchase from Sources Other than Agency....59
6.10.3 Vehicle Lease from Agency....60
6.11 Financial Audit Request for Proposal....61
6.12 Specifications....61
6.13 Affirmative Action/Contract Compliance....62
6.13.1 Affirmative Steps....63
6.13.2 Documentation of Affirmative Steps....63
6.13.3 Supplier Diversity Preference....64
6.14 Ineligible Vendor Listings....64
6.15 Bonding....64
6.16 Warranty Requirements....65
6.17 Vendor Payments....65
6.18 Contract Management....65
6.19 Property Improvements through Contractors....66
6.20 Contract Sharing....67
6.21 Staff Sharing....68
7. Equipment and Materials Management....69
7.1 Property....69
7.2 Program Leasing of Agency Owned Property....69
7.3 Recordkeeping....70

7.3.1 Vehicles, Equipment and Tools 70
7.3.2 Inventory Asset Accounts 70
7.4 Disposal 71
7.4.1 Vehicle Disposal 71
7.4.2 Equipment and Tools Disposal 72
7.4.3 Inventory Disposal 72
7.5 Consumable Materials 73
7.6 Information Technology Hardware and Software 73
8. Energy Audits 75
8.1 Required Equipment 75
8.1.1 Minimal Required Equipment for Personal Safety 75
8.1.2 Minimal Required Equipment for Instrumented Air Leakage Measurements 75
8.1.3 Minimal Required Heating System Analysis Equipment 75
8.1.4 Minimal Required Combustion Safety Testing Equipment 75
8.1.5 Minimal Computer Equipment and Software 76
8.2 Required Building Assessment General 76
8.2.1 Required Diagnostic Testing (excludes Manufactured Home Measures List (MHML)) 76
8.2.2 Required Combustion Safety Testing (excludes MHML) 76
8.2.3 Required Heating System Testing (excludes MHML) 76
8.2.5 Exhaust Fan and Ventilation Testing 76
8.2.5 Required Documentation of Testing 77
8.2.6 Shell Measure Assessment 77
8.3 Electronic Audits and Measures Lists General 77
8.3.1 Mobile Home Measures List (MHML) 77
8.3.2 Weatherization Assistant Audits 77
8.3.3 Modeling Mobile Homes with MHEA 81
8.3.4 Modeling 5-24 Unit Buildings with Weatherization Assistant 82
8.4 Computerized Audits for Buildings of 25 or More Units 82
8.5 Audit Requirements and Measure Specifications 82
8.5.1 Attic and Kneewall Areas General 83
8.5.2 Sidewall Insulation General 84
8.5.3 Foundation/Floor Insulation General 84

8.5.4 Windows 86
8.5.5 Air Sealing General 87
8.6 Mechanical Systems Measures 88
8.6.1 Heating System Replacement General 88
8.6.2 Other Heating Systems Work General 94
8.6.3 Water Heater Replacement General 97
8.7 Baseload Measures 99
8.7.1 Lighting 99
8.7.2 Domestic Water Heater Measures 100
8.7.3 Refrigerator Replacement and Removal 100
8.7.4 Freezer Replacement and Removal 101
8.8 Health and Safety Measures 102
8.8.1 Depressurization and Worst Case Draft Testing 102
8.8.2 Mechanical Ventilation 104
8.8.3 Replacing Wood Heaters General 105
8.8.4 Other Health and Safety Measures General 106
8.9 Repairs 106
8.9.1 Door Replacement 106
8.10 Code Compliance 107
9. Health and Safety 109
9.1 General Policy 109
9.1.1 Health and Safety Checklist 109
9.1.2 Health and Safety Hazards 110
9.1.3 Worker Safety 110
9.1.4 Occupant Pre-Existing Health Conditions 111
9.1.5 Building Units Receiving HUD Funding 112
9.2 Radon and Weatherization 112
9.3 Mold Guidelines 112
9.3.1 Background 112
9.3.2 Notification and Inspection 113
9.3.3 Training for Mold and Moisture 113
9.3.4 Testing 113
9.3.5 Treatment 113

9.4 Lead and Asbestos Policy 113
9.5 Lead-Safe Work 115
9.5.1 General Policy 115
9.5.2 Regulatory Authority 115
9.5.3 Client Education 116
9.5.4 Testing for Lead 116
9.5.5 Recordkeeping 116
9.5.6 Lead Renovation Requirements 117
9.5.7 Weatherization Worker Protection 120
9.6 Asbestos-Containing Materials (ACM) 120
9.6.1 Background 120
9.6.2 Regulatory Authority 121
9.6.3 Weatherization Requirements 122
9.6.4 ACM Work Procedures 125
9.7 Spray Polyurethane Foam 130
9.8 Cooking Stoves 130
Appendix A Summary of Changes 132
Appendix B Home Energy Plus (HE+) Resources 135
Appendix C Wisconsin Weatherization Material Specifications 136
Appendix D WisWAP Reporting Guide 150

1. Definitions and Acronyms

Agency
The non-profit entity under contract with the Division to provide weatherization services to low-income families as defined in 10 CFR 440.15. (DOE refers to local weatherization agencies as Sub-Grantees, while the State of Wisconsin uses the term Agency.)

Air Sealing
A systematic approach to tightening a building shell to reduce uncontrolled heat loss through the heated envelope.

Appliance
Any device powered by electricity or fuel designed for household use. This includes, but is not limited to refrigerators, freezers, dehumidifiers, heating systems, and water heaters.

Applicant/Case Head
The person whose name is in Field 2 of the Home Energy Plus application form, DOA-9549. Applicant and case head are used interchangeably for purposes of the Home Energy Plus Program. For more information on Applicant/Case Head see WHEAP Operations Manual 2.2 Non-Financial Eligibility.

Asbestos-Containing Material (ACM)
Any material or product which contains more than 1 percent asbestos (OSHA 1910.1001(b)).

Authorized Agent
A person who is designated by a property owner to sign the Work Agreement and other required weatherization field forms.

Baseload Measures
Energy conservation measures that reduce non-heating energy use (e.g., installation of compact fluorescent lighting in place of incandescent lighting; electric to natural gas water heater fuel switch).

Blower Door
A diagnostic tool used to locate points of infiltration in the building envelope and help prioritize the air sealing protocols.

- **As Is Blower Door Test** – The blower door test completed prior to any work on the building that provides the CFM leakage of the house with the pressure difference at 50 pascals.
- **Final Blower Door Test** – The blower door test taken at the completion of Wisconsin Cost-Effective sealing protocols to measure CFM 50 reduction.

Building
A structure containing one or more units. A building has an identifiable site address such as a fire number or street address. A United States Postal Service PO Box number is a mailing address and does not constitute a building address.

Callback
Additional work required as a result of a final inspection or complaint/concern and occurs prior to a unit being reported as complete.

Categorical Eligibility
All household members must be recipients of W-2/TANF, FoodShare, or SSI for each of the three months preceding the month of application. W-2 is considered categorical eligibility criteria only if there is a 'cash benefit.' For more information on Categorical Eligibility see WHEAP Operations Manual 2.3 Financial Eligibility.

Code of Federal Regulations (CFR)
The general and permanent rules published in the Federal Register by the departments and agencies of the Federal Government. The CFR is divided into 50 titles that represent broad areas subject to Federal regulation.

Common Area
Any portion inside a multi-unit building that is not residential space ("unit"). Common area may be intended for the use of all residents (hallways, entryways), for access only by specific residents (storage lockers) or areas not accessible to residents but dedicated to systems serving residents (boiler rooms).

Completed Energy Audit
An energy audit is completed when all data collection is complete, when applicable a NEAT/MHEA audit run with the current contract year library shows a cumulative SIR of 1.0 or greater, a work order is created, a Work Agreement is signed by the Agency and customer, and no contingencies or reasons for deferral remain. The date when all conditions are met shall be recorded in WisWAP in the Audit Completion Date field.

Completed Measure
An energy conservation, health and safety, or repair measure that has been installed in accordance with all standards and specifications contained in this manual and/ or other program guidance, including the Weatherization Field Guide.

Completed Unit
A unit that has received all appropriate weatherization measures required by the energy audit and meets the following criteria: the building has passed a final inspection; the property owner, or the owner's authorized agent, has completed the owner sign-off document, or a good faith effort has been made to obtain the sign-off; a completion date is entered on the associated WisWAP job.

Contractor
A business entity that enters into a contractual agreement with an Agency for the provision of services. A contractor may include a vendor or lower-tier subcontractors.

Correction
The addition of a measure after a building is closed and edits to an existing measure in WisWAP after it is invoiced. A correction does not include additional field work on a unit. See also 2.1.8 Rework and 2.1.9 Correction.

Cost Allocation
A method used to assure that costs are charged to funding sources appropriately and accurately. Cost allocation plans identify the methodology by which this takes place.

Customer
Individual applying for and/or benefiting from the HE+ Program. Customers may include WHEAP eligible households, free riders, renters and property owners.

Deferral of Service
A temporary delay of weatherization services to an eligible building due to conditions that impede completion of weatherization work or preclude the installed materials from performing for their expected lifetime. See 3.7 Deferral of Weatherization Services.

Denial of Service
A permanent delay of weatherization services to an ineligible building. See 3.6 Denial of Weatherization Services.

Disability
A self-declared physical or mental impairment or a designation made by a state or federal program that substantially limits one or more of a person's major life activities; or results in the person receiving either Veteran's or Social Security disability benefits.

Division
The State of Wisconsin, Department of Administration, Division of Energy, Housing and Community Resources (DEHCR)

Department of Energy (DOE)
The federal U. S. Department of Energy (DOE) whose mission is to advance energy technology and promote related innovation in the United States. DOE also refers to funds provided by DOE.

DOE Priority Households
Elderly (persons 60 and older), persons with disabilities, families with children (under 6 years old), and households with a high energy burden (10 CFR 400.16).

Economic Unit
A person or group of persons, related or unrelated, who live together in a unit and jointly share in providing the necessities of life for the person(s) in the group. The necessities of life are shelter, heat and utilities. NOTE: Persons living in a cooperative housing arrangement who have their own room and share common spaces are all part of a single economic unit.

Elderly Person
A person who is 60 years of age or older.

Energy Assistance
The component of the Wisconsin Home Energy Assistance Program (WHEAP) that provides households with benefits to assist in meeting the cost of home energy. See also "Low Income Home Energy Assistance Program (LIHEAP)."

Energy Audit
An assessment and documentation of existing thermal, mechanical, electric baseload and health and safety related conditions. This may be based on a Division approved energy audit software program that generates a list of recommended weatherization measures.

Energy Conservation Measures (ECMs)
Installed measures intended to provide energy cost savings. ECMs are in contrast with Health and Safety and repair measures that do not always return an energy cost savings, but are necessary to complete ECMs.

ENERGY STAR® Standards
When stated in this manual that a product "shall meet ENERGY STAR® standards," it shall be certified, labeled and listed on the ENERGY STAR® website and shall conform to the set of criteria used by ENERGY STAR® to rate that product.

Fair Market Value
The best estimate of gross proceeds if a unit of property were to be sold in a public sale.

Field Data Collection Form
The notes, sketches and photos, maintained in the customer file, that record building dimensions, materials, systems and layout, including sufficient detail that a qualified energy auditor could reproduce the energy model and Work Order created for the building.

Final Inspection
The inspection performed on a building by someone who did not install measures on the building following the completion of all on-site work and the completion of any callbacks.

Financial Audit
An audit conducted in accordance with generally accepted auditing standards, U.S. Government Auditing Standards, and state single audit guidelines. See 5.1.4 Financial Audits.

Free Rider
A unit in a multi-unit building whose occupants have not applied for or do not meet the Home Energy Plus eligibility requirements but which shall receive weatherization services and be reported as a completed unit because the building is eligible to receive weatherization services.

Good Faith Dispute
A contention by an agency that goods delivered or services rendered were of a lesser quantity or quality than ordered or specified by contract, were faulty or were installed improperly, or any other reason giving cause for the withholding of payment by the agency until the dispute is settled.

Group Homes
Facilities that provide supportive housing for families and/or unrelated individuals. A group home has a clearly definable identity that distinguishes it from more informal, family-type setting (e.g., a residence for persons with disabilities).

Heating Costs
The cost of all sources of space heating used for residential heating purposes. Heating costs for commercial or business spaces are excluded.

High Energy Burden Household
A low-income household whose residential energy burden (residential expenditures divided by the annual income of that household) exceeds the median level of energy burden for all low-income households in the State (10 CFR 440.3).

Home Energy Plus (HE+)
The umbrella term used for the suite of low-income programs administered by the Division (e.g. WHEAP, Weatherization Assistance Program, Furnace Program). HE+ also refers to the Home Energy Plus website.

Household
Any persons or group of persons living together in a unit on the Home Energy Plus Application date, who are an economic unit and who directly purchase home energy or make undesignated payments for energy in the form of rent.

Indoor Air Quality
The quality of indoor air relative to its acceptability for healthy human habitation. For example, the presence of by-products of a combustion appliance is considered to render indoor air unsuitable for healthy habitation.

Infiltration/Exfiltration
Outdoor air unintentionally entering/leaving the building, typically through cracks or gaps in the building envelope.

Lead-Safe Work
Conditions that meet the OSHA, EPA and DHS requirements for adequate protection from lead exposure for both the building occupants and the workers and contractors performing the weatherization activities. See 9.3 Lead-Safe Weatherization.

Low Income Home Energy Assistance Program (LIHEAP)
Federal block grant program designed under 42 U.S.C. 8621 to provide benefits and services to assist low-income households with the cost of energy used for home heating (also referred to as "Energy Assistance"). LIHEAP funds are used together with other funding sources to operate the Wisconsin Home Energy Assistance Program (WHEAP). Chapter 16.27(3), Wis. Stats., directs 15% of the annual LIHEAP block grant be transferred to the Weatherization Assistance Program (also referred to as "EAP" funds).

Lost Materials
Materials that cannot be accounted for at the time of inventory reconciliation, including stolen materials.

Major Measures
A measure required to be completed in order to effectively weatherize the building and/or maintain the integrity of other weatherization measures. If major measures are refused by a household, the building may be deferred (see 3.6 Deferral of Weatherization Services).

Shared Meter
In a multi-unit rental building, residential space heating energy costs are metered by one device and to an account billed to the owner.

Manufactured Home Energy Audit (MHEA)

A computerized energy audit tool used for manufactured homes and is part of the Weatherization Assistant software package. See also Weatherization Assistant Guide on the HE+ WisWAP Information page.

Minor Infiltration
Air sealing work performed when blower door testing cannot be performed. Minor air sealing work is limited to probable attic bypass and key junctures, glass repair or replacement, and miscellaneous sealing that will affect the occupants comfort.

Multi-Family Building
A building that contains five or more units.

Multi-Unit Building
A building that contains more than one unit.

National Energy Audit Tool (NEAT)
A computerized energy audit used for one to four unit buildings and is part of the Weatherization Assistant software package. See also the Weatherization Assistant Guide on the HE+ WisWAP Information page.

Office of Management and Budget (OMB)
The federal Office of Management and Budget issues Circulars in the areas of uniform administrative requirements and financial audits such as the Omni Circular (2 CFR 200).

Owner Contribution
The portion of the cost of weatherization that the owner of a building pays. See 3.9 Owner Contribution.

Occupational Safety and Health Administration (OSHA)
The United States Congress created OSHA in 1970 to assure safe and healthful working conditions by setting and enforcing standards and providing training and education. OSHA is part of the United States Department of Labor.

Owner Sign-Off
Completion Certificate for Weatherization Program Work signed by the owner or authorized agent that states the weatherization work has been completed as agreed and in an acceptable manner.

Poverty Level
Household income in relation to family size as defined by federal poverty guidelines.

Pressure Diagnostics
Measuring air pressures and flows in different zones of a building to determine air leakage between the zones.

Program Income
Gross income earned by an Agency from grant-supported activities, including but not limited to income from service fees, sale of commodities, usage or rental fees, and royalties, patents and copyrights. Program income shall be used to weatherize additional units within the same

contract performance period. Owner contributions and leveraged funds are not considered Program Income. See also 2 CFR 200.80, DOE WPN 17-1 and 5.3.2.7 Job Cost Reduction.

Public Benefits
Under Wis. Stats. s. 16.957, the Utility Public Benefits provides funding for the Home Energy Plus programs. For more information see the Wisconsin Public Benefits HE+ Annual Report available on the HE+ Program Information page.

Quality Control Inspector (QCI)
An inspector certified by the Building Performance Institute who possesses the knowledge, skills and abilities in the National Renewable Energy Laboratory QCI Job Task Analysis.

Rental Unit
A unit occupied by a tenant whose name does not appear on the proof of ownership document. See 3.4 Proof of Ownership.

Repair Measure
Items necessary for the effective performance or preservation of energy conservation measure materials (e.g., shingles, roof cement).

Residence
A unit where household members listed on the WHEAP application are living on the WHEAP application date.

Rework
The addition of a measure or editing of measures in WisWAP after a building has been closed. A rework includes additional field work on a unit. See also 2.1.8 Reworks and 2.1.9 Corrections.

Room
A living room, kitchen, dining room, bedroom, family room, den, study or other room, excluding bathrooms, entryways, unfinished basements, hallways, unheated attics and porches, closets or areas occupied by persons who are not part of the applicant's economic unit. The number of rooms in a unit is determined by the WHEAP agency as part of the application process and is a factor in establishing WHEAP benefits. Rooms or other areas used only for commercial purposes are not considered eligible space for weatherization services.

Savings-to-Investment Ratio (SIR)
A calculation used in NEAT and MHEA that refers to the ratio between the energy cost savings over the assumed lifespan of a measure versus the investment cost of installing that weatherization measure.

Separate Living Quarters
Living quarters in which the occupants do not live and eat with any other persons in the structure and which have either direct access from the outside of the building or through a common hall or complete kitchen facilities for the exclusive use of the occupants. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated persons who share living arrangements, and includes shelters for homeless persons (10 CFR 440.3).

Standard Work Specifications (SWS)
Guidelines and specifications that identify outcomes for a whole-house approach to installing residential energy efficiency measures. The SWS was developed by the National Renewable Energy Laboratory and the U.S. Department of Energy.

Subcontractor
An entity that enters into an agreement with a contractor to provide all or a portion of the contractor's weatherization responsibilities.

Temporary Shelter
A building with the principal purpose to house, on a temporary basis, individuals who may or may not be related to one another (e.g., transitional housing for homeless persons and domestic abuse shelters). Nursing homes or similar institutional care facilities are not eligible buildings (10 CFR 440.3). See 3.3.2 Temporary Shelters.

Unit
A single family house, stationary mobile or manufactured home, apartment, group of rooms, or a single room occupied as a separate living quarters (10 CFR 440.3).

Unusable Materials
Weatherization materials that can no longer be installed due to damage, loss, inadvertent ordering of an incorrect size or the elimination by the Division of previously allowable weatherization measures. See 5.3.2.6 Unusable Materials and 7.4.3 Inventory Disposal.

Vendor
An entity that enters into an agreement to provide commodities to an agency and/or a contractor.

Weatherization Assistant
Weatherization Assistant is an energy audit software tool developed for the U.S. DOE Weatherization Assistance Program by the Oak Ridge National Laboratory.

Weatherization Measures
Energy conservation measures, energy related health and safety measures and other repairs that may be installed and funded as determined by the Division.

Wisconsin Home Energy Assistance Program (WHEAP)
See LIHEAP definition above.

WHEAP Agency
A county or its contractor that administers the Wisconsin Home Energy Assistance Program. See HE+ Where to Apply webpage to locate a WHEAP Agency by county.

WHEAP Referral Report (priority list)
A list of potential weatherization households prioritized based on the following formula:
(Sum of WHEAP heating and electric benefit amounts) + (Sum of DOE priority household categories)

Work Agreement

A written agreement between an Agency and the owner/agent of an eligible building that discloses the type and amount of weatherization work to be done on the building and other conditions both parties shall agree to, including the right for representatives from the Agency as well as state and federal government, or their designee, to verify the delivery of weatherization services and the quality of those services. See 2.2.4 Work Agreements.

Work Order
Document that specifies the weatherization work to be performed and materials to be installed on a unit.

2. General Management

An Agency shall make all reasonable efforts to deliver comprehensive weatherization services to income eligible households in the most cost effective, efficient, and timely way possible. In doing so, the Agency will maximize the use of available funding in delivering weatherization services.

The purpose of this manual is to identify Wisconsin Weatherization Assistance Program (WAP) requirements for agencies and financial auditors. It is considered part of the annual contract/grant agreement by reference. The order of precedence for contract compliance is the weatherization contract, followed by this Weatherization Program Manual and then the Wisconsin Weatherization Field Guide and Weatherization Assistant Guide. The Division reserves the right to have the final authority in any cases of dispute.

Several Home Energy Plus websites and SharePoint pages host additional documents including field forms, procurement templates, official Division communications , and training and technical assistance tools. See Appendix B -- Home Energy Plus Program Resources for a complete listing. It is the agency's responsibility to ensure the forms and documents they are using meet current weatherization program requirements.

2.1 Program Management

The mission of the Wisconsin WAP is to reduce energy costs for eligible low-income households by improving the energy efficiency of their homes while ensuring their health and safety. Achieving the primary goal of energy efficiency is dependent on effective program management that strives to maximize energy savings, minimize production costs, improve program management and quality of work, and reduce the potential for waste, fraud, abuse and mismanagement.

2.1.1 Conflict of Interest

Each Agency shall develop, implement, and keep on file a plan for dealing with potential conflicts of interest. Conflicts of interest covered by the plan shall include all situations, actual or perceived, when the Agency, members and relatives of the Agency's board of directors, Agency staff, and relatives of Agency staff have an interest in a business (or organization) providing services or materials, or property proposed to receive weatherization services. At a minimum, the plan shall set forth the procedures and steps the Agency will follow to deal with conflicts of interest in:

- Purchase of materials and services;
- Receipt and processing of applications;
- Prioritizing and scheduling of services;
- Determining services (energy auditing) for buildings;
- Installing measures in buildings;
- Conducting final inspections; and
- Obtaining owner sign-off.

Agencies shall document all identified potential conflicts of interest and make the documentation available to the Division on request. An optional tracking template is available; contact the HE+ Help Desk for a copy of the template.

Weatherization of a property in which an Agency has an interest is a special case of conflict of interest. When an Agency has partial or complete ownership of a property that is eligible for weatherization, the following process shall be followed:

1) The Agency reviews its Conflict of Interest Policy as it applies to the potential project.
2) The Agency sends a message through the Help Desk indicating that the property is eligible and proposes who would conduct the energy audit (Agency or third party).
3) The Division reviews the request and approves or denies auditor proposal.
4) If approved the energy audit is conducted.
5) The Agency submits the following to the Division for review, at a minimum (additional information may be requested):
    a) Computerized audit file,
    b) Field data collection form(s),
    c) Audit photos including, but not limited to, building exterior, existing conditions, and mechanicals, and
    d) List of measures to be performed and by whom (e.g., contractor, Agency crew).
6) The Division approves or denies the request.
7) The Agency notifies the Division when the building is reported as complete.
8) The Division schedules the property for Quality Assurance inspection.

2.1.2 Local Coordination

An Agency shall coordinate efforts with local agencies providing energy assistance and other organizations serving low-income households. This includes working with the vendors that do not participate in Public Benefits funding. Weatherization and WHEAP agencies shall work together to provide outreach to customers and to resolve application discrepancies, referral list issues, and any other issues or questions related to eligibility. If unable to be resolved at the local level, submit the question or issue to the HE+ Help Desk.

HE+ Furnace Program
The Agency, as a condition of their Weatherization contract, agrees to provide emergency furnace repair and replacement services for the WHEAP agencies within their service territory. This service is billed through the HE+ System.

Wisconsin State Tribal Initiative
Wisconsin Executive Order #39, issued in February 2004, affirms the government-to-government relationship between the State of Wisconsin and Tribal governments located within the State of Wisconsin. Government-to-government relations involve respectful and cooperative communication and dealings that are designed to achieve a consensus before a decision is made or an action is taken, and to implement programs in a collaborative manner.

The intent of this policy is to improve the planning and delivery of State services to Tribal governments, Tribal communities, and Tribal members by developing principles and a process for consultation on these service policies in Wisconsin. DOA and Tribal governments work to ensure eligible tribal members receive services in a cost effective and timely manner. It is the responsibility of the weatherization Agency to collaborate with local Tribal governments to ensure potential customers are aware of the program and the process of application and completion of weatherization of eligible homes.

2.1.3 Priority of Service

An Agency shall develop an internal prioritization plan for serving priority groups. An Agency shall give priority of service to households based on the Priority ID number found in the WHEAP Referrals Report. The WHEAP Referrals Report is a list of potential weatherization households prioritized based on the following formula: (Sum of WHEAP heating and electric benefit amounts) + (Sum of DOE priority household categories).

Referrals with the lowest Priority ID numbers shall generally receive the highest priority. Where a Tribal household is in alignment with the DOE priority definition, the Tribal household shall be included in the targeted high priority of service group regardless of the Priority ID number on the WHEAP referral, and agencies shall prioritize tribal households to ensure work is completed in a timely manner.

Although determined initially by information contained on the WHEAP application, prioritization is tied to the unit, not the applicant. If the eligible household moves, they will not establish a new priority ranking until they apply for WHEAP at their new residence.

2.1.4 Home Energy Plus Logo

An Agency shall use the official Home Energy Plus logo when creating weatherization documents such as brochures and program marketing materials. Any changes to the logo must be submitted to the Help Desk for approval. Any materials developed using the logo shall be made available for review upon request by the Division.

The official logo can be obtained on the Home Energy Plus Training and Technical Assistance website. The logo and guidelines for use are located under the Technical Assistance drop down menu.

2.1.5 Customer Notifications and Education

An Agency shall ensure that persons with limited English proficiency (LEP) have meaningful and equal access to benefits and services. This assistance goes beyond provision of brochures in Spanish, Hmong, or another language. As some individuals may not read English, or any other language, the agency shall have a mechanism to communicate orally with people with limited English proficiency.

Customer Bill of Rights
The Customer Bill of Rights shall be provided to all weatherization program customers, regardless of funding source. The Customer Bill of Rights provides information concerning rights to safety, the right to be informed, warranty information and the steps a customer may take in the event a warranty issue is not resolved. An Agency shall provide the Customer Bill of Rights as early in the weatherization process as possible. The customer's signature on the Work Agreement shall signify receipt. The Customer Bill of Rights is available on the HE+ WisWAP Information page under the Weatherization Program Information heading.

Work Agreement
A work agreement shall be signed by the owner/agent of an eligible building prior to the commencement of weatherization work. The Agency shall use the Wisconsin Weatherization Assistance Program Work Agreement documents available on the HE+ WisWAP Information page under the Field Forms heading.

The work agreement shall detail the weatherization work to be completed. The owner or authorized agent shall sign the work agreement prior to the installation of weatherization measures. Following completion of all work, a final inspection is conducted and a signature by the owner or authorized agent is required to verify the proposed work was completed in an acceptable manner.

Tenant Notification
The Agency shall provide written notifications to tenants of rental buildings as described in Section 3.8 Tenant Notification. An optional template is available on the HE+ WisWAP Information page under the Field Forms – Optional Forms heading.

Health and Safety Checklist
A Health and Safety Checklist is required for each occupied unit in 1 to 4-unit buildings. In 5+ Multi-family buildings a single Health and Safety Checklist is required for the building. See 9.1.1 Health & Safety Checklist.

Customer Guidebook
The Weatherization Guidebook shall be provided to site-built single-family homes including single condominiums, and any 2 to 4 unit buildings where DOE funds were used. An Agency shall complete and distribute the Guidebook to each unit occupant within 60 days of reporting a building as complete. The Guidebook contains information about installed materials, appliances and mechanicals including warranty information and installer contact information, and is available on the HE+ Training and Technical Assistance website.

2.1.6 Quality Control System

Each Agency shall develop, maintain and implement a documented Quality Control System (QCS). A QCS includes procedures that are designed to provide a detailed review of the weatherization program process including an on-site unit check and measurement of customer satisfaction. The QCS process is not the same as the final inspection completed on each job. Agencies shall have a mechanism to track jobs receiving a QCS review and shall document management review and approval. Several optional tools for reviews and documentation are available under the Quality Control System Tools heading on the HE+ WisWAP Information page.

Each Agency QCS will be reviewed during the annual Administrative Review process and kept on file at the Division. If changes are made to a QCS on file, the Agency shall submit a copy of the updated QCS to the HE+ Help Desk.

Quality control shall be performed continuously throughout the contract year in correlation with production. The following elements shall be included in the QCS:

1) Prior to the job being released into production, the program manager shall review and approve all jobs meeting the following criteria:
    a) Single family houses and mobile homes where completed energy audits show an estimated job cost of $12,000 or greater. Cost-effective energy conservation measures shall not be removed from a job to bring the estimate under the $12,000 threshold.
    b) Single family houses and mobile homes where completed energy audits show total estimated repair costs of $1,500 or greater.
2) After job completion, evaluate a minimum of 5% of all jobs to assess the following items.

a) Energy Audit accuracy and appropriateness.
b) Work Order/Work Agreement accuracy and appropriateness.
c) Completeness of work performed (final inspections).
    i. When it is necessary for individuals who audit units to also perform final inspections of those same units, the Agency shall include a written plan in the QCS detailing the process by which the agency will assure the quality and integrity of the audit as well as of the final inspection. An Agency shall receive approval prior to allowing the same individual to performing both the energy audit and final inspection on a unit (see 2.1.7 below).
d) Quality of work performed (for example, in-progress quality control inspections).
e) Compliance with applicable health and safety requirements.
f) Customer satisfaction with work performed.
g) Contractor and/or agency crew performance and management.

3) A feedback loop for discussing work performance that is below required standards with those performing the work (contractors and/or agency staff).
4) Verification of heating system replacements identified by contractors that were not recommended by the computerized energy audit. This may include: using multiple contractors, with replacements performed only by a contractor other than the one who identified the failure; obtaining a percentage of failed heating system units and verifying failures with physical or destructive tests; or using other methods to ensure that reported heating system failures are accurate.
5) Documenting receipt and resolution of all complaints.
6) Immediately reporting all serious complaints and incidents to the Division, including those having potential legal consequences, suspected or potential fraud and incidents relating to severe structural damage or impacting customer or worker health. An optional Weatherization Complaint Report form is available on the HE+ WisWAP Information page under the Quality Control System Tools heading.

2.1.7 Final Inspections

Final inspections shall be completed on every unit. The final inspection shall be performed after the completion of any callbacks and before the owner or authorized agent and final inspector signs off on the Completion Certificate. All final inspections of units completed using DOE funds shall be performed by a certified Quality Control Inspector (QCI). The Home Energy Plus DOE QCI Form shall be completed and kept in the customer file for all units where any DOE funds are used.

Whenever feasible, final inspections shall be completed by individuals who did not audit the building. In all cases the final inspection shall not be completed by an individual involved in the installation of the weatherization measures on the inspected unit. When it is necessary for individuals who audit units to also perform final inspections of those same units, the agency must receive prior approval by submitting an updated QCS to the Division as described in 2.1.6 above.

2.1.8 Reworks

Any weatherization work performed on a unit after the unit has been reported as completed in WisWAP is considered a rework. All rework expenses require prior Division approval to be allowable. If a rework is being requested more than one year after the completion date the

Agency shall ensure the customer is eligible for HE+ Program services prior to submitting the rework request. DOE funds shall not be used for rework expenses.

Weatherization work that was omitted or does not meet the program requirements is the responsibility of the Agency. An Agency is encouraged to utilize insurance to cover expenses related to employee or contractor negligence or warranty issues related to weatherized units.

2.1.9 Corrections

Corrections include WisWAP system edits such as changing a funding source or a cost on an invoiced measure, or adding a measure after a building has closed due to an administrative oversight. All corrections shall be completed prior to the contract end date. Division approval is required prior to adding a new measure to a closed building.

2.1.10 Training and Technical Assistance

The Division allocates Training and Technical Assistance (T&TA) funds to each Agency. An Agency is required to develop and submit a plan for T&TA expenditures per annual Division direction. An Agency shall comply with all mandatory training requirements as directed by the Division.

2.1.11 Basic Energy Auditor Certification

A person auditing homes in the Wisconsin Weatherization Assistance Program shall obtain a Wisconsin Weatherization Basic Energy Auditor Certification within 12 months of beginning to audit homes for the Weatherization Program. Auditors working toward a Basic Energy Auditor Certification will be considered an Energy Auditor Trainee and shall have their audits reviewed and signed-off on by a certified Energy Auditor. Completion of the Basic Energy Auditor Certification requirement advances the energy auditor beyond the trainee status.

Further details can be found in Core Competencies for the Weatherization Assistance Program and the Energy Auditor Job Task Analysis.

2.2 Documentation and Record Keeping

An Agency shall comply with the applicable federal and state laws, and Division regulations concerning the confidentiality of customer records.

2.2.1 IT System Requirements

An Agency shall have all IT hardware (equipment that allows a user to create, store, or transmit data), software (computer application/program or data) and service subscriptions, including but not limited to email hosting, and desktop support, necessary to meet general requirements for program management and financial reporting. Computers, laptops, tablets, and desktop PCs, shall use a version of Microsoft (MS) Windows® operating system. Productivity software loaded on the computers shall be a version of MS Office® compatible with Division software. Transmittal of MS Office files to DES shall be in MS Word, MS Excel, MS PowerPoint, .wdz (Wx Assistant), or PDF file format. Other file formats may be transmitted at the request of the Division.

An Agency shall have reliable access to the Internet at a sufficient connection speed to meet business requirements. Internet browsers used to access the WisWAP system shall be MS Internet Explorer.

An Agency shall appoint at least one WisWAP System Contact Administrator who is responsible for:

1) Submittal of a completed and signed WisWAP System Contact Administrator form identifying the appointed Contractor Administrator(s); and
2) Notification to the Division system administrator(s) (using the same form), of any changes to these appointments.

The WisWAP System Contact Administrator is responsible for creation and maintenance of WisWAP System user logins/permissions/user profile information within their agency, including signed security agreements for each system user within the agency.

To safeguard the integrity and security of data maintained in WisWAP, an Agency shall limit contracted energy auditors' access to the database. Such contractors are allowed only to add, edit or delete measures. The correct permissions setting for these functions is "JobMeasureModifyOwnGrantee."

2.2.2 Timely WisWAP Data Entry

All WisWAP data entry shall be performed within five working days of the completion of the activity as follows:

- Add a building and edit building and unit information, as needed, within within five working days of receiving a verification of interest in weatherization services.
- If weatherization service is deferred change the unit status and enter a deferral date, reason and comments within five working days of sending the Deferral Notification.
- For regular weatherization jobs only, add a job, all measures to be completed, and the estimated total cost for each measure within five working days from the completion of the audit. An energy audit is completed when all data collection is complete, when applicable a NEAT/MHEA audit run with the current contract year library shows a cumulative SIR of 1.0 or greater, a work order is created, a Work Agreement is signed by the Agency and customer, and no contingencies or reasons for deferral remain. The date when all conditions are met shall be recorded in WisWAP in the Audit Completion Date field, and the auditor name should be selected from the drop-down menu.
- Complete job costing for each measure (quantity, labor hours, unit cost and total cost, when applicable) as soon as possible following receipt of invoices and/or cost information.
- For regular weatherization jobs only, enter a job completion date as soon as feasible after the final inspection, following the completion of all on-site work and completion of any callbacks. All measures must be invoiced or checked ready for invoice or not installed prior to entering a job completion date. The job completion date should match the date the agency representative and owner or authorized agent, when feasible, signed the Completion Certificate.

For guidance on measure reporting in WisWAP see Appendix B WisWAP Reporting Guidance.

2.2.3 Customer Files

The following information is required to be included in or associated with customer files. All Home Energy Plus (HE+) electronic documentation associated with the WisWAP Building ID, including the HE+ Application and WisWAP job and invoice, is considered part of the customer file. Electronic documentation may be printed and included in the customer file, but printing is

not required (paperless systems are allowed). If an Agency is notified that a file review will be performed by the Division, the Department of Energy, or an associated auditing or quality assurance organization, the Agency must make available all documents listed below.

1) Verification of eligibility using a printed or an electronic (PDF) copy of the WHEAP Referral Details screen.
2) Verification of ownership.
3) Deferral Notification, if applicable.
4) Work Agreement signed by property owner or their authorized agent and an agency representative prior to the installation of weatherization materials and measures.
5) Completion Certificate signed by the final inspector and property owner or their authorized agent following completion of all weatherization work.
6) The Field Data Collection Form completed to prepare the energy audit and Work Order.
7) When applicable, electronic files or reference(s) to the location(s) of:
   a) Weatherization Assistant or TREAT audit
   b) Diagnostic Workbook
   c) Therm Calculator
   d) Furnace Useful Life Calculator
   e) Electric Fuel Switch Calculator Worksheet
   f) Freezer Replacement Calculator
8) Work order, including:
   a) Total measures costs, with final job costing sheet;
   b) Documentation of any call-backs;
   c) Quality control record, if performed;
   d) Justification for any Recommended Measures not completed;
   e) Job detail report documenting any non-DOE/LIHEAP/Public Benefits weatherization work on the unit; and
   f) Instructions for crew when possible or confirmed asbestos-containing materials and/or lead paint will be disturbed.
9) Health and Safety Checklist for each unit in 1 to 4 unit buildings, and for each multi-family (5+ unit) building. See 9.1.1 Health and Safety Checklist.
10) Documentation that the EPA Booklets “A Brief Guide to Mold, Moisture and Your Home,” "The Lead-Safe Certified Guide to Renovate Right," “A Citizen’s Guide to Radon,” and the Division “Customer Bill of Rights” were distributed to each household.
11) Refusal of Ventilation: Release of Liability, Indemnification and Waiver of Claims, if applicable.
12) Heating System Checklist available under the Field Forms heading on the WisWAP Information page.
13) Documentation of the sizing calculation for replacement heating systems. Acceptable sizing calculations are REScheck™, ACCA Manual J, or an equivalent industry accepted sizing formula.
14) Results of any tests for asbestos or lead
15) Renovation Recordkeeping Checklist(s), if applicable.
16) For rental units: documentation of unit’s monthly rent, and documentation of contribution calculation.

17) Documentation of any waivers or approvals pertaining to the job.
18) Photographs, or references to the location of photos, including at a minimum:
    a) The frontal view of the unit's exterior;
    b) Each appliance, window, and door before replacement. The photos shall clearly document compliance with Division standards for replacement;
    c) Leaky water heater before replacement. The photos shall clearly document compliance with Division standards for replacement;
    d) Any condition adversely affecting the installation of weatherization measures;
    e) Photo documentation of lead-renovator and asbestos containment practices as described in Table 9.2; and,
    f) On deferred units, pictures documenting the reason(s) for deferral (e.g., mold or other problems).
19) Documentation of historical review submission and response, when applicable.
20) Building Permit(s), if required by local government. If a permit is not issued by the local jurisdiction, then a copy of the receipt for payment is acceptable documentation.
21) Accrual of Benefits form for multi-unit (2 or more unit) buildings when tenants do not pay a heating fuel or electric bill, found under the Field Forms heading on the HE+ WisWAP Information page.
22) DOE Quality Control Inspection (QCI) Form, when applicable. The DOE QCI Form is available under the Final Inspections Forms heading on the HE+ WisWAP Information page.

2.2.4 Historic Review

For buildings 50 years old or older, certain measures may be subject to review by the Wisconsin Historical Society (WHS). Historic review is only required when federal funds are expensed, and not required if only PB funds are used to weatherize a building.

Measures that will change the appearance of the exterior of a home 50 years old or older are subject to review. Measures that will change the appearance of historically significant elements of the interior of a building 50 years old or older are subject to review. Examples of items that require review include replacement of exterior windows or doors, removal of original/ornamental lighting fixtures, or significant structural alterations to walls or roofs.

Some measures are exempt from review as long as those measures do not alter the appearance of the home or adversely affect the property. For more information, see the document titled "Historic Review - List of Exempt Activities" available on the HE+ WisWAP Information page under the Historic Review heading.

While other weatherization work may proceed, measures subject to Historic Review are not to be completed without written permission from the Division. Requests shall be sent to the Help Desk with an email subject line stating "Historic Review Request" and shall include:

- County the home is located in;
- Complete street address;
- WisWAP Building ID Number;
- Year built (or estimate);
- A list of non-exempt items planned for replacement;
- Photos of the items planned for replacement;

- A photo of the exterior of the home from several views (front, back, and unique exterior features);
- Notes about improvements completed since the home was built (such as construction of additions, covering or replacement of original siding or replacement of original windows); and,
- If the home is in a rural area, the Township, Range and Section Numbers as found on the property tax bill.

An optional Historic Review Request Template is available on the HE+ WisWAP Information page under the Historic Review heading.

Once a measure is submitted to WHS, the Society has up to 30 days to review the planned work. When received, the Division permission is printed and placed in the customer file. WHS may require additional review and request further documentation on a case-by-case basis. Additional requests may include detailed photos, building history or material specification for proposed replacement items.

2.2.5 Record Retention

An Agency shall retain all records associated with the Grant as detailed below for three years after the final Federal Financial Report (FFR) has been submitted by the state, per federal regulations (2 CFR 200.333).

1) An Agency shall retain all financial and procurement records, supporting documentation, and statistical records.
2) An Agency shall store their agency cost files and label or name each file according to the time period involved.
3) All records maintained in accordance with the operation of the weatherization program shall be available to the Division on request for inspection, examination, excerpting, transcription or financial audit.
4) For all financial and Customer File records created during a Grant Period the following record disposal schedule shall be applied.

Grant Period	Disposal Date
07/01/2004 – 06/30/2009	After 9/30/2012
07/01/2009 – 06/30/2013	After 9/30/2016
07/01/2013 – 06/30/2016	After 9/30/2019

An Agency shall consider Social Services Department staff working with WHEAP or with Income Maintenance Programs such as W-2/TANF and Food Stamps (Food Share) as employees of the Division for purposes of confidentiality. Therefore, an Agency shall permit these staff access to necessary information concerning customers.

2.2.6 Open Records/Public Records

Agencies are subject to State Public Records laws, (Wis. Stats. Chapter 19, subchapter II, sections 19.21 through 19.39). These laws relate to record retention by the Agency and its contractors/vendors and to the provision of information (known as “complete public access”). An agency shall:

1) Forward a written copy of all records requests to DOA, DEHCR or directly to DOA, Office of the Secretary, Legal Office, P.O. Box 7864, Madison, WI 53707-7864.
2) Provide records to requestors, as required; or
3) Request that DOA coordinate the response to the records request.

If an Agency receives a request to participate in a study or evaluation related to weatherization (other than Division or WECC projects), the Agency shall notify the HE+ Help Desk and receive approval from the Division prior to agreeing to participate.

2.3 Handling Sensitive Data

An Agency shall not use confidential information for any purpose other than the limited purpose of their contract, and shall not disclose such confidential information to any persons other than those who have a business-related need to have access to such information.

An Agency shall ensure program employees, both internal and subcontracted, shall take reasonable efforts to protect and secure sensitive information. Sensitive data are any information of which the loss, misuse, or unauthorized access to, or modification of could adversely affect the Home Energy Plus Program, contracted agencies, program employees, and/or customers. Sensitive data and information includes but is not limited to Social Security Numbers (SSNs), Personally Identifiable Information (PII) meaning information that can directly identify a specific individual, applicant household member or account specific information.

2.3.1 Non-Disclosure Agreement

An Agency shall institute and maintain reasonable security procedures to maintain confidential information while in its possession or control, including transportation, whether physically or electronically. Confidential information means all tangible and intangible information and materials, including all proprietary and PII. For more specific information regarding confidentiality and PII see weatherization contract Article 36 and 2 CFR 200.79.

All staff that have HE+ System access will be prompted to agree to the Conflict of Interest/Non-Disclosure Agreement Form upon gaining access to the HE+ System. Agency employees that work with weatherization and have access to confidential information but do not have HE+ System access shall sign a paper copy. The Conflict of Interest/Non-Disclosure Agreement is available on the HE+ Program Information page under the Agreements/Forms heading. This agreement is valid for the duration of employment with the Agency. The Agency is responsible for the breach of the contract by any Agency employees.

2.3.2 Sensitive Data Tiers

For the purposes of the following policy, sensitive data has two tiers.

Tier One sensitive data includes:

- SSNs by themselves or in combination with any PII (including date of birth, names, address, phone number, fuel account number and name, and income information), and
- The combination of date of birth and name without an SSN.

Tier Two sensitive data includes:

- PII elements that may be needed to complete effective business communications in support of the Home Energy Plus Programs (name, address, phone number, fuel account information, and income information).

Agencies and their contractors shall limit the use and exchange of sensitive data to the minimum required to conduct Home Energy Plus Program business effectively.

When using sensitive data individually or in quantity, contracted Home Energy Plus Program agencies, contractors, subcontractors and participants shall take reasonable actions to ensure the protection of sensitive program data that are: collected, displayed, transferred, stored, analyzed, or destroyed. This appendix identifies minimum requirements that shall be used for equipment, information collected and methods of transferring sensitive information. Contracted agencies shall have documentation and planned procedures in place for the handling of sensitive data and be able to make them available upon request.

2.3.3 Desktops

Desktops that are used for collecting, displaying, transferring, analyzing or storing Tier One or Tier Two sensitive data, shall apply the following standards:

1) Desktops shall be locked when left unattended by authorized personnel. Re-entry into the desktop shall require a user login and password.
2) An automated screen saver lock shall be enabled after 15 minutes of inactivity. Re-entry into the desktop will require a user login and password.
3) Hard drives shall be cleansed using at least a seven pass overwrite procedure (commonly referred to as the Department of Defense (DOD) standard), where the drive is written over electronically to eliminate all data prior to surplus or re-assignment to another user or work area. Contracted agencies shall make available upon request verification that the device has been sanitized meeting industry standards, seven pass overwrite, degaussing (sanitation based on magnetism), or complete physical destruction of the hard drive media.

2.3.4 Portable Computing Devices

Portable computing devices that are used for collecting, displaying, transferring, analyzing or storing Tier One or Tier Two sensitive data, shall apply the following standards:

1) Personally assigned portable computing devices shall have full disk (hard drive) encryption, requiring a login and password.
2) Portable computing devices shall have the boot up from external or secondary devices disabled. Boot up shall only be permitted from the hard drive.
3) An automated screensaver lock shall be enabled after 15 minutes of inactivity. Re-entry into the laptop will require a user login and password.
4) Portable computing devices that are inactive for 15 minutes shall automatically lock.
5) Do not store Tier One sensitive data on shared pool portable computing devices.
6) Hard drives shall be cleansed using at least a seven pass overwrite procedure (commonly referred to as the Department of Defense (DOD) standard), where the drive is written over electronically to eliminate all data prior to surplus or re-assignment to another user or work area. Contracted agencies shall make available upon request verification that the device has been sanitized meeting industry standards, seven pass overwrite, degaussing (sanitation based on magnetism), or complete physical destruction of the hard drive media.

2.3.5 Portable Media

Portable devices used for collecting, displaying, transferring, analyzing or storing Tier One or Tier Two sensitive data, shall apply the following standards:

1) Files that contain Tier One sensitive data shall require a password to open.
2) Media that may contain sensitive information shall be encrypted and require a login and password to access the media prior to file or folder access.
3) Shall be stored in a restricted access location, surrounded by a durable physical barrier that is not portable.
4) Disposal of the media shall require wiping electronic media with at least a 7 pass overwrite of the entire medium, degaussing (sanitation based on magnetism) or complete physical destruction of the medium.

2.3.6 General Electronic File Creation and Storage

Tier One sensitive data shall not be used to name files or folders. Faxing or transmitting original or copies of SSN cards, Driver's Licenses, Identification Cards or any Tier One data is prohibited.

2.3.7 Shared Network Drive

Shared network drives are accessible to individuals through a server for the purposes of sharing electronic files and folders. Files containing Tier one and Tier Two sensitive data stored on a network drive shall be stored in a secured folder limited to staff that require access to the data.

2.3.8 File Transfer Protocol (FTP) Sites

An FTP is an internet site intended to transfer files or folders. Tier one and Tier Two Sensitive data on FTP sites shall require the following standards:

1) Files require a password to open.
2) The password shall not be stored in the file name, file properties or other related information files about the file (aka metadata).
3) Password is to be provided to the end user via phone, email or other separate method of communication.
4) Sensitive data shall not be stored on an FTP site as a long term or permanent solution.

2.3.9 Email

An Agency shall not email Tier One sensitive data. An Agency may not request applicants to submit Home Energy Plus applications by email; and an Agency shall not accept Home Energy Plus applications by email. Upon receipt of application materials from applicants or household members by email, the material shall be quarantined and handled appropriately. The sending individual shall be contacted, informed of the policy and provided an alternative option for submitting the application.

2.3.10 Hard Copies

Hard copies are any information printed, written or displayed on a surface, such as paper.

Storing hard copies:
Tier One sensitive data that are printed or physically displayed on media shall:

1) Be stored in a locked access location (key code door, key, combination lock, etc.).

2) Meet programmatic requirements for record retention requirements. See specific program policies for requirements.
3) Be disposed of through complete destruction of the material, including shredding the media into confetti or burning the materials.

Tier Two sensitive data that are printed or physically displayed on media shall:

1) Be stored in a restricted access location.
2) Meet programmatic requirements for record retention requirements. See specific program policies for requirements.
3) Be disposed of through complete destruction of the material, including shredding the media into confetti or burning the materials.

Hard copies in transit:
When Tier One sensitive data are printed or physically displayed on medium that is in transit:

1) The data shall be stored in a location secured by a durable physical barrier requiring a key, such as a locking metal file case, locking vehicle trunk, lock box, or delivery truck.
2) Always be attended by an authorized individual.
3) When transporting hard copies containing Tier One data, a log shall be maintained of applications in transit from the point of origin and point of receipt.
4) The log of hard copy applications in transit will be made available upon request.

When Tier Two sensitive data are printed or physically displayed on medium that is in transit:

1) Always be attended by an authorized individual.

2.3.11 Quality Assurance

Contracted agencies shall have procedures established to ensure:

1) Employees and contractors are made aware of the sensitive data policy requirements annually. The agency is responsible for ensuring signers of the Non-Disclosure Agreement have a full and complete understanding of the Home Energy Plus Policy for Handling Sensitive Data.
2) Technology and devices are within the standards set forth in this chapter.
3) When scanning (making an electronic copy of) documents for storage, the original hard copy or source data are to be maintained until the scanned document imagery is secured. Original hard copies and source data are to be handled and destroyed in accordance with applicable document retention guidelines.
4) Documentation is written and maintained for plan of action regarding incident management and data handling. Employees are to immediately notify their supervisor if it is suspected that sensitive data may have been compromised in any way (i.e. loss, theft, unattended media, including but not limited to, PCs and laptops). Incident Information to be recorded and retained:
    a) Date and time of incident.
    b) Location of incident.
    c) Description of what happened to expose the data.
    d) List of potential impacted identities shall be made available upon request in a password secured document.

e) Plan of prevention and correction.
f) Incident information will be password protected in a secured folder on the network drive and restricted to the necessary authorized individuals.
g) The Division shall be notified of any incidents and corrective actions.

5) Contracted agencies and subcontracted agencies shall not:
   a) Scan, photocopy, or retain photo identification of program customers or household members.
   b) Scan, photocopy, or retain Social Security cards of program customers or household members.
   c) Send or request materials to be sent containing social security numbers by public or private mail, post, or messenger service.

3. Eligibility

3.1 General Eligibility

To be eligible for weatherization, both the building and the household(s) residing in the building unit(s) must meet HE+ program eligibility criteria.

Within the constraints of the program, Agencies shall provide services to buildings that have rental units occupied by eligible households. Agencies are required to make a substantial effort to weatherize a number of rental units that is proportional to the percentage of renters in the low-income population residing in their service territory.

3.2 Household Eligibility

Household eligibility is established by the WHEAP provider in the county where the applicant resides. For information regarding WHEAP eligibility guidelines, see the WHEAP Program and Operations Manual, Chapters 3 and 4.

3.2.1 Eligibility Timeline

There are two eligibility stages, and both are contingent upon the household remaining at the address for which the initial eligibility was established.

> **Stage 1:** The household is eligible for weatherization services for one year from the WHEAP application date, contingent upon building eligibility. During this one-year time period, an energy audit shall be completed or the eligibility of the household for weatherization shall be re-established by re-applying for WHEAP.
>
> **Stage 2:** The completed energy audit date is the start of the Stage 2 time period. The unit shall be reported as completed within one year of this date. If a building is vacated while work is in-progress during Stage 2, the Agency may contact the HE+ Help Desk for guidance on expensing and reporting incomplete units.

Deferrals do not extend the eligibility time periods. When either time period is exceeded, household eligibility shall be re-established by the WHEAP agency, and a new priority for service is established.

3.2.2 Multi-unit Eligibility

When only Public Benefits or EAP funds are used to weatherized multi-unit buildings:

1) 50 percent or more of the units must be occupied by eligible households; or
2) 50 percent or more of the units will be occupied by eligible households within 180 days under a federal, state or local government program for rehabilitating or making similar improvements to the building. The Agency shall receive approval from the Division prior to utilizing this qualification process. Contact the HE+ Help Desk to request permission.

When ***any*** DOE funds are used:

1) 66 percent or more (50 percent or more for duplexes and 4 unit buildings) of the units in the building must be occupied by eligible households; or
2) 66 percent or more of the units will be occupied by eligible households within 180 days under a federal, state, or local government program for rehabilitating the building or making

similar improvements to the building. The Agency shall receive approval from the Division prior to utilizing this qualification process. Contact the HE+ Help Desk to request permission.

All units required to meet the percentage amounts above shall be eligible before the energy audit is completed or the eligibility of the household shall be re-established by re-applying for WHEAP. If the multi-unit building is not eligible for weatherization, service to the entire building shall be denied.

3.2.3 WHEAP Applications for Multi-family (5+) Buildings

Weatherization agencies shall refer multi-family buildings to the local WHEAP agency for application intake. The local WHEAP agency shall complete an application for any households in the building without a current year application and discuss the eligibility results with the weatherization agency within 30 days of receipt of the referral.

If the building does not have the required number of eligible units to proceed with weatherization after the local WHEAP agency has completed application efforts, the two agencies shall discuss what further steps may be necessary to qualify additional households, or decide to delay weatherization of the building.

3.3 Building Eligibility

Once initial household eligibility is established by the WHEAP agency, the weatherization agency shall determine building eligibility. A building must be a structure including a stationary mobile home, single family house, multi-unit apartment building, or qualified shelter or other group facility. Government institutions, halfway houses, nursing homes, recreational vehicles (RVs), cars, trucks or tents are not eligible buildings. Buildings having only a commercial use are not eligible for weatherization. If a structure was originally designed and built for a use other than residential (e.g., manufacturing, commercial, worship) and has been converted to residential or is now being used as a residential building, the Agency shall receive approval from the HE+ Help Desk prior to proceeding with weatherization.

A building is eligible for weatherization if it:

- Contains the required number of units occupied by eligible households, or contains units that will become eligible within 180 days under a Federal, State, or local government program for rehabilitating or making similar improvements to the building; and
- Has not been previously weatherized, or
- Was weatherized prior to October 1, 1994, or
- Was weatherized prior to October 15, 2000, and the residence is served by a Public Benefits participating electric utility.

A building served by a PB participating utility and weatherized between October 1, 1994 and October 14, 2000 may be reweatherized using state PB funds only. A building originally weatherized with DOE funds prior to October 1, 1994 may be reweatherized using federal DOE and EAP funds, and PB funds only if the residence is served by a participating electric utility.

3.3.1 Group Homes

Agencies may weatherize eligible private, non-profit, or publicly-owned long-term group homes. If a group home is owned by a religious organization, the Agency shall use PB funds if PB eligible and EAP funds if not PB eligible.

Group homes are eligible when they meet the household and building eligibility criteria above. The Agency shall establish the number of units in the building using the Separate Living Quarters definition in Chapter 1. For example:

- Single Units: If residents share a kitchen, the building may only be qualified as a single unit with all residents counted as one household for application purposes.
- Multiple Units: If the group home is composed of more than one unit, determine eligibility for each unit and treat it as the building type it most closely resembles (e.g., 2-4 unit).

The owner or operator of a group home is required to pay at least 15 percent of the total cost of weatherization if space heating is billed to an account paid by the owner or operator or the owner/operator provides the heat.

3.3.2 Temporary Shelters

A temporary shelter is any unit or units whose principal purpose is to house, on a short-term basis, individuals who may or may not be related to one another(e.g., transitional housing for homeless persons, domestic abuse shelters). Nursing homes, prisons, or similar institutional care facilities are not eligible temporary shelters.

Agencies may weatherize temporary shelters without an income eligibility test or WHEAP application. However, only properties owned by non-profit entities or units of government and their subsidiaries, such as housing authorities, are eligible. If a temporary shelter is owned by a religious organization, the Agency shall use PB funds if PB eligible, and EAP funds if not PB eligible.

The owner of a temporary shelter is required to pay at least 15 percent of the total cost of weatherization if space heating is billed to an account paid by the owner or operator or the owner/operator provides the heat.

For the purpose of determining how many units exist in a shelter, an Agency shall count each 800 square feet of the shelter living area as a unit ***or*** count each floor of the shelter that has living area as a unit.

3.3.3 Buildings Containing Commercial Property

Commercial property is not eligible for weatherization. If a building contains one or more eligible units ***and*** is also used for commercial purposes, only the part of the building that is residential may be weatherized.

Where a measure will need to be installed on both the eligible unit and commercial area to be effective (e.g. insulating sidewalls) the Agency shall charge the portion associated with the eligible unit to the program and charge the portion associated with the commercial area to the property owner. The cost of weatherizing the commercial space charged to the property owner may not be counted toward a required owner contribution for weatherization of the residential space. If the property owner declines the measure or declines to pay for the portion associated with the commercial area, the building shall be denied.

3.3.4 Owner Occupied Multi-unit Buildings – Condominiums

If each unit in a multi-unit building is separately owned and occupied by the owner, then each eligible unit shall be created as a separate building in WisWAP. Work on common area measures is allowed only when all units in such a building are occupied by eligible households.

3.3.5 Limitations and Exceptions to Building Eligibility

A building is not eligible for weatherization, even if occupied by an eligible household, if the building was previously weatherized with program funds, unless:

- The building was damaged by fire, flood or natural disaster, and repair of the damage to weatherization materials is not covered by insurance; or
- The building is eligible for reweatherization.

If the occupancy of the unit changes to another low-income family, the unit does not become eligible for additional weatherization. A building is not eligible for weatherization, even if occupied by an eligible household, if a federal, state or local program has designated the building for acquisition or clearance within 12 months from the date weatherization would be scheduled to be completed.

3.4 Proof of Ownership

The Agency is responsible for verifying ownership by obtaining a copy of one of the following documents and retaining the documentation in the customer file:

- Property tax bill, deed, or verification statement from the county assessor's office.
- Life-estate or life-tenancy documentation that is recorded with the County Register of Deeds. If the life estate is included in the provisions of a will made by the former owner of the property, the requirement for registration may be waived. Contact the Help Desk for further guidance.
- A land contract. The buyer may be considered the property owner if the land contract is registered with the county and the buyer is responsible for paying property taxes and building maintenance. Notarization of a land contract does not establish the buyer's claim to the property.
- A Quit Claim Deed and required additional information, including but not limited to evidence that the tax records show the new owner as responsible for paying property taxes or evidence the giver of the deed was the owner of the property at the time of conveyance. A Quit Claim Deed alone is not sufficient proof of ownership.

3.4.1 Manufactured Homes

Mobile or manufactured homes on private property are not required to be titled according to State of Wisconsin law. If a customer resides in a mobile or manufactured home that is on private property and does not have a Certificate of Title, a Bill of Sale, or a copy of the Homeowner's Insurance, the customer must provide documentation that identifies the owner of the property where the address listed on the HE+ Application is located, such as property tax records, deed, or other verification of ownership of the land on which the manufactured home sits.

If a customer resides in a mobile or manufactured home that is located in a mobile home park or community (not on private property) and does not have a Certificate of Title, the Agency is

encouraged to work with the customer to obtain a title by mailing the completed application and necessary payment to the Department of Safety and Professional Services. If the customer is unable to provide or acquire a title, the following documents may provide sufficient proof of ownership:

- a Bill of Sale;
- a copy of the Homeowner's Insurance where the document provided identifies the household member's name as the building owner and describes the building(e.g. serial number, make and year);
- property tax or municipal permit fee records that name a household member or home owner as responsible for the taxes at the address listed on the HE+ Application.

3.5 Denial of Weatherization Services

Agencies shall provide comprehensive weatherization services to eligible units occupied by eligible low-income persons. Weatherization services shall be denied when:

- The housing type is not an eligible building.
- The building was previously weatherized and is not eligible for reweatherization.

Upon denial of weatherization program services, the applicant shall be given a copy of the Agency's appeal procedure (see 3.7 Applicant Appeal Process).

3.6 Deferral of Weatherization Services

The decision to defer work is difficult but necessary in some cases. Whenever appropriate, educational information on how to address the deferral reason shall be shared with the customer. Agencies shall pursue reasonable options on behalf of the building owner and use good judgment in dealing with difficult situations. Agencies shall not defer service without pursuing other options and identifying other resources to address identified hazards.

The Division administers several housing programs that may be appropriate referral resources, including:

- Community Development Block Grant (CDBG) - Small Cities Housing Program
- CDBG – Housing Revolving Loan Fund Program
- HOME Homebuyer and Rehabilitation Program

Weatherization services shall be deferred when:

- The customer refuses major measures that cause the proposed cumulative Savings to Investment Ratio (SIR) to drop below 1.0. . See also Section 9.1.4 Occupant Pre-Existing Health Conditions.
- A repair or health and safety measure causes the proposed cumulative SIR to drop below 1.0. Agencies shall then defer all services to the customer until the repair or health and safety issue is addressed with other funds.
- The building condition or occupants presents a serious crew safety concern.
- There are no energy conservation measures to complete and/or the cumulative SIR is less than 1.0.
- There are changes to household eligibility status.
- The building is listed for sale, in foreclosure proceedings, or is foreclosed.

Pictures documenting the reason for deferral shall be part of the customer file record. Agencies shall create a building in the WisWAP reporting system, document the deferral status, and select the reason(s) for deferral. As shown in Table 3.1 below, most deferral reasons require a notification letter be sent to the customer.

Special conditions apply to asbestos deferrals and corrective action taken by the customer (WPN 17-7). See Section 9.6 for additional information.

Table 3.1: Deferral Reasons and Notification Letters

Deferral Reasons	Notification Letter Required
Building For Sale or in Foreclosure	Yes
Chemical or Combustion Hazard	Yes
Clutter/Restricted Access to Work Areas	Yes
Lead Paint Hazard	Yes
Moisture/Mold	Yes
Possible Asbestos Containing Material	Yes
Refused/Unable to Pay Contribution	No
Remodeling	Yes
Repair	Yes
Sewage/Animal Feces	Yes
SIR < 1.0	Yes
Vermin/Pests	Yes
Other	Yes

3.6.1 Deferral Notification Requirements

Upon the decision to defer weatherization program services, the customer shall be notified in writing within five working days based on Table 1 above. The notification shall be sent by mail or hand delivered. Agencies shall continue to make appropriate referrals to any programs available to assist customers in resolving the deferral issue(s).

Notifications shall include:

- A copy of the Agency's appeal procedure.
- The Deferral of Service Notification form available on the HE+ WisWAP Information page under the Field Forms heading.

The notice shall include the reason for the deferral, and the means by which the customer can rectify the situation so the weatherization measures can be performed. The requirements for rectifying the deferral shall be reasonable and appropriate to the severity of the situation being addressed. The Agency shall provide the customer a reasonable timeframe to correct the identified issue.

Any eligible customer that complies fully with these requirements shall be reinstated in the Agency's work system so weatherization work can progress as soon as reasonably possible. There is no time extension for the eligibility period due to a deferral. If the unit cannot be

reported as complete within the eligibility period, the customer must reapply for WHEAP and they do not retain their priority.

3.7 Appeal Process

Agencies shall have an internal appeal process. Upon the deferral or denial of weatherization program services, the customer shall be given a copy of the Agency's appeal procedure. The appeal process may be the same when an applicant is denied service or when service is deferred. If, after following the appeal process, a customer wishes to contact the Division, they shall be provided with the HE+ Plus Hotline number: 1-866-HEAT-WIS (432-8947).

3.8 Tenant Notification

By signing the Rental Work Agreement (see 2.2.4 Work Agreements), the owner agrees not to raise rent(s) for a period of one year, beginning on the date of the completed final inspection, because of the increased value of the unit(s) when the value is increased solely because of the weatherization work. Agencies shall inform tenants of this rent provision. An optional Tenant Notification form is available on the HE+ WisWAP Information page under the Field Forms heading. If a complaint arises due to an alleged violation of the Rental Work Agreement and the complaint is not resolved through the Agency complaint process the tenant may submit a written request for investigation to:

Department of Administration
Division of Energy, Housing and Community Resources
Quality Assurance Section
PO Box 7970
Madison, WI 53707-7970

3.9 Owner Contributions

In rental buildings with 2 or more units where owners are responsible for paying heating costs or that have a shared meter for space heating, owners are required to make a contribution amounting to a minimum of 15 percent of the total cost of the weatherization work. Non-profit organizations that are owners or managers of eligible rental property are not exempt from the 15 percent contribution requirement. Owners who are themselves eligible for WHEAP are exempt and **not** required to make an owner contribution. An owner shall meet the contribution requirement with a cash contribution.

Agencies wishing to collect additional contributions from rental building owners shall draft an agency policy and request approval via the Help Desk.

3.9.1 Multi-family (5+) Unit Buildings

Owner contributions may be used to cover the cost (or portion of the cost) of any allowed weatherization measure that does not meet a minimum 1.0 SIR test under the following conditions:

1) The owner's contribution shall be equal to or exceed the buy-down amount needed to generate a measure SIR greater than or equal to 1.0.
2) The owner's contribution shall be at least 15 percent of the total cost of measures performed when the heat is provided through a shared meter.

3) The buy-down of measures shall not result in other cost-effective measures being dropped. All measures that were cost-effective after the initial energy audit remain a part of the list of measures to be completed.
4) The cumulative SIR shall be greater than or equal to 1.0.
5) There shall be documentation in the customer file of the energy audit, including measures that will be completed which have an initial SIR of less than or equal to 1.0.
6) A summary of all costs associated with the weatherization of the building shall be retained in the customer file.

4. Baseload Services

4.1 General Policy

Baseload Services is a program available for 1 – 24 unit buildings,and is funded with Public Benefits and EAP funds only. Receipt of Baseload Services does not prevent an eligible unit from receiving full weatherization services in the future. Baseload Services and full weatherization do not have to be completed within the same contract year. See Section 4.6 for additional guidance.

4.1.1 Eligibility and Priority of Service

An Agency shall target Baseload services as described in 2.1.3 Priority of Service. Households are eligible for Baseload Services when they meet all eligibility requirements for the weatherization program. Such households may include:

- Units with a deferral reason SIR < 1.0; or
- Households that are referred by the WHEAP agency and receive heating system work under the Home Energy Plus Furnace Program, such as Emergency Furnace or Non-Emergency Furnace services; or
- Households with high electrical use.

4.1.2 Assessments and Work Agreements

A computerized energy audit is not required for buildings to be considered for Baseload Services. The Agency shall complete an initial visit to assess Baseload needs prior to delivery of refrigerator and/or freezer measures. The Agency may complete lighting measures during the initial visit. The Agency shall use the Baseload Services Work Agreement and shall address rental property-related items such as owner contribution and ownership of appliance(s), as required.

If the Agency performed an energy audit of the building, then that audit may count as the initial visit; however, the Agency shall verify that the audit reflects the current building conditions, including verifying the same appliances observed during the energy audit are still present and verify the customer has a current eligible application in the HE+ System. All Baseload work shall be completed within one year of the HE+ Application date.

Applicable Weatherization Program Manual requirements relating to materials and provision of services apply, with the exception of items identified in this Chapter.

4.1.3 Documentation and Customer Files

Chapter 2.2.3 Customer Files applies as follows for buildings that receive Limited Services:

- Retain items 1 – 4 at a minimum, and all documentation (including photographs) relating to site conditions, expenses, decisions and activities performed related to the building.
- Recordkeeping requirements related to qualification for services, status determinations and rental property apply.
- Photographs shall include, at a minimum:
    - The frontal view of the unit's exterior;
    - Each appliance prior to replacement, including the nameplate showing model information, etc.

- Providing the Baseload Services customer with a Weatherization Customer Guidebook is optional.

4.2 Allowable Measures

The delivery of Baseload Services shall meet or exceed Wx Program standards. The Agency shall recommend measures on the basis of the requirements; however, customer acceptance of all recommended measures is **not** required. The following table provides a summary of the allowable measures included as Baseload Services, along with applicable requirements:

Table 4.1 Allowable Baseload Measures

Measure Category	Measure Detail
Lighting	LED Bulb
	CFL Bulb
	LED Exit Light
	Halogen Torchiere Replacement
Refrigerator	Remove Existing Unit(s)
	Replacement
Freezer	Remove Existing Unit(s)
	Replacement
Water Heater	Electric to Natural Gas conversion only

4.2.1 Refrigerator Replacement and Removal

Follow all applicable policies and requirements in 8.7 Baseload Measures, with the following exception: A functioning refrigerator manufactured on or before December 31st, 2003 is eligible for replacement with a properly sized new unit. The Agency may replace a newer refrigerator if NEAT/MHEA modeling indicates a SIR of 1.0 or greater for the replacement.

4.2.2 Freezer Replacement and Removal

Follow the applicable policies and requirements in 8.7 Baseload Measures, with the following exception: A functioning freezer manufactured on or before December 31st, 2003, and greater than or equal to 7 cubic feet, is eligible for replacement with a new manual-defrost unit of comparable or smaller size. Consolidation of two or more existing freezers with a single new replacement is allowed. The Agency may replace a newer freezer, if NEAT/MHEA modeling indicates an SIR of 1.0 or greater for the replacement.

4.2.3 Refrigerator and Freezer Specifications

Technical specifications are available in Refrigerator/Freezer Attachment 4 available on the HE+ Procurement SharePoint site.

4.2.4 Water Heater

An Electric to Natural Gas conversion water heater replacement is allowable as a Baseload measure when an existing natural gas service is available in the building. Follow all applicable policies and requirements in 8.6.3 Water Heater Replacement General.

4.3 Reported Units and Quality Control

A building does not need to receive all allowable Baseload measures in order to be reported as a Baseload Services unit. A final inspection is not required for every unit that receives Baseload Services. Section 2.1.6 Quality Control System, requirements are modified for Baseload units as follows:

- For 5% of units that receive Baseload Services, and all Baseload units for which a complaint is received from the customer or the contractor, apply items 2) c-g, 3, 5 and 6 from 2.1.6 Quality Control System.

If the Baseload job receives full weatherization, that inspection may count toward meeting the 5% QCS requirement.

Mobile Homes shall not be reported under Baseload Services. Mobile Homes shall be reported as a regular unit. If the unit comes out of deferral status, contact the HE+ Help Desk to request a rework job to account for the additional measures.

4.4 Future Full Weatherization

When full weatherization will occur within one year of the completion date of Baseload Services, the original water heater, refrigerator and/or freezer energy usage may be modeled to take credit for the energy savings. A comment shall be entered in the comment box on the Weatherization Assistant measure to explain that replacement(s) occurred under the Baseload Services Program.

4.5 Warranty Requirements

The Agency shall warranty Baseload Services workmanship and products for at least one year commencing from the date of installation.

To avoid excess costs associated with replacing failed light bulbs, light bulbs that fail within the warranty period shall be exchanged in a cost-effective manner, such as having customers bring failed light bulbs into the Agency office for exchange.

4.6 Expenditures, Budget Lines and Direct Labor Rate

Charge those costs associated with the *installation* of Baseload measures (e.g., measure-hours and materials) to the Wx Operations budget line only. Charge support costs related to Baseload Services to the Wx Program Support budget line, as allowable.

Count Baseload measure hours toward Available Production Hours in the Direct Labor Rate calculation; do not deduct Baseload measure hours.

The Agency may move unspent Baseload Services funds to the Wx Operations, Wx Health & Safety, or Wx Program Support budget lines.

Baseload Services Program Support costs are limited to Public Benefits and EAP funds.

5. Financial Standards

5.1 Procedures and Documentation

The Agency shall establish and maintain fiscal control and accounting procedures as set forth in Wis. Stats. 46.036(4) and the Omni Circular (2 CFR 200). These procedures shall be in writing and consistently applied, and shall include procedures for determining the reasonableness, allocability and allowability of costs in accordance with the provisions of the applicable Federal cost principles and the terms and conditions of the award. Agencies shall maintain accounting records on a double entry basis. Agencies are strongly encouraged to maintain records on the accrual basis of accounting. Agencies shall maintain separate accounting for distinct programs and activities, and for allocating program expenses to grants and awards that provide funding for the program.

If work is performed by Agency staff, charges to the weatherization program will be made on an actual cost basis. Agencies shall immediately notify the Division of any potential financial conditions that could adversely impact program operations. Examples of these conditions include: pending legal activity by a vendor, customer or employee; organizational cash flow shortages; allegations or investigations of fraud or embezzlement. Failure to notify the Division of potentially adverse financial conditions is grounds for immediate termination of the contract.

5.1.1 Source Documentation

Agencies shall maintain at least the following documentation of funding sources (see also 2.2.6 Record Retention):

1) Approval to secure funds,
2) Applications and requests for modifications,
3) Signed contract and modification approvals,
4) Board minutes, and
5) Proof of receipt/deposit slip, including date, amount, source of funds, and identification of receipt of funds in cash ledger.

5.1.2 Expenditure Documentation

Agencies shall maintain at least the following documentation of expenditures:

1) Written prior authorization where required,
2) Budget approval,
3) Budget amendment approval,
4) Extension of vendor contracts,
5) Internal prior authorization,
6) Purchase order,
7) Travel authorization,
8) Employee contract or time records signed by employee and supervisor,
9) Proof that goods or services were received,
10) Bill of lading and receipt or invoice marked “received” with initials or name of person accepting delivery, and
11) Proof of payment using check stubs or copies of checks/vouchers including:
    a) Source of funds,

b) Date paid,
c) Amount paid,
d) Authorization of payment, and
e) Identification of application in disbursement ledger.

5.1.3 Cash

Agencies shall make intact deposits (no cash back).

The Division does not allow cash payments except from petty cash.

It is not necessary to keep funds from separate grants (contracts) in separate bank accounts; however, Agencies shall maintain separate financial records for each grant.

Agencies shall perform bank reconciliation at least once per month.

Advances may only be used for allowable weatherization costs that occur during the grant period.

Grant funds may only be used for allowable weatherization program expenses. Any use of weatherization program funds for expenditures other than those allowed by the weatherization program, even on a temporary basis, may result in immediate termination of the contract.

5.1.4 Financial Audits

Agencies shall have a certified annual audit performed utilizing Generally Accepted Accounting Principles and Generally Accepted Auditing Standards.

Federally Funded Awards:
Governmental and Non-profit Grantees, or their assignees, that expend federal funds during their fiscal year shall comply with the Omni Circular (2 CFR 200) Subpart F, and the State Single Audit Guidelines issued by the Department. Audit reports are due to the Federal Audit Clearinghouse within the earlier of 30 calendar days after receipt of the auditor's report(s), or nine months after the end of the audit period.

State Funded Awards:
If an audit is required under the Omni Circular Subpart F as described above, then this section does not apply as State Funded Awards will already be included in that audit.

Governmental and Non-profit Grantees, or their assignees, which received state funds during their fiscal year, shall comply with the requirements set forth in the State Single Audit Guidelines issued by the Department. Audit reports are due to the Department within the earlier of 30 calendar days after receipt of the auditor's report(s), or nine months after the end of the audit period.

Review the Department of Administration's Single Audit Compliance Supplement for details on submission of the reporting package. Questions or comments on the State Single Audit Guidelines should be directed to the DOAS Single Audit Coordinator. In addition, audit reports should be emailed as a text searchable, unsecured PDF file to DOASSAGGeneral@wisconsin.gov.

Agencies shall have a method for resolving questioned costs.

The selection of the audit firm shall comply with procurement requirements, with the following exceptions:

1) A Request for Proposal (RFP) shall be used instead of Weatherization Request for Bid (RFB) template.
2) An RFP is required regardless of cost.

See 6.11 Financial Audit Request for Proposal for more information on procurement of financial audit services.

5.1.5 Interest Income

Interest income is income earned on advances of program funds. Agencies shall maintain unspent advance balances in interest bearing accounts. The accounts shall be liquid and carry no penalty for early withdrawal. During the contract year, advances are reallocated among program funding sources (DOE, LIHEAP and Public Benefits) as funds are expended.

Interest shall be allocated to the appropriate Weatherization funding source based on the advance funding at the time the interest was earned, as shown on WisWAP Interest Income Allocation Report. Agencies shall report interest earned monthly on the invoice in WisWAP. To the extent possible, interest earned after June 30, but associated with the prior year's contract shall be included in the closeout report. Any necessary amendments to the interest reported in the closeout may be conveyed to the Division by e-mail.

Interest earned on DOE funds **over $500** shall be returned to the State quarterly. Checks shall be made out to the U.S. Department of Energy and submitted to the Division. Interest earned on LIHEAP and Public Benefits funds, and interest earned on DOE funds totaling $500 or less may be retained by the Agency and shall be used for weatherization program purposes. Interest earnings are not Job Cost Reduction funds.

5.1.6 Material Purchasing

The Division does not permit blanket purchase orders. Material purchases shall be made for an individual job or managed through a material inventory system that tracks assignment to an individual job. There shall be documentation of each material purchase including:

- Vendor identification
- Job identification number (when applicable)
- Quantity
- Unit description
- Unit price
- Authorizing signature
- Date

For materials stored at the Agency there shall be a material inventory log, a record of all obligations and a way to identify unpaid obligations. .

5.2 Disallowed Costs

Disallowed costs are expenses that are not reimbursable using grant funds, as determined by the Division. If the Division cannot determine if expenditure is allowable due to inadequate records or documentation, the questioned cost will be disallowed. Agencies shall reimburse the Division for the amount of any disallowed costs. Disallowed costs include but are not limited to:

- Interest expenses paid with DOE funds.
- Rework expenses except when specifically authorized by the Division.
- Equipment and vehicle purchases with funds other than PB, except when a disposition or trade-in is specifically approved by the Division.
- Unusable, damaged or lost materials in excess of the limit specified in Section 5.3.2 below.

The Division ***does not*** allow the use of Training and Technical Assistance funds for:

- Wages and fringe benefits (except as noted in 5.3.7 below);
- Costs related to attending meetings (except as noted in 5.3.7 below); or
- Equipment purchases over the life of a contract that total more than $5,000, without prior written approval from the Division.

5.3 Allowable Costs

An Agency shall expend funds provided under contract in conformance with the approved Contract Work Plan (weatherization contract Attachment H) and the following limitations:

1) Administrative expenditures shall not exceed the budgeted amount per funding source and total administrative expenditures shall not exceed the percent specified in an Agency's contract of total actual allowable expenditures.
2) DOE Health and Safety budget shall not be overspent.
3) T&TA budget shall not be overspent, and under spent DOE T&TA funds shall not be used to cover over-spending of other funds.
4) Public Benefit (PB) funds may be used only in territories being served by a retail electric utility that is collecting fees and participating in the state Public Benefits Program under Wis. Stats. s.16.957.
5) Funds cannot be transferred between funding sources.
6) Expenditures shall meet reasonableness, allocability and allowability requirements.
7) Administrative and Support expenditures shall be invoiced from each fund proportional to the Operations expenditures, and should generally align with the monthly production plan in the Contract Planning Workbook. .
8) After the closeout of the contract cycle, the percentage of total annual budget expenditures (excluding T&TA) shall not exceed by more than 5% the percentage of annual unit goal completions, according to the WisWAP Monthly Production vs. Contract Plan Report.
9) Per 2 CFR 200.430, incentive compensation to employees based on efficient performance is allowable to the extent that the overall compensation is determined to be reasonable and incentive compensation is paid pursuant to an agreement entered into in good faith between the Agency and the employees before the services were rendered, or pursuant to an established bonus or incentive plan followed by the Agency.

Except as stated in 1 to 6 above, positive balances in one line item may be shifted to cover cost overruns in other line items. Costs shall be in accordance with pertinent state and federal regulations.

- All costs expensed to a contract shall fall within the contract period. The only exceptions are financial audits, which, even though the expense relates to a prior contract period, shall be expensed to the current contract.
- Expenditures incurred for the installation of allowable measures on a completed unit shall be reimbursed under the contract year the unit is reported completed. Costs for the installation of allowable measures may be accrued prior to the contract year in which a completed unit will be reported, and reimbursed when the unit is reported as completed (Advance funds shall not be used to cover these costs). To avoid disallowed costs, an Agency shall ensure that all measures are active and allowable under the subsequent contract.

5.3.1 Administration

Total Agency administrative expenses shall not exceed the contracted percent of total actual allowable expenditures.

Under administration, an Agency may charge salaries, wages and fringe benefits for weatherization-related personnel. For agency-wide administrative, human resource, finance and clerical positions, Agencies may charge as direct expenses only the portion of salaries, wages and fringe benefits that can be directly allocated to the Weatherization Program. Agency-wide administrative, human resource, finance and clerical costs that are directly expensed **cannot** also be recovered as indirect costs. For more information on direct and indirect costs see 2 CFR 200.413 and 2 CFR 200.414.

The Division allows as administrative expenses such items as:

- Space
- Supplies (paper, pencils, etc.)
- Furniture
- Operational equipment (fax machines, photocopy machines, etc.)
- Computer systems and supplies
- Telephone
- Postage
- Copying
- Utilities (Weatherization Program share)
- Training (including state-sponsored or Agency-developed training)
- Professional membership dues in business, technical and professional organizations and subscriptions to trade business, technical and professional periodicals
- Indirect costs, pursuant either to a federally-approved indirect cost rate, or election of a de minimis rate (see 2 CFR 200.414), but only up to the amount allowable in an Agency's administration budget lines, regardless of the federally approved or de minimis rate.
- Out-of-State travel (with prior Division approval) when directly related to operation/administration of the Weatherization Program and allowed by contract.

5.3.2 Operations

Operations expenses result from installing energy conservation measures (ECMs) and repair measures. Measure costs may be comprised of direct labor, materials, delivery, and contractor costs.

5.3.2.1 Direct Labor

The Agency shall include the following when calculating an agency direct labor rate:

- Direct labor costs, including taxes, vacation/holiday time, anticipated training time, and job prep/transportation time;
- Supervisory costs;
- Inventory control personnel;
- Warehousing (program share of space, utilities, etc.); and
- That portion of wages and fringe benefits for the program manager and other program staff that directly relate to crew and/or contractor field operation.

Agencies are required to use the Direct Labor Rate Calculation worksheet in the Contract Planning Workbook, posted on the Home Energy Plus website, to calculate their direct labor rate. This calculation shall be performed, at a minimum, prior to the start of the annual contracting cycle for planning purposes, any time there are significant personnel or cost changes, and/or as directed by the Division.

The Direct Labor Rate (DLR) worksheet in the Contract Planning Workbook is designed based on the assumption that the Agency will not use funds from the Training & Technical Assistance (T&TA) budget line for the wage costs of crew members or any staff splitting their time between Operations and Support (DLR-supported staff) involved in training activities. When these costs are known or can be anticipated, they should be recovered using the Operations and Health & Safety budget lines. Accordingly, enter anticipated training time for DLR-supported staff into the Contract Planning Workbook when this method is followed.

On a monthly basis, the Agency shall compute the variance between actual and recoverable direct labor expenses. Recoverable direct labor expenses are determined by multiplying measure hours completed by the direct labor rate. Agencies are required to maintain a record of measure hours completed. The use of the Direct Labor Rate Monthly Variance Tracking Spreadsheet, found in the Contract Planning Workbook and also posted on the Home Energy Plus website, to perform the monthly reconciliation is strongly recommended.

“Measure hours completed” shall be calculated in one of two ways:

1) All measure hours worked on completed and uncompleted jobs during the month, whether the job has been reported in WisWAP or not. Use this method if the agency’s policy is to expense direct labor costs when incurred, rather than to inventory unbilled labor costs.
2) All measure hours on jobs that have been completed and reported in WisWAP during the month. Use this method if the agency’s policy is to inventory unbilled labor costs, rather than expensing these costs when incurred.

The DLR shall be adjusted only if it has been determined that variances are unlikely to reverse, or self-correct prior to the end of the contract. If any changes occur to the DLR within the

contract, the agency shall update the WisWAP default DLR. Monthly reconciliation records shall be retained, and may be reviewed for any continuing pattern of excessively high variances between actual and recoverable direct labor expenses.

5.3.2.2 Materials Installed

The cost of materials installed that meet weatherization program standards and specifications (see 6.12 Specifications). If materials in stock no longer meet program specifications, an Agency may continue to install materials that met standards when purchased, until the stock of materials is depleted, unless the Division directs otherwise.

5.3.2.3 Delivery

The cost of having a third-party transport weatherization materials to the program warehouse or directly from the seller to the job site is an allowable cost.

5.3.2.4 Contractor Costs

The reasonable cost of the installation of weatherization measures by a private contractor.

5.3.2.5 Repair Costs

The cost of incidental repairs, if such repairs are necessary to make the installation of weatherization materials effective, are allowable costs when NEAT/MHEA auditing requirements have been followed as required.

5.3.2.6 Unusable Materials

Total charges for unusable materials shall not exceed 0.25 percent of the total contract year Operations, Health and Safety, and Baseload expenses. These costs shall not be charged to a weatherization job. These costs shall not include damage to installed materials or mechanicals. An Agency may only charge unusable materials exceeding 0.25 percent of the total contract year Operations expenses if approved, in writing, by the Division.

5.3.2.7 Job Cost Reduction

Job cost reduction funds are defined as the gross income earned during the contract year by an Agency from grant supported activities and contributions from outside sources such as local utilities or property owners (see 3.9 Owner Contributions) in support of an Agency's Weatherization Program. Weatherization resources shall not be used to earn income from activities not permitted by program rules. Job cost reduction funds shall be spent on allowable Weatherization Program activities. These activities are subject to the same regulations and conditions as other Weatherization Program funds. All income generated from the installation of allowable measures shall be returned to the weatherization program and used to weatherize additional units.

Job cost reduction funds shall be:

- Used within the contract year earned;
- Spent on the same job that generated the fund when feasible;
- Included in the total estimated cost when modeling the measure in Weatherization Assistant and;

- Reported in a WisWAP job measure when work is completed. All measures, including those paid for entirely with job cost reduction funds, shall be reported in the WisWAP job.

An Agency shall maintain financial records by contract year of job cost reduction funds earned and spent, including the source and amount. Records of the expenditure of job cost reduction funds shall follow the same general guidelines as contract funds.

Funds from other programs such as CDBG, HOME, some utility programs, or private foundation grants are generally not considered job cost reduction funds. Leveraged funds do not need to be recorded in WisWAP if the measure is paid in full with leveraged funds and performed independent from the weatherization job. For example, if a job is deferred due to a repair issue that will be addressed with CDBG funds, the job can remain in deferred status until the repair has been completed. After the deferral reason has been corrected the building status can be changed and the audit can be run without the corrected repair measure. If the SIR is greater than or equal to 1.0 the Agency may proceed with weatherization. Leveraged funds shall not be used to decrease the cost ("buy down") a measure in Weatherization Assistant.

5.3.3 Program Support

Program support costs are allowable costs when incurred in the provision of weatherization services as described in this section.

5.3.3.1 Support Labor

Support labor includes costs for staff directly managing weatherization activities and program staff. Agencies shall not include administrative, human resources, finance and clerical staff costs described in Section Administration 5.3.1 without prior written approval from the Division. To request approval Agencies shall submit a waiver request with the Contract Planning Workbook prior to the start of the contract year.

Allowable support labor costs directly tied to the installation of weatherization measures include:

- Direct supervision of weatherization program staff by the Weatherization Program Manager and/or Director;
- Energy audits;
- Final inspections;
- Procurement of weatherization services and commodities and associated contractor management;
- Training time not included in the Direct Labor Rate calculation;
- Data entry in WisWAP; and,
- Customer outreach, intake and scheduling appointments for agency field staff and contractors.

5.3.3.2 Transportation

This is the cost of transporting weatherization materials, tools, equipment, work crews, supervisory personnel and energy auditors. Vehicle usage expenses may include mileage reimbursement for non-agency owned vehicles and may also include expenses for agency-owned or leased vehicles used for weatherization, such as:

- Gas and oil
- License and taxes
- Tires and vehicle repairs
- Vehicle insurance (collision and liability)
- Vehicle purchase using PB funds
- Vehicle lease
- Vehicle lease termination
- Vehicle storage costs

Vehicles purchased or leased by the WAP that benefit more than one program may make the equipment available for use on other projects or programs provided that such use does not interfere with the work on the projects or program for which it was originally acquired.

A cost allocation for vehicle usage by other programs shall include an equitable distribution of reimbursement to the WAP for costs as noted above. Reference Wx Program Manual Section 7.3.1 regarding the requirement for completing an annual analysis of tracking and records management policy of vehicle maintenance activity.

5.3.3.3 Tools and Equipment

The Division allows the purchase and/or lease of tools and equipment necessary to install weatherization materials effectively. Tools and equipment shall include non-consumable items such as tape measures, insulation blowers, ladders and also consumable equipment (e.g., saber saw blades, replacement filters for dust masks, blades for utility knives, etc.). See Chapter 7 Equipment and Materials Management for further definitions of, and requirements for agency property.

Repair and maintenance costs for tools and equipment are also allowable costs.

5.3.3.4 Other Support

Other Support includes the following costs that occur as a result of staff performing weatherization tasks or contractors obtaining payment bonds:

- Telephones
- Office supplies
- Postage
- Copying
- Space
- Computer supplies and service contracts
- Computer equipment for production based activities
- Equipment lease or purchase (other than computers)
- Payment bond premiums (see 6.14 Bonding)
- Reimbursement of travel to attend meetings of the Weatherization Operators of Wisconsin (WOW)
- Staff uniforms (includes work boots)

5.3.4 Health and Safety

An Agency shall expense treatment of Health and Safety hazards in accordance with Chapter 9 Health and Safety. Health and Safety expenses are limited to $1,000 per unit unless a cumulative SIR≥1 is verified by a computerized audit. DOE Health and Safety expenses shall not exceed the DOE Health and Safety budget.

5.3.5 Liability Insurance

The Agency shall charge the cost of insurance for the following to this cost category:

- Personal injury
- Property damage
- Operations
- Product liability
- Pollution Occurrence Insurance (POI) – (also see 5.3.5.1 Pollution Occurrence Insurance (POI))

Payment of reasonable deductible amounts shall be allowable if a claim has been submitted to the policy issuer and with prior approval of the Division.

The Division strongly recommends that a competitive process is followed for an agency-wide purchase of a liability insurance policy; for example, receiving at least three quotes from an insurance broker.

The cost of mold and mildew coverage is ***not*** an allowable cost. The cost of liability insurance for vehicles is ***not*** allowed in this budget line item. It is a transportation cost. Self-insurance is ***not*** allowed.

5.3.5.1 Pollution Occurrence Insurance (POI)

DOE and DEHCR strongly recommend Agencies, Contractors and lower-tier subcontractors be covered by a POI policy. POI coverage is not allowed for vendors providing commodities only (including refrigerator/freezer delivery), or for contracts that provide services such as energy audits or final inspections. Recommended minimum limits are $500,000 per occurrence, $500,000 aggregate for the policy term, and a maximum $2,500 deductible per occurrence.

An Agency shall decide whether to cover its contractors under its POI insurance as “additional named insured” or pass the liability to such contractors. If an Agency chooses not to have POI, or has POI but chooses not to cover its contractors, it shall inform contractors, and require a signed waiver that indemnifies the agency and the state. The language suggested is as follows:

The Contractor shall indemnify and hold harmless the weatherization agency, the State of Wisconsin, and all of their officers, agents and employees from all suits, actions or claims of any character brought for or on account of any injuries or damages received by any persons or property resulting from the operations of the Contractor, or of any of its agents or subcontractors, in performing work under this Agreement.

Allowable costs are for a POI policy that covers WAP related work being performed under an agreement with a funding source to perform such work on their behalf. The cost for non-

weatherization program work covered under a POI policy performed by crews or contractors is not an allowable weatherization cost and shall be paid for from sources other than the weatherization contract.

If an Agency does not obtain POI or require Contractors to have POI, the cost to do remediation, clean up, relocation, medical expenses, the cost of any litigation/settlement or any other resulting cost is not an allowable weatherization expense and must be covered by another funding source.

For more information on POI see the WAPTAC FAQs – Pollution Occurrence Insurance.

5.3.6 Financial Audit

The Weatherization Program is classified as a major program as defined in Title 2 of the Code of Federal Regulations Subpart F – Audit Requirements.

An Agency shall charge the cost of the required financial and compliance audit of the Weatherization Program to the Financial Audit budget line. Do not include the cost of a financial audit in the agency's indirect cost rate. Separate funding is available for audit costs, and the costs shall ***not*** be paid with administrative funds.

The cost of a financial audit shall be ***either*** the cost of a separate audit of the Weatherization Program ***or*** the Weatherization portion of an agency-wide audit.

5.3.7 Training and Technical Assistance (T&TA)

An Agency shall not exceed the budgeted amount for Training and Technical Assistance.

Training and Technical Assistance activities are intended to maintain or increase the efficiency, quality and effectiveness of the Weatherization Program at all levels. Such activities shall be designed to maximize energy savings, minimize production costs, improve program management, crew and contractor quality of work, and reduce the potential for waste, fraud, abuse and mismanagement.

An Agency shall use T&TA Funds for:

- The cost of training programs and training materials;
- In-state travel costs and registration fees for training weatherization staff;
- The cost of subscriptions to weatherization program-related periodicals;
- Program evaluation costs, including labor costs, in accordance with the program budget;
- Costs associated with out-of-state training when allowed;
- The cost of training certifications that are required by the Division or DOE, including but not limited to, Energy Auditor, Lead-Safe Renovator, Asbestos Supervisor, and Asbestos Inspector.
- The cost of travel to Technical Development Work Group (TDWG) for designated employees;
- State-directed Agency meetings;
- All or part of the cost of training contractors (see 5.3.7.2 Contractor Training below); and
- Education for customers on energy conservation practices, including the information that is relevant to conditions noted in the home and the identification of the measures completed

on their home and how to maintain those measures over their lifetime. The Wisconsin Weatherization Customer Guidebook is designed to incorporate that information for the program's customers.

5.3.7.1 Labor Costs

Labor costs paid with T&TA funds are limited to:

- Labor that is directly linked to a specific training activity not included in the Direct Labor Rate calculation;
- Labor used to provide customer education; and
- Labor required as a part of program evaluation.

There shall be complete documentation of any labor costs associated with an Agency's internal training, including the training activity/topic, the hours involved in the training, and names and positions of those trained, the development and distribution of the individualized Weatherization Customer Guidebook, and the hours charged for the participation in and support of program evaluation (e.g., state or national evaluation).

5.3.7.2 Contractor Training

Any costs associated with training contractors shall be preceded with a retention agreement in exchange for the training. Reimbursement may include the registration fee, course materials, mileage, meals and lodging costs as specified in the retention agreement.

Whenever possible, the term of a retention agreement shall coincide with the one-year contract (between the Agency and the Contractor) or one-year renewal period. Otherwise, the retention agreement shall be for the duration of the contract from the time the training is provided, not to exceed one year. Training, but not certification as a Lead or Asbestos Company or maintenance of any certifications, may be provided to contractors meeting retention requirements. Note that the retention agreement requirement does not apply to Agency or State contractor orientation sessions or when Agencies provide instruction to contractors on improving technique as needed.

Agencies shall consider whether the term of the retention agreement aligns with the cost of training provided. Contact the Division for additional guidance regarding this, if needed. The required Retention Agreement Template can be found on the HE+ Procurement SharePoint site under "Post-Award Resources". The template may be edited as specified in the document.

5.3.7.3 Out-of-State Travel

Out-of-state travel for conferences or other training shall be approved on a case by case basis, unless a blanket approval is extended by the Division for a specific event. Submit requests to the HE+ Help Desk. Requests for out-of-state travel shall include:

- The name and position of the persons attending the event;
- The costs associated with their attendance at the event;
- An indication of how Agency participation will minimize production costs, and/or improve program management, and/or improve the quality of work; and
- The Agency's current level of unit and expenditure production (e. g., 110 percent).

5.3.8 Blending Funds (DOE, PB and EAP)

DOE funds shall only be used to weatherize one to four-unit site-built homes meeting all required DOE standards and specifications. PB and EAP funds are allowed for weatherization of all housing types. In general, funds may be blended (split) on a measure basis as allowed in WisWAP with the following exceptions.

If a customer refuses ventilation required by ASHRAE 62.2-2016, DOE funds shall not be used. All measures in the building must be invoiced to PB or EAP. See 8.8.2 Mechanical Ventilation.

The following measures are funded ***only*** by PB and EAP. In some areas where the utility does not participate in PB, EAP may be the only available funding source.

- Water Heater Conversion – Indirect Fired Water Heater
- Freezer – Replacement
- Freezer – Remove Additional Unit
- Health and Safety Air Quality – Other Remediation
- Window Replacements Door Replacements

Verify your agency has PB or EAP funding available for planned expenditures toward-these measures. See also Appendix B WisWAP Reporting Guidance.

5.3.9 Average Unit Cost

The Department of Energy (DOE) sets a limit on the **average amount** of DOE funds that can be spent **per unit**. For Program Year 2018 to 2019, the statewide Average Unit Cost limit is $7,261 for DOE funds. Agencies shall manage job costing to adhere to this average limit for DOE funds spent on all units completed in a contract year. DOE fund line items included in determining the Average Unit Cost are Program Support and Operations.

5.4 Reporting Requirements

The Agency shall submit reports to the Division on a monthly and contract basis. The Agency shall also submit special reports as requested by the Division.

An authorized agency representative shall review all reports and sign financial reports before submission. The Division reserves the right not to accept as timely, reports that are incomplete or inaccurate.

When submitting electronic financial reports, clicking the “Approve” button in WisWAP has the same implications as a signature, and shall only be performed by an authorized Agency representative.

5.4.1 Monthly Financial Reports

Monthly reports shall be submitted through the WisWAP electronic system by the fifteenth (15th) day following each contract month. Completed unit information to be included on the monthly invoice can be entered any time before the invoice is created.

Electronic reports received by the 5th of the month will be reimbursed first and a second reimbursement for those received by the 15th. If the 5th or the 15th of the month fall on a weekend or holiday, the deadline is extended to the next following business day.

Monthly financial reports are subject to a four-stage approval process before reimbursement:

1) Initial Agency approval;
2) Agency authorized representative approval;
3) DEHCR representative approval; and
4) Division of Administrative Services (DOAS) representative approval.

The expenditure reports shall present an accurate statement of allowable costs incurred for the month. The Agency shall submit separate Weatherization Expenditure Reports each month for each grant funding source.

5.4.2 Unit Reporting

All measures identified in a work order shall be invoiced in the contract year the unit is reported as complete. If a measure is completed and invoiced, the unit shall be completed in that contract year. If the unit is not completed by the end of the contract year, any invoiced measure costs will be disallowed and shall be backed out and reentered for the new contract year. Costs for the installation of allowable measures may be accrued prior to the contract year in which the completed unit will be reported, and then reimbursed when the unit is reported as complete. To avoid disallowed costs, care shall be taken to ensure that all measures are active and allowable under the subsequent contract.

5.4.3 Final Program Review (Close-Out Report)

The Agency shall submit the Final Program Review Close-Out Report (Close-Out Report) to the Division no later than 60 calendar days from the end of the contract period or upon termination of a contract. No production charges are allowed unless approved by the Division.

The Close-Out Report contains multiple parts. The Division does not consider the Close-Out Report finalized until each of the multiple parts is submitted and approved.

The Close-Out Report consists of the following:

1) Electronic submittal using the Division Close-Out Report Excel Spreadsheet which includes:
   a) Return of Unspent Advance Funds, by funding source, if applicable;
   b) Return of Overspent Admin Amount, if applicable;
   c) Total Number of Completed Units;
   d) Job Cost Reduction Reconciliation;
   e) Tool and Equipment Purchase of items with an acquisition cost of $5,000 or more when DOE or LIHEAP funds were used for the purchase;
   f) Vehicles Purchased and Leased when DOE or LIHEAP funds were used for the purchase;
   g) Program Support Expended to Planned;
   h) Interest Income Earned from Advances, by Fund Source; and
   i) Admin Expended as a % of Total Actual Allowable Expenses.

2) Checks for the return of unspent advance funds and/or overspent administration, if applicable, are to be made payable to the Department of Administration.

The Close-Out Report shall be submitted via e-mail to DOADEHCRFiscal@wisconsin.gov with the subject line 'Close-Out Report.'

5.4.3.1 Final Month 13 Close-Out Invoice

An Agency shall submit, electronically through WisWAP, a final month 13 invoice for each fund.

5.4.3.2 Units Completed

An Agency shall report the total number of units completed during the contract period on the Close-Out Report. The total number of units shall reconcile to the Average Invoice Cost per Unit WisWAP report which can be found in Reports/Invoice Costs/Average Invoice Costs per Unit.

5.4.3.3 Job Cost Reduction (JCR) Reconciliation

An Agency shall report the following JCR information on the Close-Out Report:

1) Enter the Total Cost Reductions amount earned in the contract year; and
2) Enter the total Amount Expended in WisWAP in the contract year.

The Total Cost Reductions amount and the total Amount Expended in WisWAP shall reconcile to the Average Cost per Measure WisWAP report found in Reports/Job Costs/Average Cost per Measure.

5.4.3.4 Tool and Equipment Purchased

If an Agency used federal funds (DOE or LIHEAP) to purchase tools or equipment with an individual purchase price of $5,000 or more, the Agency shall provide a list and include the item description, purchase price, funding source(s) and, if applicable, the percent of funding split if purchased with more than one fund source. Include a total dollar amount for the equipment expenditures listed.

5.4.3.5 Vehicles Purchased/Leased

If an Agency used federal funds (DOE or LIHEAP) to purchase and/or lease a vehicle with a purchase price of $5,000 or more, the Agency shall provide a list of vehicles purchased and/or leased and shall include the vehicle year and model, purchase price, funding source(s) and, if applicable, the percent of funding split if purchased with more than one fund source. Include a total dollar amount for all vehicle purchase(s)/lease(s) listed.

5.4.3.6 Interest Income Earned from Advances

An Agency shall identify, by fund source, per contract year, the amount of interest earned from each funding source and the amount of DOE interest returned to the Division. Close-Out Reports will not be finalized until any interest owed to DOE has been returned and the Close-Out invoice reflects the amount returned. See also 5.4.3 Final Program Review (Close-Out Report).

5.4.3.7 Weatherization Interest Income Allocation Report

The Interest Income Allocation Report is available on WisWAP to assist Agencies with properly reporting all interest income earned on advance funds to the proper fund source (EAP, PB, and DOE). Advances are made from one or more contract funds at the beginning of the contract year and Agencies are required to maintain advance amounts received in an interest-bearing bank account. As individual contract funds are expended through the course of the contract period it is necessary for advance amounts to be reallocated to contract funds with sufficient available balances. The Interest Income Allocation report provides Agencies with the correct percent allocation breakdown by fund for the month they are reporting expenses. Agencies are required to use this report when reporting interest income amounts earned on the monthly invoice. The invoice will have the total amount of interest reported by date, broken out by funding source.

The Interest Income Allocation report is found in WisWAP under Reports/Invoice Costs/Interest Income Allocation. The report parameters will default to the current contract year and your Agency ID/Name (based on user login credentials). Select the contract month for which expenses are being reported and click Create Report. The report results will display the percentage by fund to which an Agency shall allocate and report any interest income earned on that month's invoice.

5.4.3.8 Admin Expended

An Agency shall calculate the amount of allowable admin that can be reimbursed based on the total funds expended through closeout, including Job Cost Reduction, multiplied by the final approved Weatherization Monthly Contract Plan Administration Rate.

5.4.3.9 Special Reports

Special reports may be requested from the Agency by the Division regarding program operations, customer services and energy savings, or other as defined by the Division. Special reports shall be submitted as indicated on the request.

6. Procurement

6.1 Procurement Requirements

Agencies shall comply with all procurement requirements of the Weatherization Program. Such requirements include a combination of State of Wisconsin and federal requirements (Office of Management and Budget Circulars; Code of Federal Regulations 2 CFR 200; Weatherization Program Notices; and all other applicable federal requirements). Requirements apply, regardless of their inclusion in this Manual.

An Agency is subject to the following general requirements:

1) Maintain records sufficient to detail the history of a procurement and retain documentation to demonstrate compliance with requirements. These records shall include the following: a rationale for the method of procurement, selection of contract type, contractor selection or rejections, and the basis for the contract price. Optional Procurement Records Checklists are available on the HE+ Procurement SharePoint site under the Pre-Award Resources heading.
2) Demonstrate effort to utilize small businesses, minority-owned, women-owned and disabled veteran-owned businesses (see 6.13 Affirmative Action/Contract Compliance).
3) Follow open records requirements after a bid process is complete and contracts are executed with selected vendors. All open records requests are determined on a case-by-case basis (see Wis. Stats. Chapter 19, subchapter II, sections 19.21 through 19.39 and PRO-D-23).
4) Be responsive to inquiries or requests for information from bidders following a commodities contract award.
5) Award contracts to the lowest responsive and responsible bidder(s), if in the best interests of the Agency.
6) Award contracts only to responsible contractors who possess the ability to perform successfully under the terms and conditions of a procurement.

6.2 Code of Conduct

An Agency shall maintain a code, or standard, of conduct that will govern the performance of its officers, employees and agents engaged in the awarding and operation of contracts.

No employee, officer or agent of the Agency shall participate in the selection, award or administration of a contract supported by Federal or State funds if a real or apparent conflict of interest exists. Accepting gratuities, favors, anything of monetary value from contractors, or having a financial interest in a firm selected for award, would cause a real or apparent conflict of interest to exist.

6.3 Annual Procurement Planning

Annual planning to determine an Agency's procurement needs is strongly recommended by the Division. An annual procurement planning template is available on the HE+ Procurement SharePoint page under the Pre-Award Resources heading. This template can assist an Agency with annual procurement planning, including identifying commodities and services to be acquired, and the timing and method of procurement based on potential contract cost. Use of this template is optional.

6.4 Competition

All procurements shall be conducted in a manner to provide open and free competition. Agencies should be alert to organizational conflicts of interest and non-competitive practices among contractors that may restrict or eliminate competition or otherwise restrain trade.

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

6.5 Cost Analysis

If an Agency is considering a change from using primarily Agency staff to subcontracting for a service (or the reverse), the Agency shall perform a cost analysis and contact the Division for approval prior to implementing the change. Agencies shall document the results in the procurement file.

Agency procedures shall provide for a review of proposed procurements to avoid purchase of unnecessary or duplicative items. Consideration shall be given to consolidating or separating procurements to obtain a more economical purchase. Where appropriate, an analysis of lease versus purchase alternatives shall be performed to determine the most economical approach.

6.6 Procurement Method and Contract Cost

Applicable requirements shall be followed based on the estimated contract cost, including:

1) Estimated contract cost shall be based on a determination of whether commodities or services could reasonably be acquired from a single procurement. When an Agency chooses to purchase like items in separate purchases, the rationale for this decision shall be documented as part of the cost analysis (e.g., HE+ Emergency Furnace and Weatherization HVAC services were purchased separately due to the unique requirements for Emergency Furnace service).
2) Serial contracting is the practice of issuing a series of smaller purchase orders to one or more vendors for the same commodity or service in order to avoid the sealed bid process. Serial contracting is prohibited.
3) Agencies shall plan procurements to ensure that serial purchasing does not occur. Commodities or services that can logically be grouped together (refrigerators and freezers; bath fans and range hoods; miscellaneous weatherization materials such as lumber, hardware and adhesives, etc.) shall be procured using a method based on the anticipated aggregate dollar threshold. This aggregate total is for the term of the fiscal year beginning July 1. See Table 6-1 below.
4) Potential contract extensions shall be taken into account when calculating the aggregate total for all procurement types.
5) When a building requires specialized equipment or services, including specialized expertise that is not covered under a prior procurement, a separate procurement is required. Provide bidders with the opportunity to acquire detailed information that allows accurate pricing for the complete scope of work.
6) When necessary equipment or services are covered under a prior procurement Agencies have the option to perform a separate procurement for specialized or unique situations and are encouraged to do so if this option will likely result in lower overall costs.

Table 6-1 Procurement Methods and Requirements for Non-Vehicle Purchases

Requirements	Best Judgment $3,500 or less	Simplified Bid $3,501 – 50,000	Sealed Bid (RFB) Over $50,000
File Records demonstrating need and detailing history of the procurement	Required	Required	Required
Identify all applicable standards and specifications	Required	Required	Required
Solicitation List	Optional	Strongly Recommended	Required
Minimum number of bid prices required	n/a	3	3 (when available)
Cost Sheets	Optional	Required	Required
Term of Contract	Purchase Order	Up to 3 years (with renewals)	Up to 3 years (with renewals)
Terms and Conditions	Purchase Order	Required	Required
HE+ Bid Template	n/a	Optional	Required
Public Notice of Intent	n/a	n/a	Required
Bid Meeting	n/a	Optional	Required as necessary
Public Bid Opening	n/a	n/a	Required
Awards to Multiple Bidders	n/a	Optional	Strongly Recommended
AA/CC	Optional	Optional	Required for services contracts only
MBE Search	Optional	Optional	Required
Payment Bonds	Optional	Optional	Required for services contracts only (see Section 6.15)
Retention Agreement	n/a	Required if a 1-year contract is signed and Agency will reimburse contractor T&TA expenses	Required if Agency will reimburse contractor T&TA expenses
Method of Award	Vendor judged best able to supply goods or services	Lowest Responsible Bidder	Lowest Responsible Bidder
Contract Renewal	n/a	Optional for one year periods (maximum 2); notice **must** be given in original bid specifications	

Applicable requirements from 2 CFR 200 shall be followed, including:

1) The “cost plus a percentage of cost” and the “percentage of construction cost” methods of contracting shall not be used.

2) Agencies shall not use time and material type contracts, unless prior written approval has been obtained from the Division, and only:
   a) After a determination that no other contract is suitable (the determination shall document why it is not possible to estimate the extent of work, the duration of work, or the anticipated costs), and
   b) If the contract includes a ceiling price that the contractor would exceed at their own risk.

More specific guidance on conducting various procurement methods is available on the HE+ Procurement SharePoint site. Agencies should contact the Help Desk if an exception is identified or if further guidance is required.

6.7 Purchases up to $50,000

The requirement to identify the applicable Wisconsin Weatherization Field Guide and Weatherization Program Manual standards and specifications applies to both forms of procurements up to $50,000 (See 6.12 Specifications).

6.7.1 Best Judgment Purchases $3,500 or Less

When the estimated cost of a transaction is $3,500 or less, an Agency shall select the vendor judged best able to supply the goods or services. Consider the following when selecting a vendor:

1) Location of delivery point.
2) Quality of goods/service to be supplied.
3) Price.
4) Conformity with specifications and standards.
5) Purpose for which the goods/services are required.
6) Date of delivery.
7) Capacity to supply the goods/services in a timely manner.

6.7.2 Simplified Bid Purchases $3,501 to $50,000

When the estimated cost of a transaction, or multiple like transactions, is between $3,501 and $50,000, an Agency shall demonstrate a good faith effort to obtain bid prices from three or more qualified bidders and make a selection based on lowest price. These bid prices may be:

1) Written price quotes;
2) Quotes on file (e.g. catalogs, on-line print-outs, etc.);
3) Telephone or other oral quotes:
   a) Oral quotes shall include the name of the firm and individual, date, price quote, delivery information and other pertinent information.
   b) When an oral quote is accepted, the bidder must confirm the bid in writing.
4) Written bids.

To increase the likelihood of a pool of qualified bidders, developing a solicitation list is strongly recommended (retain this documentation as part of the procurement record).

When procuring services with a simplified bid, bidders shall be provided with a written document that includes: method of award, cost sheet, specifications and applicable terms and conditions. The Agency shall use the modified version of the terms and conditions for Simplified Bidding available on the HE+ Procurement SharePoint page and select the terms and conditions applicable to the procurement action.

Document all received bids on a written bid summary form. The form may be any format designed by the Agency; however, it shall contain information showing the basis for the selection (e.g., low cost, delivery terms, etc.). An exception to this requirement applies to vehicle purchases $3,501 to $50,000 (see 6.10.1).

The contract renewal terms identified in Section 6.8.3 may also be incorporated into a simplified bid process, using the same conditions.

6.8 Sealed Bid Purchases over $50,000

The Sealed Bid process is used for soliciting bids from at least three bidders (when available) when the procurement is expected to cost over $50,000. This process is also referred to as Request for Bid (RFB). There are different requirements for procurement of vehicles over $50,000 (see 6.10). A Request for Proposal (RFP) process is required for financial audit services regardless of cost (see 6.11).

For the procurement of services and commodities, except for a financial audit, the Agency shall use the required templates and attachments available on the HE+ Procurement SharePoint page. Agencies shall modify RFB templates only as directed by notes within the documents and by direction provided by the Division. Cost sheet and specification attachments may be edited by the Agency as needed.

6.8.1 Bid Procedures

The following requirements apply to Sealed Bid procurements:

1) Documentation of compliance with requirements shall be retained.
2) Use of a solicitation list to announce the procurement (including potential vendors/contractors). The Agency shall ensure that lists of persons, firms or products, which are used in acquiring goods and services, are current and include enough qualified sources to ensure open and free competition.
3) Publishing a public Notice of Intent to request bids in a local/regional newspaper that reaches potential vendors for the service territory. Trade, civic, or social publications may provide additional means of attracting small, veteran-owned, minority, or handicapped business bidders.
4) See VendorNet PRO-C-5, X. Public opening and reading of bids.
5) Faxed or emailed bids are not allowed. An Agency may propose a system for accepting email bids, but written Division approval is required prior to implementation.
6) Agencies may award contracts to multiple bidders to ensure adequate capacity for timely completion of contracts. Bid awards to multiple contractors are strongly recommended and shall be clearly stated in the Method of Award. See the HE+ Procurement SharePoint page for Method of Award examples.

7) Follow the Minor Omissions Policy for Weatherization Agency Procurements available on the HE+ Procurement SharePoint page under the Policy heading. No change is allowed that would impair the interests of the agency or would be inequitable to other bidders, and in no event shall a bidder be allowed to change the unit price, volume or quantity provided in its original bid. For more information see PRO-C-5 Section VII.
8) If less than three bids are received the Agency shall ensure procurement file documentation demonstrates due diligence in conducting a competitive procurement process and that the bid price accepted is reasonable (2 CFR 200.320(f)). Follow the guidance below from PRO-C-15, VII to ensure documentation demonstrates:
    a. The probability of receiving more than one bid existed at the time of solicitation;
    b. The receipt of less than three responses was not due to restrictive specifications or conditions;
    c. The bid price received is fair; and,
    d. Resolicitation will probably not elicit further bids.

6.8.2 Cost Sheet Requirements

When a procurement includes a labor rate (time) or material mark-up percentage, these costs shall be incorporated into the calculation of Grand Total Cost, as identified in the example cost sheet below.

To the maximum extent possible, the Agency shall define the items to be procured as fixed price items, including time (e.g., installation of measures). There may be exceptions in which the Grand Total Cost requirement does not apply; contact the Help Desk for guidance.

The following cost sheet is provided as an example to clarify this requirement:

Measures - cost of materials & installation	**Estimated Quantity**	**Unit Cost**	**Total item cost**
Measure a	12	$1,056	$12,672
Measure b	80	$2,030	$162,400
Measure c	44	$456	$20,064
Category 1 Total			$195,136
Measure x	10	$55	$550
Measure y	17	$343	$5,831
Measure z	11	$17	$187
Category 2 Total			$6,568
Additional labor hours	1000	$40	$40,000
	Value	Bidder provided %	
Misc. materials mark-up	$1000	15%	$150
GRAND TOTAL			**$241,854**

6.8.3 Contract Renewal

A contract resulting from a HE+ Weatherization or Furnace Program RFB, or simplified bid process, may be renewed for two (2) additional one (1) year periods, for a total of three (3) years, if:

1) Notice was given in the original bid specifications, and
2) Agreement is by mutual consent.

This time period is at the discretion of the Agency and may be modified by the Agency to provide either no renewals, or a one-year renewal only.

6.9 Price Increases

Price increases to a contract, including contract renewals, are limited to fully documented cost increases to the contractor which are demonstrated to be industry wide. This applies to contracts resulting from both simplified and sealed bid procurements.

An allowable price increase applies only to materials costs, not to unit installation costs (labor).

6.10 Vehicle Lease or Purchase

Vehicle lease or purchase shall be based on a demonstrated Agency need.

Only PB funds, funds resulting from an approved disposition, or an approved disposition applied as a trade-in, may be used to **purchase** vehicles. PB, DOE, or LIHEAP funds may be used to **lease** vehicles.

Agencies shall request Division approval for vehicle purchases with a total purchase price over $5,000 per unit (see 7.1 Property). A disposition request and a request for purchase may be submitted to the Division at the same time. An optional disposal/approval template is available on the HE+ Procurement SharePoint site.

Agencies shall use the total purchase price to determine a procurement method, and whether permission to purchase is required. If trading in vehicles, the trade-in value shall not be deducted when determining the total purchase price and procurement method.

When the estimated lease or purchase cost of a vehicle is $3,500 or less, an Agency shall select the vendor judged best able to supply the required vehicle. Agencies shall use a modified simplified bid process for lease or purchase of vehicles totaling $3,501 to $50,000. Agencies shall use a sealed bid process for lease or purchase of vehicles totaling more than $50,000. See Table 6-2 below.

If leasing vehicles, Agencies shall use the total vehicle purchase price as the basis for the lease contract amount.

If exercising an option to buy a vehicle at end of lease term, Agencies are allowed the option of reviewing recent local/regional auction sales and NADA Blue Book values of comparable vehicles as sufficient justification to buy a vehicle out of lease at a competitive price. This option is based on program efficiencies realized due to the vehicle already being in service, and

knowledge of vehicle's operating and maintenance history, etc. Agencies shall maintain full documentation of comparable vehicle pricing reviews.

Table 6-2 Vehicle Procurement Method

		Procurement Method (based on total cost)		
	Allowable Funds	**$3,500 or less**	**$3,501 – $50,000**	**Over $50,000**
Purchase	PB Division approved trade-in or disposal	Best Judgment (see 6.7.1)	Modified Simplified Bid (see 6.10.1)	Sealed Bid (see 6.10.2)
Lease	PB DOE LIHEAP			

6.10.1 Modified Simplified Bid for Vehicle Lease or Purchase $3,501 to $50,000

The Division will allow lease or purchase of new or used vehicles through a modified simplified bid process. Prior to beginning procurement, the Agency shall ensure equal comparison between vehicles and provide vendors with specifications that are specific enough to meet the Agency needs, yet also encourage competition.

Do not include specification features that may preclude the ability of a vendor to bid (must have a "Hemi" engine, specific color, etc.). This process is particularly important when considering used vehicles. See 6.10.2 for additional requirements on vehicle purchases.

The following requirements apply to lease or purchase of new or used vehicles through a modified simplified bid:

1) All vehicles shall be purchased only with PB funds, funds resulting from an approved disposition, or an approved disposition applied as trade-in.
2) PB, DOE, or LIHEAP funds may be used to lease vehicles.
3) A minimum of 3 bids shall be obtained from qualified vendors.
4) Notice shall be provided to an appropriate list of potential bidders.
5) Specific information shall be provided to all bidders (e.g., location of delivery point, dealer to pay for delivery, specifications and standards, date of delivery, and quality).
6) Consider quality of vehicle to be supplied, price of vehicle including delivery, conformity with specifications, purpose for which the vehicle is required, and date of delivery.
7) The Sealed Bid process is required when a total of more than $50,000 of vehicles will be purchased, regardless of the number of vendors or vehicle types.

6.10.2 Sealed Bid Vehicle Lease or Purchase from Sources Other than Agency

Agencies shall use a sealed bid process for lease or purchase of vehicles totaling more than $50,000. See general procurement guidelines (Section 6.8) for purchases in excess of $50,000

and obtain a minimum of three (3) bids. See the HE+ Procurement SharePoint page for a Vehicle RFB template.

The Agency shall have possession of the purchased vehicles and the title during the term of the contract when the purchase was made.

The following requirements apply to Vehicle lease agreements and purchases:

1) Vehicle Specifications:
   a) Age of vehicle (if used)
   b) Mileage (if used)
   c) Vehicle type
   d) Body style
   e) Size (½ ton, 1 ton, etc.)
   f) Engine size
   g) Accessories/options
   h) Description of vehicle's general condition (if used)
   i) Early lease termination clause
   j) Lease/purchase contract conditions
2) Obtain a minimum of three sealed bids from different sources for lease of similar types of vehicles for the same time period.
3) Leases with maintenance clauses may not be compared to those without them.

6.10.3 Vehicle Lease from Agency

The Agency may lease vehicles it owns to its weatherization operation. The Division allows cost allocations to the extent that the costs are reasonable according to:

1) Costs of comparable vehicles, if any;
2) Market conditions in the area; and
3) Type, life expectancy, condition and value of the leased vehicle.

If the Agency leases a vehicle to the Weatherization Program, charges to the Program may not exceed the actual costs to the Agency. Agency costs may include purchase price, interest, lease administration charges, maintenance, etc.

If the vehicle was purchased with Weatherization Program (state or federal) funds, the Agency may not charge lease costs of the vehicle to the Weatherization Program. It may be used by the Weatherization Program but not paid for a second time with Weatherization Program (state or federal) funds.

If the vehicle was **not** purchased with Weatherization Program funds, the Agency may charge lease costs of the vehicle to the Weatherization Program.

To document the rationale for leased vehicles, keep the following information on file and available for review:

1) Vehicle Specifications:
   a) Age of vehicle (if used)
   b) Mileage (if used)
   c) Vehicle type
   d) Body style
   e) Size (½ ton, 1 ton, etc.)
   f) Engine size
   g) Accessories/options
   h) Description of vehicle's general condition (if used)
   i) Early lease termination clause
   j) Lease/purchase contract conditions
2) Competitive bids from other sources for lease of similar types of vehicles for the same time period.
3) An explanation of how the lease amount was computed, the methodology used and the amount of lease termination costs.
4) Justification, including detail of total lease costs compared to purchase costs.
5) Leases with maintenance clauses may not be compared to those without them.

6.11 Financial Audit Request for Proposal

For the procurement of financial audit services, a Request for Proposal (RFP) shall be utilized and the following requirements apply:

1) Requests for Proposals (RFP) shall be publicized or an optional audit firm solicitation list is available from the Division to meet the publicizing requirement. This list includes financial audit firms who have experience auditing Wisconsin Weatherization Programs. Contact the Help Desk to request the solicitation list. Any response to publicized requests for proposals shall be honored to the maximum extent practical;
2) Proposals shall be solicited from an adequate number of qualified Financial Audit firms and Invitation to Propose letters shall be sent out one month prior to RFP release date;
3) RFP should contain language identifying the type of audit experience required;
4) There shall be a method for conducting technical evaluations of the proposals received and for selecting the awardee; and
5) All evaluation factors and their relative importance shall be identified in the Request for Proposals;
6) Awards will be made to the responsible firm whose proposal is most advantageous to the program, with price and other factors considered.
7) Also see Vendornet PRO-C-12 for further guidance on RFP procedures and requirements.

6.12 Specifications

An Agency shall define and provide the specifications for goods or services to be acquired for each simplified and sealed bid procurement. To meet this requirement, an Agency shall identify the applicable Wisconsin Weatherization Field Guide requirements and Weatherization Manual standards and policies, and follow the Wisconsin Weatherization Materials and Specifications in

Attachment C. The specifications and procurement templates are available in editable formats on the HE+ Procurement SharePoint.

Installation of materials shall follow required health and safety protocols and shall be of professional quality in order to ensure the effectiveness of the measure.. The Agency shall require materials and installation standards meet the standards set forth in the Weatherization Manual, annual contract requirements, or 10 CFR Part 440, Appendix A, whichever is more restrictive. Agencies shall ensure that bidders have access to these standards by providing the standards as part of the simplified or sealed bid package. A bidder's products and services may exceed standards.

Agencies shall comply with the following requirements for specifications:

1) Specifications presented to potential bidders shall define the product or end result of the contract, and the time in which contract performance is to be completed.
2) Develop specifications to preclude restrictive provisions and encourage bidder competition.
3) Develop specifications to permit the lowest responsible bid to be the principal basis of award.
4) Use performance criteria that will not restrict competition or limit the number of sources bidding.
5) Use generic specifications with no trade or brand names.
6) The procurement specifications shall not exceed materials and installation standards and service requirements, as stated in the Weatherization Program Manual and Field Guide, without prior written approval from the Division.
7) Properly identify scope of work (items to be included in the bid) and material/equipment specifications to achieve equitable cost comparison and expected building outcomes. When the complexity of the project requires design, include the design parameters.

6.13 Affirmative Action/Contract Compliance

Affirmative Action/Contract Compliance (AA/CC) requirements identified in s.16.765, Wis. Stats., and Department of Administration, Administrative Code, Chapter 50, apply to Agency procurements as follows:

1) When a purchase for services for which the Agency is under contract with the Division to provide are subcontracted and the resulting contract is estimated to be over $50,000, the Agency shall ensure that AA/CC requirements are met as described in this section. Such services include auditing, inspection and installation of materials and commodities. Financial audit services are not subject to AA/CC requirements (see also 5.3.6 Financial Audit).
2) Procurement of commodities (e.g., materials, equipment, or major mechanicals) for installation by Agency staff is not subject to the AA/CC requirement.
3) Procurement of refrigerators/freezers, including installation/removal by the vendor, is considered to be a commodity and is not subject to the AA/CC requirement.
4) AA/CC provisions shall be included as part of Sealed RFB and RFP procurements. AA/CC does not apply as a result of cumulative expenditures awarded through separate contracts.
5) Contractors with fewer than 50 employees are exempt from having an AA Plan, but must submit an exemption request to the Agency.
6) The Agency shall review and approve AA plans. Plans or exemption requests shall be processed within fifteen (15) working days of receipt.

7) Once a plan is approved, the Agency shall provide the contractor with the required notice (Compliance Law Poster) that sets forth the provisions of the State of Wisconsin nondiscrimination clause.
8) The AA/CC requirements do not apply to a contractor's lower-tier subcontractors (these requirements only transfer down one tier from the Agency).

Procurement file documentation shall include, at a minimum:

1) Approved Affirmative Action Plan or Exemption Request for each services contractor.
2) Information related to approval or denial of plan or exemption request.
3) Other items as directed by the Division.

6.13.1 Affirmative Steps

In outreach and design of the bid package, an Agency shall follow the Affirmative Steps requirements identified in 2 CFR 200.321 to ensure that small and minority firms, women's business enterprises and disabled veteran-owned business enterprises have the opportunity to participate in the bid. These steps shall include:

1) Including qualified small and minority firms, women's business enterprises and disabled veteran-owned business enterprises on solicitation lists whenever they are potential resources.
2) Dividing total requirements and establishing delivery schedules, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority firms, women's business enterprises and disabled veteran-owned business enterprises.
3) Using the services and assistance of the Small Business Administration, and the Minority Business Development Agency of the U.S. Department of Commerce.
4) Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed above.

Affirmative Steps Definitions:

1) "Small business" means a business which has had less than $1.5 million in gross annual sales in the most recent calendar or fiscal year (Wis. Stats. s. 16.75(4)(c)).
2) "Women's business enterprise" (WBE) means a business that is at least 51 percent owned, controlled and actively managed by a woman or women (Wis. Adm. Code Admin 83.12(53)).
3) "Minority business enterprise" (MBE) is a business certified by the Department of Administration under Wis. Stats. s. 16.287. "Minority" means any of the following: Black American, Hispanic American, American Indian, Eskimo, Aleut, native Hawaiian, American Asian-Indian, and an American of Asian-Pacific origin (Wis. Adm. Code Admin 84.02(29)).
4) "Disabled Veteran-owned Business Enterprise" (DVB) is a business certified by the Department of Administration as at least 51% owned, controlled, and actively managed by disabled veteran group members.

6.13.2 Documentation of Affirmative Steps

Documentation shall show that the Agency followed the Affirmative Steps for each Sealed RFB. At a minimum, such documentation shall include a copy of the solicitation list developed for each procurement and a printout of the search results for certified MBE, WBE and DVB businesses from the DOA Wisconsin Supplier Diversity Program, Business Search. The search shall be based on 'products/services' and 'county'.

6.13.3 Supplier Diversity Preference

Qualified bids from certified MBE or Disabled Veteran-owned Business Enterprises DVB may be provided up to a five percent (5%) bid preference, in accordance with Wis. Stats. s. 16.75(3m).

1) To apply this requirement, take the lowest bid and add 5%; if a certified MBE or DVB bid price is within that amount, the MBE/DVB is awarded the bid.
2) For example, a low bid = $1,000; $1,000 x 1.05 = $1,050. If the MBE/DVB firm submits a bid of $1,050 or less, they are awarded the bid.
3) For more guidance see PRO-D-1 and the DOA Supplier Diversity Program.

6.14 Ineligible Vendor Listings

Prior to entering into a contract with a winning bidder the Agency shall verify the contractor is not listed on the following:

1) Wisconsin Office of Contract Compliance Vendor Directory lists vendors that remain ineligible based on their failure to satisfy s.16.765, Wis. Stats. This list only applies to services contracts over $50,000 (see also Section 6.13 above).
2) Certification for Collection of Sales and Use Tax Vendor Directory lists vendors determined to be ineligible by the Wisconsin Department of Revenue for non-compliance with tax law listed in s.77.66, Wis. Stats.
3) Office of Federal Contract Compliance Programs Debarred Companies

Instructions for conducting the ineligible vendor verifications are available in the HE+ Procurement SharePoint document library under “Pre-Award Resources”. See also Appendix A: Wisconsin WAP Terms and Conditions, Section 14.0 Applicable Law and Compliance.

6.15 Bonding

Payment bonds are required for all weatherization and HE+ Furnace program services contracts exceeding $149,999 annually and where wholesaler or subcontractor partnerships are utilized to deliver services (2 CFR 200.325; PRO-C-19). The Division may grant a waiver to the payment bond requirement if a potential bidder provides proof of a contractor bond for construction work performed in the State of Wisconsin. The Agency shall submit a waiver request to the HE+ Help Desk, including proof of bonding documentation.

Agencies, at their discretion, may require payment bonds for all weatherization and HE+ Furnace Program services contracts up to $149,999. Program funds may be used to reimburse a contractor for payment bond premium costs as described below. If the Agency chooses not to require a bond for contracts up to $149,999, the Agency shall complete weatherization contract Attachment I prior to entering into an agreement with the contractor.

The bonding or insurance company issuing the payment bond shall be authorized to do business in Wisconsin (PRO-C-19). Agencies shall verify company status using the National Association of Insurance Commissioners Search or the U.S. Department of the Treasury’s Listing of Certified Companies. For additional guidance see the Insurance Company Search and National Association of Surety Bond Producers (NASBP) documents on the HE+ Procurement SharePoint under the “Pre-Award Resources” heading.

A copy of the current payment bond shall be kept in the procurement file. Payment bond premium costs may be reimbursed and invoiced to Program Support or Operations. If an agency chooses to invoice the premium cost to Program Support the use of EAP or DOE funds is not allowed for weatherization invoicing. Agencies, at their discretion, will determine how to reimburse the premium cost. The invoicing method must be determined prior to publishing the bid package and the RFB template shall be updated accordingly.

The use of bid or performance bonds is not allowed. An exception to this requirement may be provided if an Agency submits written justification and receives written Division approval prior to finalizing the contract agreement.

6.16 Warranty Requirements

An Agency shall warranty workmanship, materials and products on **all work** for at least one year, in addition to the manufacturer's standard warranties on all items. This one-year warranty shall commence on the date of the final inspection.

Subcontracted work procured through a bid process requires a one-year warranty which commences on the date of satisfactory completion of the work. This warranty period is separate from the one-year warranty required of Agencies.

To avoid excess costs associated with replacing failed light bulbs, light bulbs that fail within the warranty period shall be exchanged in a cost-effective manner, such as customers taking failed bulbs into the Agency office for exchange.

6.17 Vendor and Contractor Payments

Agencies shall make timely payments to vendors and contractors as follows:

1) There shall be work orders/purchase orders authorizing work to proceed. Variances from the original cost sheet shall be documented.
2) The Agency shall normally pay properly submitted vendor invoices within thirty (30) days of receipt, provided that goods and/or services have been delivered, installed (if required), and accepted as specified. Variances from the original work order/purchase order shall be documented.
3) A good faith dispute, or an improper invoice, creates an exception to prompt payment only when the vendor is notified in writing of the reason for the dispute or improper invoice.
4) After a dispute is settled, or improper invoice is resolved, the agency shall have 30 days to pay the invoice.

6.18 Contract Management

A system for contract management and administration shall be maintained to ensure contractor conformance with the terms, conditions, and specifications of the contract, and to ensure adequate and timely follow up of all services and purchases. Agencies shall evaluate contractor performance and document, as appropriate, whether contractors have met the terms, conditions and specifications of the contract.

1) Contractors/vendors shall be provided with the **right to cure** except if the contractor/vendor breaches or defaults an obligation under their Contract as follows:
   a) Fails to perform any material obligation required under the Contract such as

- Files a petition in bankruptcy, becomes insolvent, or otherwise takes action to dissolve as a legal entity;
- Does not allow a final judgment to be satisfied, or a lien to be disputed, after a legally-imposed 30-day notice; or
- Makes an assignment for the benefit of creditors;

b) Fails to follow the sales and use tax certification requirements of Wis. Stats. s. 77.66;

c) Incurs a delinquent Wisconsin tax liability;

d) Fails to submit a nondiscrimination or affirmative action plan as required;

e) Fails to follow the nondiscrimination or affirmative action requirements of Wis. Stats. s. 111 Subchapter II (Wisconsin's Fair Employment Law);

f) Becomes a federally debarred Contractor;

g) Is excluded from federal procurement and non-procurement contracts;

h) Fails to maintain and keep in force all required insurance, bonds, permits, and licenses as provided in the Contract;

i) Fails to maintain the confidentiality of the State's information that is considered to be Confidential Information, proprietary, or containing Personally Identifiable Information; or

j) Contractor performance threatens the health or safety of a State or Agency employee, or an Agency's customer.

2) An Agency shall document their contractor performance management process as part of the requirement for a documented Quality Control System (see Section 2.1.6).

3) If an Agency intends to terminate a contract due to performance issues, the Agency shall notify the Help Desk within 30 days after the decision to terminate. The notification shall include the date the contract was or is proposed to be terminated and a brief description of the reason for termination.

6.19 Property Improvements through Contractors

An Agency contracting under the weatherization program for any improvement of a property, in which the address for the improvement is identified to the contractor, shall inform the contractor of the following:

1) The only recourse for payment is the weatherization agency. By agreeing to perform weatherization work the contractor agrees to the following terms and agrees to pass along the following requirements to their suppliers and any subcontractors:

   a) The contractor agrees they will not, under any circumstances, seek payment from the owner or occupant of the premises improved.

   b) The contractor shall not file, suffer, or permit any lien or other encumbrance of record as a claim against any site of a weatherization project in recognition that the only recourse for payment is from the weatherization agency.

   c) An optional form is available on the HE+ Procurement SharePoint site under the Post-Award Resources heading for informing subcontractors and material suppliers of the lien waiver policies related to weatherization services.

   d) Any lien notice action by a contractor, its subcontractors or material suppliers, against a property owner may be considered non-performance by the terms and conditions of their contract, and the contractor, subcontractors and suppliers may be removed from the statewide weatherization agency bidder's list for a period of 2-5 years.

2) By engaging in a contract with the weatherization agency, the contractor agrees that if they do not pay for materials and labor completed through their weatherization contract, the weatherization agency has the option to use payments owed to the contractor to pay such subcontractors and suppliers.

6.20 Contract Sharing

Contract sharing is an allowable activity under the State of Wisconsin Procurement Manual (referred to as "Piggybacking" in PRO-D-29). When applied to the weatherization program, contract sharing allows a weatherization agency to use an existing open contract established by another weatherization agency. Contract sharing will not exist beyond the final contract date of the originating weatherization agency contract.

Agencies may request approval to utilize a commodity and/or services contract competitively bid by another agency. The requesting agency is the weatherization agency that seeks to share an open contract that was competitively bid and awarded by another weatherization agency. The originating agency is the weatherization agency that originally bid and awarded the open contract subject to the request. An open contract is a continuing contract for a specific period of time which is current (that is, operating within the designated contract period including renewal options).

A weatherization agency may use a contract established by another weatherization agency if the use of such contract is agreeable to both weatherization agencies and the vendor. It is the responsibility of the requesting agency to complete Procedures 1 through 3 below.

1) The requesting agency shall in all cases first make awards from its own list of current and responsive bidders prior to seeking the commodities/services of an originating agency's vendor.
2) The requesting agency shall review the originating agency's contract and determine that the following conditions are met:
    a) The originating procurement must have been competitive (several bidders, generic specifications, etc.).
    b) The contract must be an open contract and must be current. Current contracts are contracts established with prices that have remained competitive since award.
    c) The commodities or services to be purchased shall be the same as those provided in the original contract. The terms and conditions provided in the original contract shall be accepted by the requesting agency.
    d) The prices provided to the requesting agency shall be the same or better than those provided in the original contract.
    e) The requesting agency shall obtain written authorization from the originating agency and vendor indicating each is in agreement with the proposed piggybacking and that production capacity for the originating agency will not be diminished.
3) The requesting agency shall provide the following information to the Division for approval via the HE+ Help Desk:
    - Completed Contract Sharing Request (available on the HE+ Procurement SharePoint under the Post-Award Resources Heading) including required attachments,
    - Written authorization from the originating agency, and
    - Written authorization from the vendor.

4) The Division will review the request to determine that all conditions above are met. If approved, the Division will respond to the requesting agency with written authorization to contract with the vendor.

6.21 Staff Sharing

Staff sharing is a cooperative agreement between two Agencies to share the services performed by an Agency employee. Only the actual costs directly related to the installation of the weatherization measure are allowable and shall be used as a credit to reimburse the Agency for services provided.

If a staff sharing agreement is used in lieu of a simplified bid or RFB, prior to entering into a staff sharing agreement the requesting Agency shall submit a cost benefit analysis to the HE+ Help Desk including: the measure cost under the proposed staff sharing agreement; the cost of any comparable bids or price estimates, and; any additional information that influenced the staff sharing decision.

Following approval from the Division, the Agencies shall sign a written agreement describing the services to be shared and responsibilities of each agency. The Division will provide an optional template on request.

7. Equipment and Materials Management

7.1 Property

Property includes non-consumable equipment, tools, vehicles, inventory and consumable materials. The Division and federal granting agency hold a reversionary interest in property purchased with weatherization program funds. Title to property is also vested with the Agency.

An Agency shall maintain asset accounts for all consumable and non-consumable property. Agencies shall have a system to control losses, damages or theft of Agency property (see Section 7.4 for property disposal requirements).

Purchase or lease of property shall be based on demonstrated Agency need. All equipment and vehicles shall be purchased entirely with PB funds, funds resulting from an approved disposition or an approved disposition applied as a trade-in.

Disposition of property shall be in accordance with the rules of the funding source. The Division reserves the right to transfer equipment from one Agency to another if the equipment is found to be surplus. See the following sections for details on proper disposition of property by type.

7.2 Program Leasing of Agency Owned Property

The Division will allow the leasing of Agency owned property (such as vehicles, agency operations space or equipment) to the Weatherization Program if:

- Property was purchased with non-federal funds; and
- Total cost does not exceed the cost of comparable property or available alternatives.

Agencies may calculate charges for the property lease using one of the following methods:

1) **Allowance Method:** Charge an allowance not to exceed 2 percent of acquisition cost for building and improvements, including land improvements. When the allowance method is used for buildings, the entire building shall be treated as a single asset and the building's components (e.g. plumbing system, HVAC, etc.) cannot be segregated from the building shell. An Agency may compute equipment charges (for items that are attached or fastened to the building but not permanently fixed to it) at a rate not to exceed 6⅔ percent of the acquisition cost.
2) **Depreciation Method:** Establish the period of useful service for each asset, taking into consideration the type of construction, nature of equipment and other factors influencing the asset's useful life. The method of depreciation used to assign the cost of an asset to an accounting period shall reflect the pattern of consumption during its useful life. If there is no clear pattern of consumption, use the straight line method.

Support charges for use, allowance or depreciation by adequate property records (including depreciation records for each accounting period if the depreciation method is used).

In addition to the allowance and depreciation methods, the Agency may calculate maintenance, taxes, insurance and interest into the lease charges.

7.3 Recordkeeping

7.3.1 Vehicles, Equipment and Tools

The Agency shall take a physical count of vehicles and non-consumable equipment and tools at least annually. The count shall be reconciled to the written records and the Agency shall document shortages in writing at the point of reconciliation.

The Division requires the following records be kept for all vehicles, non-consumable equipment and tools being used by the weatherization program and with a total purchase price of $5,000 or more per unit:

1) Description including model, year, serial or vehicle identification number, etc.;
2) Date of purchase;
3) Total purchase price, including any trade-in applied;
4) Source of funds used for purchase;
5) Location, use and condition of property;
6) Individual to whom property is assigned;
7) Records of maintenance completed; and
8) Disposition date, method, and amount received.

All equipment requiring calibration shall be maintained and calibrated according to manufacturer's recommendations.

7.3.2 Inventory Asset Accounts

The Agency shall take a physical count of materials and supplies inventory each month. An Agency shall maintain asset accounts for all consumable materials. There shall be a costing system, and a system for storage, handling and protection against damages and theft.

There shall be a monthly reconciliation of the physical inventory to the perpetual records and inventory asset account. The Division recommends a "first in, first out" system, and the Agency shall rotate stock and use older materials first.

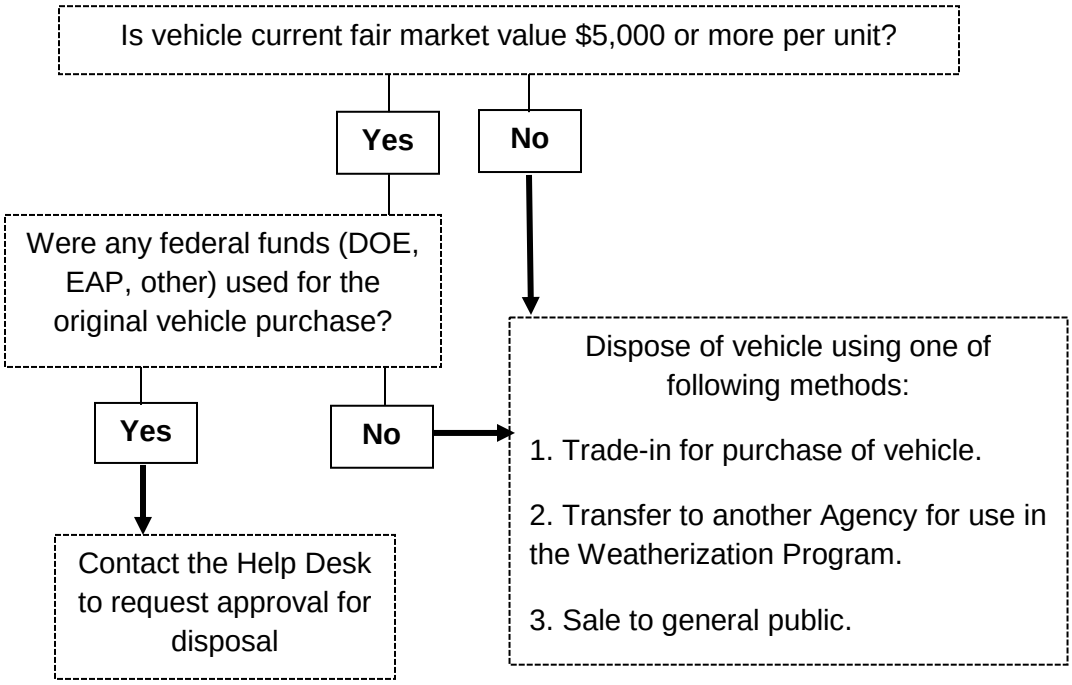
An Agency shall maintain an inventory record. This record shall include:

1) Location of inventory (if multiple storage locations);
2) Quantity of materials received and disbursed;
3) Description of materials;
4) Unit prices of materials;
5) Job number;
6) Date of disbursement, return and receipt;
7) Crew person signing materials in or out; and
8) Purchase Order number for all receipts.

7.4 Disposal

7.4.1 Vehicle Disposal

The chart below provides guidance for determining the method to use when disposing of vehicles and non-consumable tools and equipment. Acceptable methods for determining current fair market value include, but are not limited to, the following: using an existing Agency depreciation policy; blue book value or used retail value; obtaining a dealer or vendor quote.



Vehicles with current fair market value of less than $5,000 may be disposed of using a system ensuring free and open competition without prior notification to other Agencies. Proceeds shall be used to purchase other weatherization materials or equipment, or as program income to weatherize additional units (see Chapter 1 “Program Income”).

If federal funds were used for the initial vehicle purchase **and** the current fair market value is $5,000 or more per vehicle, then the Agency shall request permission from the Division to dispose of the vehicle(s). Written disposal requests shall include the following:

1) Explanation of why the vehicle can no longer be used in the Weatherization Program;
2) Description of the vehicle including model, year, identification number, odometer mileage, etc.;
3) Date of purchase;
4) Contract number when purchased;
5) Purchase value, including any trade-in applied;
6) Source of funds used for purchase (PB, DOE, LIHEAP, ARRA or EXXON) and percentages, if multiple funding sources were used;
7) Estimated current fair market value;

8) Condition of vehicle. If vehicle is in unsafe operating condition, or inoperable, supply an estimate of repair costs required to return the vehicle to operating condition; and
9) Copy of purchase approval letter, if applicable.

A Vehicle and Equipment Disposal template is available on the HE+ Procurement SharePoint page. Use of this template is optional.

Proceeds from such disposals shall be handled based on the requirements of the funding source. The Division will provide guidance regarding allowable use of the proceeds.

7.4.2 Equipment and Tools Disposal

For disposal of non-consumable tools and equipment with current fair market value of less than $5,000 per unit, the Agency shall notify other Agencies that the equipment is available for use in the Weatherization Program. Acceptable methods for determining current fair market value include but are not limited to: using an existing Agency depreciation policy; used retail value; obtaining a vendor quote.

If the equipment is defective, it does not need to be offered to other Agencies.

If another Agency expresses interest, the equipment may be transferred to that Agency for the purpose of their use in the Weatherization Program. If no Agency expresses an interest, then the equipment may be disposed of using a system ensuring free and open competition. Proceeds shall be used to purchase other weatherization materials or equipment.

The Agency shall request permission from the Division to dispose of non-consumable tools and equipment that were originally purchased with federal funds (DOE, LIHEAP) **and** have a current fair market value of $5,000 or more. Written disposal requests shall include the following:

1) Explanation of why the equipment can no longer be used in the Weatherization Program;
2) Description of the equipment including model, year, serial or identification number, etc.;
3) Date of purchase;
4) Contract number when purchased;
5) Purchase value;
6) Source of funds used for purchase (DOE, LIHEAP, EXXON, ARRA, or PB) and percentages, if multiple funding sources were used;
7) Estimated current fair market value;
8) Condition and age of equipment. If equipment is defective, in unsafe operating condition, or inoperable, supply an estimate of repair costs required to return the equipment to operating condition; and
9) Copy of purchase approval letter, if applicable.

7.4.3 Inventory Disposal

The Agency shall contact the original vendor to request return of the unusable materials. If the items cannot be returned, the Agency may dispose of the inventory. If the cumulative value of the inventory to be disposed of in a program year exceeds 0.25 percent of the total program year operations, health and safety, and baseload operations budget, the Agency shall submit a written request to dispose inventory including:

1) Description of items to be disposed, including

a) unit price;
b) quantity of items;
c) original vendor; and,
d) funding source used to purchase items.

2) Disposal methods to be used (e.g., auction, public notice, or sealed bids). It is essential that the method chosen allows for open and free competition and that the general public has a chance to purchase the items.
3) Cost of selling the items, not to exceed 10 percent of the value of items being disposed of.
4) Plans for the use of any funds recovered (e.g., to be returned to the funding source, to be used to purchase other weatherization materials).

The Agency shall notify all other Agencies that the inventory is available for use in the Weatherization Program. If an Agency expresses interest in the item(s), the inventory may be transferred to that Agency for use in the weatherization program.

5) If no Agency expresses an interest, then the inventory may be disposed of using a system ensuring free and open competition.

In the event of an Agency downsizing, any charge to be made against the contract to cover losses incurred in liquidating inventory shall be approved in writing by the Division.

7.5 Consumable Materials

Consumable materials are materials that are not inventoried individually, difficult to measure on a per-unit basis and for which the unit quantity may be used in more than one building. Examples of consumable materials meeting this description are nails, paint thinner, push points, and other similar materials.

An Agency may use a cost allocation system for consumable materials and shall develop a consistent procedure to handle such consumable materials. When tools are assigned to a crew, an Agency does not need to inventory consumable tools that are usable for only one or two jobs.

7.6 Information Technology Hardware and Software

Agencies are responsible for all costs of hardware, software, and internet access required for Weatherization Program delivery. An Agency shall procure all IT hardware, software and services in accordance with all applicable federal and state guidelines and laws, and shall make full specifications and disclosure of such products and services available to the Division upon request.

An Agency shall track and maintain all IT hardware, software, and services that are purchased with Wisconsin Home Energy Plus program funds. All data handling will be in compliance with 2.3 Handling Sensitive Data.

Weatherization crews shall electronically document building test results and site conditions using the Wisconsin Diagnostic Workbook, available on the Home Energy Plus Training and Technical Assistance Website.

This workbook was developed for the State of Wisconsin and shall not be shared outside of the Weatherization Program and its specific contractors. The workbook shall not be modified

except as authorized by the State of Wisconsin or its contractors. Agencies shall maintain the workbook with the most current updates.

8. Energy Audits

8.1 Required Equipment

The Division requires that Agencies and/or their contractors use professional equipment as part of their assessment of buildings. Direct access to computers is required to model jobs with electronic energy audits and to document diagnostic field tests. The following lists of required equipment represent the required minimal amount of equipment. Other equipment may be necessary to deliver weatherization services effectively and efficiently.

8.1.1 Minimal Required Equipment for Personal Safety

1) Calibrated personal carbon monoxide detector capable of measuring CO levels in ambient air with an audible alarm
2) PPE (personal protective equipment) for respiratory, vision, hearing, skin, feet and head protection.

8.1.2 Minimal Required Equipment for Instrumented Air Leakage Measurements

1) Calibrated blower door, Minneapolis Model 3 or equivalent, capable of creating a pressure differential between sections of a building and outdoors.
2) Calibrated pressure and flow gauge, DG-700 or equivalent, capable of measuring pressure differentials and calculating air leakage in CFM50 (cubic feet per minute at 50 pascals)
3) Smoke generating testing equipment.

8.1.3 Minimal Required Heating System Analysis Equipment

1) Calibrated combustion analyzer capable of measuring O_2, CO_2, CO, SSE, stack temperature and net temperature.
2) Smoke test kit capable of measuring relative soot level in flue gases.
3) Calibrated pressure gauge capable of measuring draft in either Pa (pascals) or IWC (inches of water column), gas pressure in IWC and oil pump pressure in PSI.
4) Calibrated thermometers capable of measuring temperature of air in forced air distribution and measuring temperature of water in hydronic distribution.
5) Calibrated air handler flow meter, TEC TrueFlow or equivalent, capable of measuring air flow in forced air system.
6) Timing device capable of measuring seconds for clocking gas meters.

8.1.4 Minimal Required Combustion Safety Testing Equipment

1) Calibrated carbon monoxide or combustion analyzer capable of measuring CO as measured.
2) Calibrated combustible gas detector capable of identifying gas leaks, with adjustable tick rate and alarm when exceeding 10% of LEL (lower explosive limit).
3) Gas leak detection fluid to confirm leaks identified with electronic detector.
4) Timing device capable of measuring minutes to check for appliance spillage.
5) Mirror or smoke to determine appliance spillage
6) Borescope
7) Ladders

8.1.5 Minimal Computer Equipment and Software

1) PC, Laptop or Tablet with Windows 7 or higher operating system.
2) Excel 2010 or higher
3) Word 2010 or higher
4) Modern internet browser (Chrome, Internet Explorer 11 or higher, Firefox)
5) Email capability, Outlook or equivalent.

8.2 Required Building Assessment General

The Division requires that all agency and contracted auditors complete an assessment of all buildings that may be weatherized through the program.

8.2.1 Required Diagnostic Testing (excludes Manufactured Home Measures List (MHML))

1) Overall building air leakage rate in CFM_{50} (As-Is and Final tests). Contact the Help Desk for guidance if unable to complete an “As-Is” blower door test at audit because of concerns regarding damaged/deteriorated PACM.
2) ZPD (Zone Pressure Diagnostics) for attached garages
3) CAZ (Combustion Appliance Zone) depressurization to determine worst case
4) Pressure pan force air distribution leakage testing (mobile home)
5) Room by room pressurization testing (mobile home)

8.2.2 Required Combustion Safety Testing (excludes MHML)

1) Detection of fuel leaks, primarily for gas but also oil
2) Spillage testing under worst case depressurization at required time limit
3) Draft testing under worst case depressurization for natural draft and fan assisted appliances.
4) CO testing of combustion appliances including kitchen stoves
5) Continual monitoring of ambient CO

8.2.3 Required Heating System Testing (excludes MHML)

1) Combustion Efficiency and CO
2) Spillage testing under worst case and natural conditions at required time limit
3) Draft testing under worst case and natural conditions for natural draft and fan assisted appliances
4) Fuel pressure (gas and oil)
5) Temperature rise
    a. If temperature rise results fall outside of manufacturer’s recommendations (PMI), additional testing may be completed. These tests may include Static Pressure and Fan Speed measurements.
6) Smoke test (oil only)
7) BTU input

8.2.5 Exhaust Fan and Ventilation Testing

1) Air flow of all exhaust fans.
2) Air flow of dryers vented to the outdoors.

3) Air flow of existing balanced mechanical ventilation, ERV or HRV.

8.2.5 Required Documentation of Testing

1) Results of required testing shall be documented in the Diagnostic Workbook on the Auditor worksheet for the appropriate building type.
2) Testing not included in the Diagnostic Workbook shall be documented on a FDCF (Field Data Collection Form).

8.2.6 Shell Measure Assessment

1) All shell components of a building shall be accurately measured and recorded on a FDCF.
2) Insulation levels in all attics, walls, floors or foundations that define the thermal boundary shall be determined and recorded on FDCF.
3) Repairs necessary to protect energy conservation measures shall be identified and recorded on FDCF.
4) Windows and doors shall be evaluated for general condition and for possible replacement and recorded on FDCF.
5) A minimum inspection sample of 8 units or 25 percent, whichever is larger, is required for all buildings with 5 or more units. The inspection sample shall include units from each floor and each building exterior wall orientation (i.e. direction), and shall be representative of each type of unit in the building. All common areas shall be inspected and addressed in the energy audit.

8.3 Electronic Audits and Measures Lists General

The State of Wisconsin utilizes the NEAT (National Energy Auditing Tool) for 1-4 unit and 5-24 multiunit dwellings and MHEA (Manufactured Home Energy Audit) for mobile homes heated with bulk fuels or electricity. The Mobile Home Measures List (MHML) is utilized for mobile homes heated with natural gas. The audits and measures list are used to determine the recommended measures to be completed on weatherized buildings. NEAT and MHEA audits shall be performed according to the instructions in the Weatherization Assistant Guide found on the HE+ WisWAP Information page.

8.3.1 Mobile Home Measures List (MHML)

The Division has developed protocols to use when auditing mobile homes that are heated with a natural gas appliance. Further details on how to use the MHML are available on the WisWAP Information page under the MHML heading.

8.3.2 Weatherization Assistant Audits

The Division has developed default set-up libraries by agency for use within Weatherization Assistant energy audit software database for 1-4 unit, 5-24 multiunit buildings and mobile homes. Those default setup libraries are reviewed and adjusted annually. Default values of the key parameters, fuel costs, and fuel price indices are determined and updated in the setup library. Enabled measures in the library are updated with projected agency costs. The default list of user defined measures is updated and includes any agency default costs if provided by agency. The Agencies shall use the audit software and database version designated annually by the Division and posted on the HE+ Training and Technical Assistance website.

It is the Agency's responsibility to establish a local supply library for water heaters and refrigerators. The supply libraries shall be customized to reflect the Agency's current

replacement equipment models and costs. It is recommended that Agencies also customize their supply libraries to include other sub-contracted weatherization services.

Agencies shall maintain the final electronic version of each completed energy audit. The electronic copy of the energy audit shall, at a minimum, be maintained within the database it was created in. Energy audits shall be readily available to the Division upon request.

Not all of Wisconsin's weatherization measures are modeled within the energy savings algorithms utilized by the Weatherization Assistant audits to establish a Savings to Investment Ratio (SIR). In order to generate a Recommended Measures report that is reflective of all the measures and costs, additional measures shall be selected from the user defined options in the Itemized Cost tab. Some measures shall be included in the cumulative SIR; other measures shall *not* be included in the SIR. Notwithstanding the MHML, building units must have a cumulative SIR of 1.0 or greater before weatherization work may proceed. If, in a 2 to 4-unit building, some but not all units have an SIR of 1.0 or greater, the Agency may request a review of the building via the Help Desk and may proceed only with prior approval from the Division.

8.3.2.1 General rules for data entry into the Weatherization Assistant audits:

1) Identify all planned measures in the audit.
2) Use the Itemized Cost tab to identify those measures that are currently not modeled within the audit. Some common examples are:
   - Programmable thermostats
   - Lighting efficiency improvements
   - Domestic water heater measures (not water heater replacement)
   - Refrigerator and freezer removal incentives
   - Freezer replacements
   - Sealing and insulating duct work
   - Miscellaneous heating system work
   - Heating system clean and tunes
   - Exhaust ventilation
   - Slab-on-grade exterior foundation insulation
3) Repairs shall be entered in the Itemized Cost Tab. Repairs are only allowed when necessary for the effective performance or preservation of energy conservation measure materials.
   - The cumulative SIR shall be greater than 1.0 in order to complete the planned repairs. Buildings that cannot be weatherized without the repairs shall be deferred.
   - Repair costs shall be separated from energy conservation and health and safety measure costs when reporting the completed measure in WisWAP.
4) Health and safety measures shall be identified in the Itemized Cost tab, with the following exceptions: water heater replacements and asbestos work (see below for more detail on modeling). When estimated health and safety costs total more than $1,000, all health and safety measures shall be included in the SIR.
   - Health and Safety measures which are excluded from the $1,000 and the SIR include ventilation, worst-case depressurization safety testing, and gas leak repair.
   - Water heater replacements shall always be modeled on the baseload tab with both replacement required and include in SIR checked. Report as a Health and Safety

measure if the SIR is <1. The cost of the replacement shall be included in the $1000 limit.

- Health and Safety asbestos work shall be included as an additional cost with the related energy conservation measure(s). The cost of the work is not included in the $1000 limit.
- The cumulative SIR shall be greater than 1.0 in order to complete the planned Health and Safety measures. Buildings that cannot be weatherized without the Health and Safety measures shall be deferred.
- If Health and Safety costs end up exceeding $1,000 due to issues that arise during the course of weatherization, there shall be documentation in the customer file of the conditions which caused the additional costs, and the reason they were not previously identified. For water heaters and heating systems, also see 8.3.2.3 End State Planning and Informational Modeling.

5) Heating system modifications (repair, distribution replacement or additions) shall be modeled as follows:
   - When modifications to a heating system are required for the proper ***installation*** of a replacement heating system separate those costs from the cost of the replacement heating system and model them in the Itemized Cost tab. Report the repair costs separately in WisWAP.
   - When modifications to the heating system are required for the proper ***operation*** of the existing or replacement heating system, identify the measure and cost in the Itemized Cost tab. The cost shall be included in the SIR.
6) Installation, repair or replacement of air conditioners is not an allowed measure. (Furnace replacement may occasionally require installation of a new/compatible A-coil. Prior approval from the Help Desk is required.) . Include sufficient information about existing air conditioners in Weatherization Assistant to model the electric savings.
7) When the estimated cost of a measure, based on a contractor's bid or the Agency's labor and materials for that job, differs from the Agency's default cost by +/- 20 percent, a cost shall be included in the Additional Cost field in the measure's tab.
   - When the estimated cost of a measure is less than the Agency's default cost enter a negative number in the Additional Cost field in the measure's tab and direct questions about how to make a negative cost adjustment to the Help Desk.

NEAT/MHEA Modeling Guidance: For additional modeling guidance see the Weatherization Assistant Guide found on the HE+ Website.

8.3.2.2 Modeling Buildings Using Fuel Consumption

The Agency shall collect and use actual fuel consumption data provided by the WHEAP Referral or customer for all buildings where natural gas or electric is the primary heating fuel. Use a minimum of 12 months, including the most recent heating season, of actual pre-weatherization fuel consumption except as indicated below:

- When customers are attempting to significantly reduce energy expenses by any of the following:
  - Closing off at least 50 percent of the rooms in an attempt to only heat part of the building.
  - Maintaining the home at a temperature below 65 degrees for more than 12 hours per day during the heating season.

- When fuel records cannot be obtained for the heating season of the previous year.

In cases where the customer is attempting to significantly reduce energy expenses, the Division strongly recommends entering actual fuel records and then comparing the difference in consumption to justify the use of audit default values. The circumstances justifying the use of the default audit results shall be documented in the customer file. Note that the completed HE+ application provides a release for fuel vendors to supply a customer's energy use information for weatherization purposes. All vendors participating in WHEAP have agreed to provide billing information.

The Enhanced Therm Calculator (Therm Calculator) shall be used for 1 to 4-unit buildings and mobile homes. The Therm Calculator will normalize the consumption for average heating degree days, since Weatherization Assistant will not. It will also assist energy auditors in estimating the heating fuel consumption when multiple fuels are used and/or when a full 12 months of usage data is not available. The calculator is available on the T&TA site under the Technical Assistance tab. Multi-family 5-24 unit buildings with a shared meter shall have the fuel consumption records for the preceding 12 months submitted by the building owner as a part of the certification process. Rental buildings with 25+ units shall have actual shared meter consumption records, when applicable, for both heating and electrical for the preceding 18 to 24 months submitted by the building owner as a part of the certification process. Buildings with individual mechanical systems in each unit shall have the actual consumption records for each unit for the preceding 18 to 24 months. Tenants not certified as HE+ eligible (free riders) will need to provide fuel consumption records to the building owner or the agency. If fuel records are unavailable, free riders will need to sign a release to allow access to their utility records.

Use the Therm Calculator worksheet in the 5-24 Unit Workbook to projects the total building fuel consumption by using a median consumption projection for units without actual data.

8.3.2.3 End-State Planning and Informational Modeling

The primary goal of the Weatherization Assistance Program is energy efficiency, and the inclusion of health and safety improvements to the units occupied by low-income persons served shall be limited to such improvements that are energy-related.

1) End-state planning is required for all weatherization jobs and shall be conducted prior to proceeding with weatherization work. End-state planning involves conducting tests and analyzing the characteristics unique to each dwelling in order to:
   a) Select and implement the appropriate measures and accurately estimate costs.
   b) Estimate the post-weatherization building CFM_{50} air leakage rate.
   c) Estimate the post-weatherization natural ventilation rate per occupant.
   d) Identify the need for potential post-weatherization local exhaust ventilation and whole building mechanical ventilation.
   e) Estimate the post-weatherization worst case depressurization.
   f) Calculate the post-weatherization Depressurization Tightness Limit.
   g) Identify potential post-weatherization combustion safety issues.
   h) Make critical decisions regarding deferral, or prevention or resolution of potential combustion safety issues.
   i) Provide information to plan and manage the job to avoid unexpected delays.
2) Informational Modeling is required when a natural draft appliance will remain at the end of the job and end-state planning indicates the potential for combustion safety issues (e.g.,

spillage, lack of sufficient draft). Informational Modeling will inform the auditor whether or not the job SIR will support the cost of an appliance replacement. The results will determine if the job can support the cost of a water heater or heating system replacement, should it occur when the job is in-progress.

3) Per 2.2.3 Customer Files, the audit file associated with the Customer File shall include the measures list actually installed on the building. The End-State Planning or Informational Modeling audit file or report may be printed for Agency records, but is not required to be maintained.

When a job is in-progress and a water heater or heating system needs replacement after work has begun, the audit shall be updated with the equipment replacement(s) modeled, and re-run. If the job SIR is less than 1.0, work may proceed, however DOE funds shall not be used for the replacement measures.

Informational Modeling is required when a heating system replacement does not have a measure SIR of 1.0 or greater and there is an identified Health and Safety issue to replace, Enter the replacement in the Itemized Cost tab as a Health and Safety measure included in the SIR to determine if the job can support the cost of the heating system replacement.

If the cumulative SIR for the job is less than 1.0, the auditor shall determine if the job may proceed without the natural draft appliance replacement. The auditor shall decide to either continue with the job and prevent or manage combustion safety issues - or defer the job. Where a natural draft appliance replacement is not an allowable weatherization program expense, alternative resources shall be pursued to cover the cost. If alternative resources cannot be found, contact the Help Desk or consider deferral.

8.3.3 Modeling Mobile Homes with MHEA

The MHEA audit is visually similar to the NEAT audit, but there are differences in how data is entered and how the audit models measures. Special areas of concern are identified in Section 8.9. Mobile homes that have multiple additions and\or a basement may still be classified as a mobile home as long as the HVAC system is set up as a standard mobile home installation. When a combustion appliance zone is located in the basement, it may be more appropriate to treat the mobile home as a site built structure. The determination should be made at the energy audit. The proposed measures may assist in the decision of which software should be used. Use Table 8.1 below to help guide that decision.

Table 8.1 Guidance for Determining Computerized Audit Software

	What software to use?	
	MHEA	**NEAT**
Building Characteristics to consider when deciding which software is appropriate for the building	Heating system and water heater located on main floor	Heating system and water heater are or will be located in basement or crawlspace
		Ducts and / or plumbing in basement or crawlspace
	Unconditioned basement or crawlspace	Intentionally (or unintentionally) conditioned basement
	Multiple additions that are similar and could be accurately modeled as one	Multiple additions with different wall characteristics
	When belly insulation will be maintained as the thermal barrier	When sill box or foundation insulation is an option

8.3.4 Modeling 5-24 Unit Buildings with Weatherization Assistant

The Division has developed a separate NEAT database for 5-24 unit multi-family buildings. As with the single-family Weatherization Assistant audits, this database includes enabled measures and default set-up libraries. The default database values are reviewed bi-annually and adjusted at least annually. Agencies shall use the audit software and database version designated annually by the Division and posted on the HE+ website. Agencies may opt to customize their own set-up libraries to reflect local costs. Customized set-libraries shall:

- Use the same default fuel costs and preferences set by the Division annually.
- Only use measures enabled by the Division.
- Conform to the review and update schedule determined by the Division.
- Be reviewed and approved by the Division prior to use.

All electronic or hard copy of the documents shall be readily available to the Division upon request.

8.4 Computerized Audits for Buildings of 25 or More Units

Weatherization of buildings with 25 or more units is suspended until further guidance is issued.

8.5 Audit Requirements and Measure Specifications

1) All work will be completed in a cost effective and professional manner.
2) All materials will be installed to manufacturer specifications. For more specific information on installation procedures and guidance see the Weatherization Field Guide.
3) All debris shall be removed from the job site and disposed of properly.
4) All work will follow applicable codes and regulations of the authorities having jurisdiction.
5) Contractors providing services must be licensed and/or registered to provide those services if required by the authority having jurisdiction.

6) Building permits and any related costs are the responsibility of the Agency.
7) The Division will be the final authority for any questions regarding specifications and measures.
8) A description of maintenance and operation requirements of completed measures shall be provided to occupants.
9) Agencies shall make a reasonable effort to install products that meet ENERGY STAR® standards, whenever feasible. See materials specifications and procurement standards available on the HE+ Procurement SharePoint site.
10) All materials used shall meet the requirements outlined in Chapter 6 Procurement.
11) All removed or replaced appliances and materials including but not limited to furnaces, water heaters, refrigerators and freezers, shall become property of the Agency for recycling and proper disposal in accordance with state and federal regulations.

8.5.1 Attic and Kneewall Areas General

Model all ceiling/attic spaces for insulation. For enclosed cavities, model the maximum capacity that the space can accommodate. Add the amount of insulation that the energy audit specified. Determine the effective R-value of existing insulation by assessing the gaps in the insulation coverage. Use the following information to guide effective R-value estimates.

1) Good - One inch of insulation in good condition with unbroken coverage will have an R-value between 2.5 and 3.75 (contingent on the type of product).
2) Fair - One inch of insulation in fair condition (small gaps significant compressed areas) will have an R-value between 1.75 and 2.6 (approximate 30 percent loss in R-value).
3) Poor - One inch of insulation in poor condition (many substantial gaps and compressed areas amounting to 50% if area is uninsulated areas amounting to 5 percent) will have an R-value between 1.0 and 1.5 (approximate 60 percent loss in R-value).

When attic insulation is not being installed but attic prep work needs to be addressed, model the work in the Itemized Cost tab as “Attic Prep-No Insulation” and check “Include in SIR.” Report the work in WisWAP using the related measure, “Attic Prep-No Insulation.” Any insulation “blow over” necessary to restore existing functional insulation levels shall be part of the attic prep cost. Post an insulation certificate in the building upon completion.

8.5.1.1 1-4 Unit and Multi-Family Attic and Kneewall Areas Specifications:

1) Complete air sealing of key junctures and bypasses before adding insulation.
2) Insulate access hatches to the R-value of the attic insulation or maximum structurally allowable, whichever is lower. Box around attic entry to allow for repeated access.
3) Insulate the vertical and sloped areas to the maximum structurally allowable.
4) Vent all exhaust fans to the exterior. Seal and insulate all ducting for exhaust fans, to a minimum of R-8.
   a) Ducts with existing insulation do not have to be re-insulated. Ensure insulation is secure and provides continuous coverage.
5) Prior to insulation, prepare the attic by installing barriers around fan housing, chimneys, access points, and recessed lighting. If live knob and tube wiring cannot be eliminated from the attic, install a barrier to maintain a 3-inch air space around wires.
6) Identify all electrical junction boxes and live knob and tube barriers with flags.

7) If heating system distribution runs through the attic, seal all seams and insulate to an R-11 prior to installing any insulation over the distribution ducts.
8) Install attic ventilation based on applicable code requirements or if there is a potential moisture source that cannot be isolated or controlled by air sealing.

8.5.1.2 Mobile Home Attic and Kneewall Areas Specifications

1) Complete attic preparations including building barriers around fan housing and recessed lighting fixtures, and sealing chimney, key junctures and other obvious bypasses
2) Vent all exhaust fans to the exterior. Insulate exhaust fans ducts when feasible to R-8.
3) Insulate the attic to R-19, or maximum structurally allowable with blown fiberglass insulation. Do not dense-pack or over fill area.

8.5.2 Sidewall Insulation General

Model all uninsulated exterior walls of heated spaces to the maximum structurally allowable. Install insulation if the SIR is greater than or equal to 1.0. Model related repair costs separately in the Itemized Cost tab. Model each sidewall where voids are 10 percent or more of the sidewall area. Install insulation to the R-value allowed by the NEAT audit, using dense pack insulation techniques for loose-fill insulation. See the Weatherization Field Guide for more details on dense pack techniques.

8.5.2.1 1-4 Unit and Multi-Family Sidewall Insulation Specifications

1) Lift or remove the exterior layer of siding to drill through sheathing and any sub-layers of siding.
   a) If siding cannot be removed, there shall be documentation in the customer file of the conditions that limited the removal of the siding.
2) Transite (slate) siding shall be removed intact only by persons with appropriate Department of Health Services (DHS) asbestos certification, unless the siding has been tested and does not contain asbestos. (See Chapter 9 Health and Safety, for complete asbestos policy).
3) Sidewall insulation shall be installed following Lead-Safe Weatherization (LSW) procedures, under the supervision of a Lead-Safe Renovator when applicable (See Chapter 9 for complete lead policy). Any person who completes this work shall have been trained in LSW procedures.
4) Consider using blown fiberglass in buildings with brick facade

8.5.2.2 Mobile Home Sidewall Insulation Specifications

1) Inspect exterior siding and the interior wall materials to determine if insulating will create any structural problems
   Insulate walls with complete coverage and uniform density throughout the accessible wall cavity.

8.5.3 Foundation/Floor Insulation General

Model foundation walls or floors that define the heating envelope, including the exterior walls of unintentionally conditioned crawlspaces, sill boxes, and slab-on-grade assemblies, for insulation with an energy audit. Install insulation only if the measure SIR is greater than or equal to 1.0. Model related repair cost into the Itemized Cost tab.

8.5.3.1 1-4 Unit Foundation/Floor Insulation Specification

1) Complete air sealing prior to insulating, unless spray foam is being used for both purposes.
2) Model uninsulated sill box areas for installation of faced fiberglass batts or 2-part foam.
3) Model floors for insulation where they define the heating envelope to the maximum R-value structurally allowable.
   a) Install a minimum 6-mil vapor retarder over exposed earth floors, unless it presents a tripping or slipping hazard. Walk boards may be installed for access to mechanical systems.
4) Model accessible crawlspace walls for R-12 2-part foam insulation or R-19 fiberglass batt insulation in unintentionally conditioned areas. Other products including R-11 fiberglass, R-19 2-part foam, or rigid insulation may be modeled and installed if the measure meets a minimum SIR of 1.0.
   a) Note: 2-part foam insulation may be used to insulate crawlspaces only when the area may be isolated from the interior of the building by a thermal barrier, such as half-inch drywall or plywood, from the interior of the building. For more information see Wisconsin Uniform Dwelling Code (UDC) SPS 321.11.
   b) Install a minimum 6-mil vapor retarder over exposed earth floors.
   c) A laminated sign (minimum size of 8 1/2” by 11”) shall be posted inside of the crawlspace access. The sign shall include contact information of the installer and shall caution those entering the crawlspace not to damage the air barrier, ground moisture barrier, insulation, or mechanical components specific to the crawlspace. It shall prohibit storage of hazardous and flammable materials, and shall instruct those entering to contact the agency if damage occurs to any materials in the crawlspace. An optional “Crawlspace Sign Template” is available on the HE+ WisWAP Information page under the “Field Forms” heading.
5) Model exterior insulation of all accessible slab-on-grade foundations, inaccessible heated crawlspace foundations, and conditioned basements having an average above-grade exposure of 30” or more on the exterior surface of the exterior wall.
   a) If the model indicates a measure Sir of 1.0 or greater, Insulate exposed foundations with extruded R-5 foam board, with a durable weather resistant coating, to a minimum of 6” below grade.

8.5.3.2 Mobile Home Foundation/Floor Insulation Specifications

1) Prior to insulating the belly: Seal duct work and repair holes in the belly
   a) A 6-mil vapor barrier may be installed over exposed earth, based on site conditions.
   b) Belly repair shall be modeled as a repair measure in the Itemized Cost tab.
2) Insulate floors to the maximum the structure allows.
3) If installing blown fiberglass: Install at a density of 1.25 to 1.75 pounds per cubic foot.
4) Do not dense-pack or over-fill area.
5) Install a minimum of 2” of insulation between water pipes and the belly barrier and below ducts.

8.5.3.3 Multi-Family Foundation/Floor Insulation Specifications

1) Where they define the heating envelope, insulate floors to the maximum R-value the structure allows.
2) Insulate the accessible areas of slab-on-grade foundations to a minimum of R-5, and to a maximum of 6” below grade. Use extruded foam board with a durable weather resistant coating.
3) Seal and insulate accessible crawlspace walls to a minimum of R-12 and to a maximum of R-19. Typical applications include fiberglass insulation, 2-part foam, or rigid insulation.
   a) Install a vapor retarder over exposed earth in limited-access crawlspaces.
   b) Do not install a vapor retarder in any traffic area.
4) Seal and insulate sill box areas using faced fiberglass, rigid board, or 2-part foam up to a maximum of R-19. The sill box area shall be air-sealed prior to insulating.
5) Do not install insulation if it will cause or worsen an existing moisture problem.

8.5.4 Windows

All windows modeled for replacement shall be in the primary heating envelope. To consider a window for replacement, it shall meet both of the following conditions:

1) The window(s) shall be located in the primary heating envelope.
2) The window(s) shall have rotted or deteriorated frames or sashes.

Photographs are required for **each** window to be replaced. The photograph shall document specifically why the window was replaced, e.g., rotted frame or rotted sash, rotted frame and rotted sash with deteriorated paint film. The photo(s) shall be available upon request by the Division (see 2.2.3 Customer Files).

The work shall be done in a lead-safe manner under the supervision of a certified Lead-Safe Renovator (see Chapter 9 Health and Safety for complete lead policy). Replace a window as an energy conservation measure if the measure meets a minimum 1.0 SIR when tested with the NEAT/MHEA audit.

Window replacement is categorized as:

1) An Energy Conservation Measure when the measure is modeled as a shell measure and meets a minimum 1.0 SIR.
2) A Repair Measure when windows do not have a measure SIR of 1.0 or better. Enter the measure into the "Itemized cost" tab and the cumulative SIR for the building is a minimum 1.0 SIR. Check "Include in SIR."

Basement windows may or may not be located in the primary heating envelope depending on the conditioning of the foundation. When a basement is an unheated (unconditioned) area, the windows are not in the primary heating envelope and may not be replaced. Basement windows may only be installed as a repair measure. Basement windows are exempt from the general requirement that windows meet ENERGY STAR® standards.

8.5.4.1 1-4 Unit and Multi-Family Windows and Specifications

1) Cloudiness inside existing insulated glass (IG) units because of seal leakage does not constitute “failure” of the window or of the IG unit.
2) Re-weather stripping of existing windows is allowed as an air sealing measure.

3) A window with a cracked or broken pane of glass, but where degradation of the frame and or sash is not occurring, will have only the glass repaired or replaced as an air sealing measure.
4) Window replacement in pre-1978 buildings shall be completed using lead-safe work practices, under the supervision of a certified Lead-Safe Renovator. For more information see the Weatherization Manual Chapter 9 – Lead-Safe Weatherization and – Minimum Standards for Lead-Safe Weatherization (LSW).
5) Window replacements in buildings that are 50 years old or older are subject to historic review by the Wisconsin Historical Society if the building work incorporates any DOE or LIHEAP funding.

8.5.4.2 Mobile Home Windows Specifications

Insider storms on windows with primary single pane glass and no storm may be installed as a repair measure if MHEA doesn't select the measure as an ECM, provided the building has a minimum cumulative SIR of 1.0. Replace damaged insider storm windows on windows with primary single pane glass as a repair and if the cumulative SIR is 1.0 or greater. Repair or replace storm window glass when the glass is cracked or broken, but there is no degradation of the storm windows frame

8.5.5 Air Sealing General

Use a blower door to guide air sealing work. Seal probable heat bypasses and key junctures. Repair or replace glass as needed. Whenever feasible, based on site-specific conditions, use diagnostic tools such as depressurization, infrared scanners, and smoke testing equipment to determine the appropriate sealing locations in the building, specific units, and common areas. Provide sealing work that will improve the thermal boundary of the building and address the tenant comfort zone. Complete air sealing to all building types based upon specific Wisconsin protocols. See the Field Guide for more guidance on air sealing.

All air sealing work, depressurization testing, and worst case draft tests shall be documented in the Diagnostic Workbook. If zone diagnostics are completed, document the results on the appropriate tab in the Diagnostic Workbook.

8.5.5.1 1-4 Unit Air Sealing Specifications

1) Seal all major attic bypasses, the sill box area if air leakage is identified and key junctures, as guided by the blower door. Replace missing or broken window glass and gross holes in the building envelope. Seal chases that may be open to the outside of the thermal boundary. Examples of these heat bypasses are open interior walls, garbage chutes, plumbing and heating chases, etc. These measures are classified as Major Air Sealing. Complete Major Air Sealing work prior to installing any other shell measures. Air sealing can be completed whether or not blower door testing is performed.
2) As a general rule for sealing "all major attic bypasses", conditioned air leaking into attics should be no greater than 10 percent of the total CFM50 of the final blower door test.
3) Conduct zone-pressure-diagnostic testing on homes with an attached garage, and in other homes as appropriate.
4) When a blower door test cannot be completed, perform Major and Minor Air Sealing. Minor Air Sealing air sealing targets drafts, to improve occupant comfort, and is limited to one hour.

5) If recommended by the Diagnostic Workbook, Agencies may use depressurization tests to guide forced air distribution system work, air sealing, and the maximum exhaust ventilation. Take steps to address depressurization that exceeds the guidelines.

8.5.5.2 Mobile Home Air Sealing Specifications

1) Seal all major attic bypasses. Replace missing or broken window glass and gross holes in the building envelope. Seal chases that may be open to the outside of the thermal boundary. Air Sealing measures are completed on the building prior to installing any other shell measures. Air sealing shall be completed whether or not blower door testing is performed.
2) As a general rule for sealing "all major attic bypasses", conditioned air leaking into attics should be no greater than 10 percent of the total CFM50 of the final blower door test.
3) Conduct building depressurization tests in all units.
4) When a blower door test cannot be completed, perform Major and Minor Air Sealing. Minor Air Sealing air sealing targets drafts, to improve occupant comfort, and is limited to one hour.
5) Use depressurization tests utilizing the Diagnostic Workbook to guide forced air distribution system work, air sealing, and the maximum exhaust ventilation. Take steps to address depressurization that exceeds the guidelines.

8.5.5.3 Multi-Family Air Sealing Specifications

1) Prior to insulating, air seal as follows:
   a) Use the Multi-family Building Air Sealing Checklist to check and air seal typical air leakage locations, including but not limited to, heat bypasses between party walls and between the building and buffer zones, and building's key junctures.
   b) Whenever feasible, use depressurization, infrared scanners, and smoke pencils as diagnostic tools to guide air sealing of attic bypasses, the sill box area, and key junctures.
   c. Replace missing or broken window glass and seal gross holes in the building envelope.
2) After insulating, provide sealing work that will improve conditions in the tenant’s comfort zone.
3) All air sealing shall be completed using materials with the proper fire rating.
4) Where appropriate, follow the basic air sealing procedures in the WI Weatherization Field Guide.

8.6 Mechanical Systems Measures

8.6.1 Heating System Replacement General

Replacement heating systems modeled in the NEAT Heating System tab with a minimum SIR of 1.0 are considered energy conservation measures (ECMs). Fuel switching is allowed when the replacement meets a minimum 1.0 measure SIR and the job meets a minimum 1.0 cumulative SIR. Model all heating systems as an ECM first, unless otherwise indicated. A secondary heating system may be left in place only when it is properly modeled, meets the SIR requirements and is operating safely. See Weatherization Assistant Guide 6.0.8 for further details on modeling secondary heating systems.

All heating system replacements shall meet the minimum specifications in the Wisconsin Weatherization Materials and Specifications and applicable procurement templates available on the HE+ Procurement SharePoint page.

8.6.1.1 Informational Modeling

If the heating system replacement has an SIR of less than 1.0, model the replacement in the Itemized Cost tab as a Health and Safety Replacement for each job. Not all heating systems will be replaced. Follow the protocol below to determine if the system will be replaced.

Inspection forms and efficiency and safety test results on all heating systems (existing or replacement) shall be maintained in the customer file.

1) Natural Gas and LP Forced Air Furnaces:
   a) Inspect and test all furnaces for safety and efficiency.
   b) Model all furnaces for replacement as an ECM by selecting “Evaluate All”.
   c) For unsafe furnaces that have a measure SIR of less than 1.0.
      i. Replace the heating system if the job has a cumulative SIR of 1.0 or greater when modeled with the Health and Safety replacement.
   d) If a system has less than 5 years of useful life and estimated repair costs greater than $500, replace the system if the job has a cumulative SIR of 1.0 or greater when modeled with the Health and Safety replacement.
2) Oil Forced Air Furnaces:
   a) Inspect and test oil furnaces for safety and efficiency.
   b) Model all furnaces for replacement as an ECM by selecting “Evaluate All”.
      i. With agreement from the building owner, model fuel switching to gas for oil furnaces that are candidates for replacement. Proceed with the fuel switch if the measure SIR is 1.0 or greater.
      ii. Oil tanks placed out of service by the weatherization Agency in conjunction with a heating system fuel switch shall be sealed off or removed in accordance with Wisconsin Administrative Code ATCP 93. When performed with a fuel switch, report oil tank capping and removal in WisWAP measure ZRHS035 Fuel Switching (see 8.6.1.2 Fuel Switching and Appendix B WisWAP Reporting Guide).
      iii. Existing oil tanks placed out of service prior to the weatherization energy audit may be sealed or removed in accordance with ATCP 93 only if a documented health and safety reason exists at the time of the energy audit. When sealed or removed for health and safety reasons and not in conjunction with a fuel switch, report all oil tank costs in WisWAP measure WHAQ035 Other Remediation (see Appendix B WisWAP Reporting Guide).
      iv. In properties other than 1 and 2-unit buildings, the contractor performing tank cleaning and tank removal shall be certified in accordance with SPS Chapter 305.
   c) Unsafe furnaces that have a measure SIR of less than 1.0 may be replaced only if the job has a cumulative SIR of 1.0 or greater when modeled as a Health and Safety replacement.
3) Boilers:
   a) Inspect and test boilers for safety and efficiency.

b) Model all boilers for replacement by selecting “Evaluate All”. First, model only a high efficiency gas boiler. If the computerized audit does not select the high-efficiency replacement boiler, then rerun the audit and model the standard efficiency boiler.
   i. With agreement from the building owner, model fuel switching oil to gas.
c) Unsafe boilers that have a measure SIR of less than 1.0 may be replaced only if the job has a cumulative SIR of 1.0 or greater when modeled as a Health and Safety replacement.

4) Vented Space Heaters (non-wood):
   a) Inspect and test all space heaters for safety and efficiency.
   b) Model all space heaters for replacement as an ECM by selecting “Evaluate All”.
   c) Unsafe space heaters that have a measure SIR of less than 1.0 may be replaced only if the job has a cumulative SIR of 1.0 or greater when modeled as a Health and Safety replacement.
   d) Direct vented wall space heaters shall be sealed combustion.
      i. With agreement from the building owner, model fuel switching oil to gas and convert room heaters to direct vent wall heaters, where feasible. Proceed with the fuel switch if the measure SIR is 1.0 or better.
   e) Oil space heater replacement shall be approved on a case-by-case basis. Submit information for review to the HE+ Help Desk.
      i. Include the Building ID# of the job, the reason for replacement, the reason why no heater fuel conversion is planned, and the manufacturer’s specifications for the replacement unit, including the AFUE.
5) Other Space Heaters:
   a) Stand-Alone Electric: Repair, replacement, and installation are not allowable costs.
   b) Un-Vented Space Heaters: A home with an unvented space heater shall be deferred unless the space heater is to be removed as part of the required weatherization work, or the homeowner has the unit removed as part of the deferral.
6) Electric Conversion: Replace furnaces or baseboard heaters when there is an SIR of ≥1.0 for both the measure and the job.
   a) Modify the heating system type in the Heating tab to reflect planned replacement of the system, and include the AFUE of the new system.
   b) Use the Electric Fuel Switch Calculator Worksheet to determine the energy savings to be entered into the NEAT audit.
   c) To determine the SIR for the measure and the job, enter the conversion information generated by the calculator into the NEAT Itemized Cost tab.
      i. The required information includes the correct WisWAP measure line identification, the savings as predicted by the calculator, the fuel type saved, and the lifetime and the cost of the conversion.
      ii. Proceed if the replacement system if the measure and the job have an SIR of 1.0 or better.
   d) The Electric Fuel Switch Calculator Worksheet is available on the HE+ website. The completed worksheet results shall be printed and retained in the customer file.
   e) Existing baseboard heaters may be left in place. The Division recommends disconnecting the baseboard heaters to prevent continued use of the units.

7) Wood (as primary system): Contact the help desk if switching from Wood to Natural Gas or LP to obtain how to calculate energy savings. Wood to wood replacements shall be performed as a Health and Safety measure. Do not model as an ECM.
8) Non-electric secondary heating systems may be replaced if the system is a safety hazard and cannot be eliminated with the replacement of a primary system with prior approval from the HE+ Help Desk.

8.6.1.2 Fuel Switching

Heating system replacements shall maintain the existing fuel type unless:

1) Natural gas or LP gas is available and the fuel switch replacement measure has a minimum SIR of 1.0 when tested with the NEAT audit as an energy conservation measure; or
2) The existing system is electric and the conversion models with an SIR of 1.0 or better when the projected savings are calculated using the Electric Heat Conversion Worksheet and entered into the NEAT Itemized Cost tab; or
3) There are systems using different fuels exhausting into the same chimney.

If fuel switching is an option due to one of the conditions above, the Agency may convert appliances with the customer's consent.

Additional installation charges apply for winter installs of natural gas laterals. Agencies are encouraged to coordinate projects as to not incur additional charges for winter rates when practical.

1) If particular job circumstances dictate that winter rates cannot be avoided, the minimum cumulative job SIR to proceed with the fuel switch must be 1.5 or greater.
2) If job circumstances dictate that winter rates cannot be avoided and the cumulative job SIR is greater than 1.0 and less than 1.5, submit the .wdz file and other relevant information to the Help Desk for review. Prior approval by the Division is required.

All costs associated with fuel conversion shall be included with the heating system replacement measure when modeling the primary heating system for replacement with Weatherization Assistant. See the Weatherization Assistant Guide for additional information on modeling fuel switches using NEAT and MHEA.

In WisWAP, report the heating system bid costs to the appropriate WisWAP heating system measure. Additional costs of fuel switching such as exterior lateral installation and oil tank treatments shall be included in measure ZRHS035 – Fuel Switching. If performing an LP to Natural Gas fuel conversion only (no replacement), report all costs using WisWAP measure ZRHS035 – Fuel Switching. Include the total linear feet of exterior natural gas lateral installed and the type of fossil fuel switch (Oil to LP; Oil to NG; LP to NG) in the comments, when applicable.

The maximum allowable expenditure for measure ZRHS035 is $1,500. If the fuel switching costs are estimated to exceed $1,500 the agency shall contact the Help Desk and receive approval from the Division prior to proceeding with the fuel switch.

See the Fuel Switch Policy heading on the HE+ WisWAP Information page for additional guidance. Agencies shall notify the Help Desk and receive prior approval before proceeding with large-scale fuel switch projects (e.g. entire mobile home parks, neighborhoods or communities).

8.6.1.3 1-4 Unit Heating System Replacement and Mobile Home Specifications

All replacement heating systems except for space heaters and wood space heaters shall meet the minimum Wisconsin weatherization program efficiency standards and listed in the AHRI Directory of Certified Product Performance. Replacement wood space heaters shall be AHRI listed appliances. Wood heater installation shall conform to the requirements of NFPA 211.

1) Use the existing distribution system and gas supply line whenever safe and feasible.
2) Properly remove and dispose of existing unit. In electric conversions, the Division recommends disconnecting existing electric baseboard units at the service panel and leaving them in place.
3) New installations require a dedicated electrical circuit rated or fused to match the amperage of the new system's requirements for overcurrent protection.
4) Provide an owner's manual with a heating system replacement on or near the heating system. The manual shall be attached in a durable device that allows for repeated customer access.
5) Properly size replacement heating systems units using an accurate analysis through REScheck™, ACCA Manual J, or an equivalent industry-accepted sizing procedure.
   a. When sizing boiler systems, consider the capacity of the existing terminal devices and whether or not domestic hot water will be heated with the boiler. If the load is too high or too low for the house, make the necessary adjustments to the distribution system.
6) Space heaters (non-wood) require:
   a. An air circulating fan (not applicable to electric baseboard).
   b. A properly grounded duplex receptacle for electrical service.
   c. A fire-rated floor protector if required PMI, sized to the width and length of the space heater.
7) Install a condensate pump where needed to reach an appropriate drain. Condensate pipes generally may drain to 1) laundry stand pipe; 2) a new standpipe, indirect or local waste pipe; or 3) a floor drain when the pipe can be properly secured and does not pose a hazard to the occupants. All installations require an air break. Condensate lines cannot be drilled directly into any drain pipe or drain to grade or to a sump pit. For the more information see Wisconsin Uniform Dwelling Code (WI UDC) SPS 382.33. Local jurisdictions may vary on acceptable options.
8) Condensate pumps may be installed using an existing (non-GFCI) receptacle accessible without an extension cord, a new GFCI receptacles, or directly wired in accordance with pump and furnace manufacturer's recommendations and the requirement of the authority having jurisdiction.
9) Gas pipe will be installed, supported, and electrically bonded (if required) in accordance with NFPA-54 and the WI Uniform Dwelling Code. Follow the manufacturer's specifications for installation. For more information see NFPA-54 and WI SPS 323.16.
   a. When improperly bonded CSST is present in the building at audit and no fuel system work will be completed as part of the weatherization job, the agency may properly bond the existing CSST, per NFPA 54 (sec 7.13.2), 2015 IFGC (sec 310.1.1), and NFPA 70

(NEC), if required to comply with local Codes regarding the bonding of existing CSST installations.

10) Verify that flue-gas oxygen, temperature, draft, and carbon monoxide levels are within the manufacturer's specifications. Make adjustments as necessary.
11) Ensure that all remaining naturally vented combustion appliances are drafting properly.
12) Seal openings in chimneys where naturally vented combustion appliances are eliminated. A written notice on the chimney where sealed, that the chimney is no longer functional, is recommended.

8.6.1.4 Multi-Family Heating System Replacement Specification

Building owners may opt to replace existing heating systems that do not meet a minimum 1.0 SIR test as a part of their contribution toward the weatherization of the building. Miscellaneous heating system repair measures that are required for the heating system to function properly shall be modeled separately in the Itemized Cost tab. The owner's contribution shall be equal to or exceed the buy-down amount to generate an SIR equal to or greater than 1.0. Note: as stated in the General Policy and Specifications, the buy-down of measures shall not result in other cost-effective measures being dropped from the improvement package. All measures that were cost-effective after the initial energy audit is conducted shall remain on the list of measures to be completed at the property.

Replacement heating systems shall meet ENERGY STAR® standards whenever possible. Replacement heating systems that are not addressed in these specifications are subject to review and approval by the Division. All replacement heating systems shall meet the requirements of the Wisconsin Commercial Building Code, SPS 364 and the International Mechanical Code, as referenced by SPS 364 or any other commissioning requirements of the authority having jurisdiction.

1) Gas Heating Systems - Natural Draft: Model all gas-fired heating systems for replacement. Inspect fan-assisted systems for potential safety issues and model for replacement if safety issues cannot be repaired.
2) Gas Heating Systems - Sealed Combustion: Inspect systems for potential safety issues and model for replacement if safety issues cannot be repaired.
3) Oil Heating Systems: Model for replacement if the existing system is 10 years or older in age. Inspect systems less than 10 years old for potential safety issues and model for replacement if safety issues cannot be repaired.
4) Space Heaters: Model for replacement if the existing space heater is 10 years or older in age. If necessary, use the 5-24 Unit Workbook to generate savings information for multiple space heaters, incorporating the savings information and costs into NEAT's Itemized Cost section. Include all of the costs associated with the fuel switch in the replacement costs. Inspect systems less than 10 years old for potential safety issues and model for replacement if safety issues cannot be repaired.

Electric Furnace Conversion: Model for replacement with gas furnace with the energy audit or the Electric Heating System Conversion Calculator. Include all costs associated with the fuel switch in the replacement costs. Inspect all units that will not be replaced for potential energy conservation measures and safety issues.

All replacement heating systems, except wood burning units, shall meet the minimum Wisconsin weatherization program efficiency standards and the AHRI Directory of Certified Product

Performance standards. The type of efficiency standard varies based on the fuel type and the heating system type (commercial versus residential).

1) Use existing distribution system and gas supply line.
2) Properly remove and dispose of existing unit. In electric conversions, the Division recommends disconnecting the existing baseboard units at the service panel and leaving them in place.
3) Provide an owner's manual with heating system replacements. Ensure that the owner or building manager receives training regarding effective operation, and procedures for start-up, operation, maintenance, and seasonal shut-down.
4) Install properly sized and commissioned units following the requirements of the Wisconsin Commercial Building Code or the authority having jurisdiction.
5) Install a condensate pump where needed to reach an appropriate drain. Condensate pipes generally may drain to 1) a laundry stand pipe; 2) a new standpipe, indirect or local waste pipe; or 3) a floor with a floor drain when the pipe can be properly secured and does not pose a hazard to the occupants. All installations require an air break. Condensate lines cannot be drilled directly into any drain pipe. For the more information see the Wisconsin Plumbing Code SPS 382.33. Condensate pumps may be installed using existing receptacles, new GFCI receptacles, or directly wired per manufacturer's recommendations.
6) When required, an approved gas pipe type will be installed, supported, and electrically bonded in accordance with NFPA-54. Follow the manufacturer's specifications for installation. For more information see NFPA-54/International Fuel Gas Code Chapter 4.
    a) When improperly bonded CSST is present in the building at audit and no fuel system work will be completed as part of the weatherization job, the agency may properly bond the existing CSST, per NFPA 54 (sec 7.13.2), 2015 IFGC (sec 310.1.1), and NFPA 70 (NEC), if required to comply with local Codes regarding the bonding of existing CSST installations.
7) Seal openings in chimneys where atmospheric vented appliances are eliminated. When sealed, a written notice on the chimney that the chimney is no longer functional is recommended.
8) The installer shall guarantee materials and labor for heating system replacement for a period of one year, starting from the date of satisfactory installation.

8.6.2 Other Heating Systems Work General

Order a clean and tune only when 1) it is required by policy or 2) diagnostic tests indicate that efficiency or CO levels can be improved. Based on the auditor's inspection, a clean and tune may be performed on natural gas and LP heating systems that will not be replaced. Perform a clean and tune on primary oil heating systems that will not be replaced. Evaluate and test distribution systems. Seal major return and supply leaks. Seal and insulate ducts in unheated areas. Model system repair costs separately in the Itemized Cost tab. Programmable thermostats may be installed when the existing thermostat must be replaced and the occupant is willing and able to program the replacement thermostat. Programmable thermostats are not recommended for boilers.

8.6.2.1 1-4 Unit, Mobile Home and Multi-Family Other Heating Systems Work Specifications

1) Clean and tune primary oil furnaces or oil boilers that will not be replaced. Secondary systems may receive a clean and tune as determined by the auditor. See guidance in 8.6.2 above on when clean and tunes are allowable.
2) When improperly bonded CSST is present in the building at audit and no fuel system work will be completed as part of the weatherization job, the agency may properly bond the existing CSST, per NFPA 54 (sec 7.13.2), 2015 IFGC (sec 310.1.1), and NFPA 70 (NEC), if required to comply with local Codes regarding the bonding of existing CSST installations.
3) When performing a clean and tune, installing a dedicated circuit is not required. However, if the circuit is rated for higher amperage than is required by the heating system, provide a properly sized fuse or breaker at the appliance or at the service panel.
4) For sealed combustion heating systems installed as a one-pipe (exhaust only) system, convert the appliance to a two-pipe (intake and exhaust) system. Comply with manufacturer's instructions and NFPA 54 for location of intake pipe.
5) Inspect and test forced-air heating systems for temperature rise, airflow, and for Health and Safety problems
6) Seal all gross holes, and seal distribution leakage as directed by the Worst Case Depressurization test recommendations in the Diagnostic Workbook when naturally drafting appliances are present in the building and when negative indoor air quality conditions exist in the basement CAZ. (Note: see the Field Guide for additional guidance).
7) Take corrective action if a building CAZ is excessively depressurized or is otherwise negatively impacting natural-draft appliances.
8) Measure the heating system’s temperature rise to confirm that it meets manufacturer’s specifications. (Note: see the Field Guide for additional guidance).
9) Seal and insulate ductwork in unheated areas with a minimum of R-11 foil-faced insulation. Ducts may be insulated with two-part foam products that meet the federal specification for duct insulation.
10) Install dampers and ensure a proper temperature rise reading where ductwork is added.
11) Adjust fan speed levels as necessary to ensure customer comfort and to verify that the temperature rise for the heating system meet manufacturer specifications for new furnace installations. If adjusting fan speed levels does not bring temperature rise levels within manufactures specifications, consider performing ductwork modifications. When feasible install cold air returns to second floor rooms as needed (especially where electric space heaters are used to condition the second floor). See the Field Guide for modification specifications.
12) In rooms other than kitchens and bathrooms with limited or no return air, consider adding a return duct, undercut the door, or install a transfer grille or jumper-duct to improve the return airflow, with the owner’s permission and when feasible.
13) Return grills are not allowed in the combustion appliance zone and shall not be installed in unconditioned areas or unintentionally conditioned areas.
14) Consult with customers about the removal of existing supply grills on the plenum. A new supply register may be installed to replace plenum grilles at a location where conditioning is needed (e.g., a laundry area or work bench).

15) Boiler distribution systems shall be inspected for proper operation.
   a) Flush the existing distribution system according to manufacturer's instructions. If instructions are not available, flush until water runs clear and free of sediment. For zoned systems, flush each zone separately.
   b) Bleed air from the entire system.
   c) Install an automatic fill valve and back-flow preventer if they are not present.
   d) On compression (bladder style) expansion tanks, install an air excluding device if not present. Systems with standard (non-compression) style expansion tanks should not have automatic air excluding devices installed.
   e) Install a compression tank or fill the existing expansion tank and the system to the correct level.
   f) Ensure all safety systems are operational. If a low-water cutoff and pressure relief valve are not present or not functioning properly, install compatible controls.
   g) Where feasible. Install electric vent damper on atmospherically vented boilers.
   h) Where feasible, install thermostatically controlled radiator valves on the major radiators.
   i) Install outdoor reset and boiler controls, if feasible.
   j) Inspect radiators. Repair or replace as necessary.
   k) Install automatic and manual air bleed valves to eliminate air from each high point in the distribution system if they are not present and functioning properly.
   l) Inspect supply and return lines and connections and repair leaks.
   m) Insulate supply and return piping outside conditioned spaces with foam or fiberglass pipe insulation.
   n) Model for extending new piping and radiators to conditioned areas like additions and finished basements that are currently heated by space heaters if feasible.
   o) Insulate pipes in the circulating loop between the boiler and an indirect domestic water heater.
16) Outdoor reset controls
   a) High efficiency boiler: Install an outdoor air temperature sensor and boiler controls to improve efficiency. Include outdoor reset for all boilers and warm weather shut-down, unless it affects domestic hot water.
   b) Non-high efficiency boiler: Consider implementing the requirement identified in 15) a. above.
17) Consider installing programmable thermostats with forced air systems. Relocate thermostats to interior walls and instruct occupants regarding the operation of setback thermostat. Programmable thermostats are the only allowable replacement thermostats that can be reported as an energy conservation measure. A reasonable effort shall be made to upgrade existing thermostats to a programmable thermostat that meets the household's needs. Properly recycle any thermostat that has been replaced. Many locations have designated collection facilities for household hazardous waste or conduct annual or occasional "clean sweeps." Contact the nearest DNR regional office for local options.
18) In the event the Agency elects not to install a programmable replacement thermostat, a working thermostat shall not be replaced. If the current thermostat is non-functional, a conventional thermostat may be used but the cost shall be treated as a Repair Measure since energy savings are not associated with a non-programmable thermostat. Report thermostats separately from heating system replacement costs. Properly recycle any thermostat that has been replaced.

19) Replace oil filters.
20) For forced air units that receive a clean and tune or replacement, provide the occupant with one of the following MERV 6 or higher filters:
    a) One deep pleated (3" depth or more) disposable furnace filter, or
    b) Six 1"-2" disposable filters (one installed; five replacements), or
    c) One permanent cleanable filter.
21) Special filters for air cleaning may only be installed as a Health and Safety measure, based on building occupant medical conditions.
22) All forced air systems shall have a filter cover. Magnetic filter covers are allowable only if they provide an adequate seal to the ductwork to prevent air leakage.
23) For all heating system work, including replacements, a tag shall be prominently affixed to the heating unit identifying who the customer should call for service. The tag information shall include the name, address, and telephone number of the service organization.

8.6.3 Water Heater Replacement General

Model water heater conversion or replacement as an energy conservation measure with the audit based on the criteria listed in the specifications. All replacement water heaters shall meet the minimum Wisconsin Weatherization Material Specifications, unless otherwise specified below. The specifications are available on the Home Energy Plus Procurement SharePoint site under the “Policy” heading.

8.6.3.1 1-4 Unit and Mobile Home Water Heater Replacement Specifications

1) Fuel switch water heater conversions: Model Water Heater conversion from electric to gas, LP to natural gas, or oil to gas as an energy conservation measure when the following conditions are met:
    a) Gas is available.
    b) The customer agrees to the conversion.
    c) If the existing electric water heater is load controlled (time of use), the Agency shall contact the Help Desk for approval prior to proceeding with a fuel switch.

    Replace the water heater if selected by the audit as an ECM. The replacement water heater shall be power vented.
2) Replacement without fuel switching. Model electric to electric or gas to gas water heater replacement as an energy conservation measure with the audit if the existing water heater is over-sized for the household or the water heater needs to be replaced as a Health and Safety Measure. Replace the water heater if the measure is selected by the audit as an ECM. See Weatherization Assistant Guide Chapter 4 for modeling guidance.
3) If the unit is a mobile home the replacement water heater shall be rated for mobile home use and meet the following efficiency standards as listed in the latest editions of the AHRI Directory of Product Performance.
4) Indirect water heaters may be installed when the building has, or will have, a high efficiency boiler and the water heater is selected as an energy conservation measure with the audit (a minimum 1.0 SIR). See Weatherization Assistant Guide Chapter 4 for additional details on modeling the indirect water heater.
    a) When an existing indirect water heater must be replaced because of health and safety conditions model the replacement as indicated above.
    b) Removal and disposal of the old water heater is required.

c) Follow manufacturer's instructions when installing indirect water heaters.

5) The sizing of replacement water heaters shall consider the number of people in the household.

6) Replacement based on Health and Safety: If the measure SIR is 1.0 or greater, report it in WisWAP as an ECM. If it is less than 1.0, report it as a Health and Safety replacement. Note: Replacement water heaters of the same type, with higher EF/UEF are allowed when a leaking water heater is replaced as a Health and Safety measure and there are acceptable draft and combustion appliance zone (CAZ) depressurization test values.

7) Affix a tag to the water heater identifying who the customer should call for service. The tag shall be prominently displayed and include the service provider's name, address, and telephone number.

8.6.3.2 Multi-Family Water Heater Replacement Specifications

When needed to model multiple water heater replacements, use the 5-24 Unit Workbook to generate savings information. Incorporate the savings information and costs into NEAT's Itemized Cost tab. Building owners may opt to replace existing domestic hot water heating systems that do not meet a minimum 1.0 SIR test as a part of their contribution toward the weatherization of the building. The owner's contribution shall be equal to or exceed the buy-down amount needed to reach an SIR of 1.0. The replacement system shall be properly sized. All work will follow the Wisconsin Commercial Building Code, any commissioning requirements that apply, or other codes and regulations by the authority having jurisdiction.

1) Gas to gas replacements or system conversion: Replace the water heating system if the replacement has a minimum 1.0 SIR when modeled with the energy audit. The replacement water heater shall be one of the following:
   a) Power-vented and have a minimum .67 EF or .64 UEF (for 40 and 50 gallon units).
      i. 30 gallon water heaters shall have a minimum .63 EF or .60 UEF, and may be installed only when the unit cannot be upgraded to a 40 gallon unit.
   b) An indirect water heater working with a high-efficiency boiler system.
   c) A heat pump water heater with an EF of 2.0 or greater.
   d) One of the units listed above with a solar component. Solar water heaters shall be modeled in the NEAT itemized Cost tab.
2) Fuel switch water heater conversions**:** Fuel Switching water heating systems from electric to gas or LP to natural gas is allowed when the total cost for fuel switching the system is modeled with the energy audit, the measure meets a minimum 1.0 SIR, and the building owner agrees to the conversion.
3) Building owners may opt to replace (at their cost) existing water heating systems that do not meet a weatherization program measure SIR of 1.0 or better, with the actual cost counted as part of their contribution toward the weatherization of the building. The replacement system shall be properly sized and represent an increase in efficiency of at least 5 percent over the existing water heating system. The replacement shall be completed prior to the final inspection of the weatherization measures.
4) Electric to electric: Model the existing water heater system for replacement if the system is not properly sized, the water heater needs to be replaced based on safety concerns, or there is the potential to maximize energy efficiency. Replace the water heating system if the replacement has a minimum 1.0 SIR when modeled with the energy audit. The replacement water heater shall meet one of the following standards:

a) An electric storage water heater with a minimum .95 EF or .93 UEF.
b) A heat pump water heater with an EF of 2.0 or greater.
c) One of the units listed above with a solar component. For solar water heaters, contact the HE+ Help Desk for assistance in calculating the savings costs.

5) All replacement water heater(s) shall be sized properly for their intended use.
6) Removal and proper disposal of the old water heater is required.
7) Affix a tag to the water heater identifying who the customer should call for service. The tag shall be prominently displayed and include the service provider's name, address, and telephone number.

8.7 Baseload Measures

8.7.1 Lighting

Replace the most frequently used incandescent light bulbs with CFLs or LEDs. In general, this includes all existing incandescent light bulbs except those in areas where lights are rarely or never used. Existing CFLs shall not be replaced with LEDs. LED bulbs do not operate in all styles of dimmable fixtures, Agencies shall install LED bulbs in dimmable fixtures at their discretion. Replace all halogen torchieres with CFL or LED torchieres, and remove and dispose of old torchieres. Replacements shall be appropriate for the intended use and shall be installed and inspected prior to completion of the unit.

All lighting shall meet ENERGY STAR® standards. Agencies may use https://www.energystar.gov/productfinder/ to check for availability of ENERGY STAR® certified lightbulbs, and use non-certified lightbulbs when ENERGY STAR® is not available, documenting this in the customer file.

8.7.1.1 1-4 Unit and Mobile Home Lighting Specifications

1) See Weatherization Assistant Guide Section 4.5 for modeling instructions.
2) CFL or LED dedicated replacement fixtures may be used, if appropriate.
3) Increase lighting efficiencies in common areas of 2-4 Unit buildings.
4) Provide CFL disposal and clean-up instructions to customers with Guidebook.

8.7.1.2 Multi-Family Lighting Specifications

Convert incandescent lighting to more efficient fluorescent (CFL), LED or induction lighting as a single improvement package or measure as identified in the specifications. Replace exit lighting with LED replacements. When needed, use the 5-24 Unit Workbook to generate the savings for lighting packages, incorporating the savings information and costs into NEAT's Itemized Cost section. Individual lighting may be modeled with Weatherization Assistant.

1) Package lighting ECMs for the common area of the building in the following locations and conditions:
   a) Exterior lighting that operates from dusk until dawn or longer.
   b) Lighting in corridors and common areas, with occupancy sensors where feasible.
   c) Model tenant lighting that is used most frequently for the longest duration.
2) The use of induction lighting to replace exterior mercury vapor or high-pressure sodium lighting is allowed.

8.7.2 Domestic Water Heater Measures

Install showerheads and flow restrictors. Reduce water heater temperature to 120 degrees, where feasible. **Do not** model domestic hot water measures with Weatherization Assistant. Identify measures in the Itemized Cost tab and **do not** check "Include in SIR."

8.7.2.1 1-4 Unit and Mobile Domestic Water Heater Measures Specifications

1) Install 1.5 GPM or less showerheads and faucet aerators on every fixture.
2) Reduce water heater temperature to 120 degrees.
3) Insulate 6' of hot and cold water pipes from water heater if water heater is located in a water heater closet with only an outdoor access in a mobile home.
4) Insulate all pipes on the circulating loop between the boiler and a sidearm water heater.

8.7.2.2 Multi-Family Domestic Hot Water Heater Measures Specifications

1) Install 1.5 GPM or less showerheads and faucet aerators on every fixture.
2) For central boiler water heaters, insulate all accessible pipes within the boiler room, including the pipes in the circulating loop between the boiler and the water heater.
   a) For hot water systems install one and a half-inch fiberglass insulation on all pipes less than or equal to one and a half inches and two inches of fiberglass insulation on all pipes greater than one and a half inches in diameter.
   b) For steam systems install one and a half-inch fiberglass insulation on all pipes less than or equal to one and a half inches and three inches of fiberglass insulation on all pipes greater than one and a half inches in diameter.
3) Reduce water heater temperature to 120 degrees.
4) Where a recirculating pump is present, install an aquastat control on the return end of the loop to shut off the pump when the line is hot. Set the aquastat to turn on the pump when the line temperature drops to 110 degrees. Set the control to provide a deadband of 5 degrees or more.

8.7.3 Refrigerator Replacement and Removal

Model the refrigerator for replacement. The replacement unit shall meet Wisconsin weatherization program specifications. Replacement refrigerators are limited to one per household and shall be a top freezer automatic defrost model with no through the door ice or water and no automatic ice maker. The unit being replaced shall be the least energy efficient one. A removal incentive may be offered for additional units not being replaced based on the specifications below.

Bottom-freezer and side-by-side refrigerator units shall be considered on a case-by-case basis for households with accessibility considerations. Model the unit with the energy audit. If the audit generates an SIR of 1.0 or greater, document the reasons for installation of the specialty unit in the customer file. If the replacement does not have an SIR of 1.0 or greater and the agency has determined an install is warranted, the agency shall submit a waiver request to the HE+ Help Desk and receive approval prior to installation of the specialty unit.

8.7.3.1 1-4 Unit, Mobile Home and Multi-Family Refrigerator Replacement and Removal Specifications

1) Follow the guidelines in Table 8.2 to size the replacement refrigerator.

Table 8.2: Refrigerator Sizing

Existing Size	Modeled Size*	Example Exceptions
14.5 – 19.4 cu. ft.	17.5 – 19.4 cu. ft.	Large households, dimensions of opening
19.5 – 21.4 cu. ft.	19.5 – 21.4 cu. ft.	

*When exceptions dictate model the appropriate size. Use 16 cu. ft. refrigerator models rather than 15 cu. ft. when feasible.

2) Offer a $100 incentive for removal of additional functioning units manufactured prior to 2003 or units with R12 refrigerant listed on the label.
   a) Incentives to remove a unit may be paid for a maximum of two refrigerators per household.
   b) Units must be plugged in at the time of the audit and in use continuously for a majority of the year to be eligible.
3) Additional units that do not qualify for an incentive may be removed with customer approval. Report disposal costs in WisWAP with a comment about the additional unit disposal.
4) De-manufacture and properly dispose of all refrigerators removed.

8.7.4 Freezer Replacement and Removal

Functioning freezers equal to or greater than 7 cubic feet may be modeled for replacement. The replacement unit shall meet the Wisconsin weatherization program specifications in and be a manual defrost freezer of comparable or smaller size than the existing freezer. Replacement freezers are limited to one per household. Existing chest type freezers shall be replaced with chest type freezers and existing upright freezers may be replaced with an upright freezer. A removal incentive may be offered for additional units not being replaced based on the specifications below.

8.7.4.1 1-4 Unit, Mobile Home and Multi-Family Freezer Replacement and Removal Specifications:

1) Document existing freezer information in the customer file and as required in WisWAP.
2) Model freezers in NEAT using values obtained from the Freezer Replacement Calculator to determine if the freezer has an SIR of 1.0 or more. Maintain a copy of the completed Freezer Replacement Calculator in the customer file.
3) Replacement freezers shall be approximately equal to or less than the size of the existing freezers. In situations where downsizing is not feasible, consider the size of the family and the way they use the freezer in selecting a replacement freezer.
4) Upright freezer installations may be installed only if an upright freezer is existing and being replaced, manual defrost chest type freezer will not fit in the allotted space, or the occupant is unable to access a chest type freezer. The limitations include:
   a) Replacement upright freezers shall be of comparable size or smaller than the existing upright freezer, but cannot exceed 19 cubic feet.
   b) Determine all costs associated with the upright freezer installation (delivery, set-up, removal, and proper de-manufacture and disposal of the existing unit). The upright freezer may be installed if the installation has an SIR of 1.0 or more.

5) Offer a maximum $100 incentive for removal of additional functioning units that are not being replaced, are ≥ 7 cubic foot or larger and were manufactured prior to 2003 or have R12 refrigerant listed on the label.
   a) Incentives to remove a unit may be paid for a maximum of two freezers per household.
6) Additional existing units that do not qualify for an incentive may be removed with customer approval. Report disposal costs in WisWAP with a comment about the additional unit disposal.
7) Consolidation: When two freezers are present, with the owner's permission model the combined total consumption for the two units with a single replacement unit of comparable volume up to 19 cubic feet.
8) De-manufacture and properly dispose of all freezers removed.

8.8 Health and Safety Measures

Health and Safety measures are defined as the cost of materials and labor necessary to eliminate or reduce hazards existing prior to, or potentially resulting from, the installation of weatherization materials. Resolution of Health and Safety hazards using Weatherization Program funds shall be done in conjunction with the installed ECM. Products meeting ENERGY STAR® standards shall be used unless otherwise indicated. When using modeling, include the Health and Safety measures in the Itemized Cost section.

NEAT/MHEA Modeling Guidance: Model Health and Safety measures exceeding $1,000 using the Itemized Cost tab. Select the measure from the drop-down menu. Check "Include in SIR" box. The minimum cumulative building SIR shall be 1.0 in order to complete the planned repairs.

8.8.1 Depressurization and Worst Case Draft Testing

Test the building's Combustion Appliance Zone (CAZ) for depressurization under worst case conditions. A Worst Case Draft (WCD) test shall be completed in every CAZ that has naturally vented combustion appliances, including gas or wood fireplaces, or space heaters. Each atmospherically vented appliance shall have an adequate draft and no spillage under Worst Case Draft (WCD) conditions. The depressurization tightness limits, testing procedures and adequate draft standards are outlined in the Weatherization Field Guide. See Air Sealing Specifications for specific approaches to building CAZ configurations.

NEAT/MHEA Modeling Guidance: Do not include worst case costs or makeup air costs when calculating the $1,000 limit for H&S costs.

1) List Worst Case and Makeup Air measures using the Itemized Cost tab.
2) Do not check the "Include in SIR" box.

8.8.1.1 Building is Below Depressurization Tightness Limit

This section applies to buildings with wood burning appliances or other appliances that cannot be tested for Worst Case Draft. When the final CFM_{50} is below the DTL CFM_{50} a multi-point series of blower door readings shall be completed. The multi-point test will provide a more accurate flow exponent for the building. For most buildings the default exponent of 0.65 provides an acceptable model for calculating building depressurization limits. On very tight buildings a change in the flow exponent will impact on the amount of ventilation needed and the depressurization limit for the building. Flow exponents usually vary between 0.5-0.9. Generally multi-point test numbers with exponents that are greater than 0.65 indicate the remaining air

leaks are smaller and more diffuse, generating a higher DTL CFM_{50}; the test results with an exponent around 0.5 indicate larger leaks, generating a lower DTL CFM_{50}. The Diagnostic Workbook provides a worksheet to document the multi-point test and calculate the flow exponent.

When the Diagnostic Workbook generates a warning notice to add make-up air to a dwelling, agencies shall enter the actual cfm flow rates of the exhaust appliances. This is necessary as the estimates for the amount of make-up air to add are based on the cfm flow rates documented in the workbook.

8.8.1.2 1-4 Unit and Mobile Home Depressurization and Worst Case Draft Testing Specifications

1) Complete depressurization testing on all buildings with combustion zones before and after weatherization is completed.
2) Complete combustion safety tests on all buildings with natural draft or fan assisted combustion appliances to ensure safe operation.
3) Confirm that the final CFM50 in buildings with solid fuel burning appliances present or with appliances that cannot be tested for WCD are above the DTL. Install makeup air in buildings that are below DTL or document existing make-up is already present.
4) Remedies for poor draft may include modifications to the flue or chimney, repairs or modifications to the furnace distribution system, or elimination of other negative pressures in the combustion zone.

8.8.1.3 Multi-Family Depressurization and Worst Case Draft Testing Specifications

1) When feasible, isolate the CAZ from the rest of the building. Use fire-stopping materials as required by code.
2) Complete combustion safety tests on buildings to ensure safe operation of all atmospheric vented appliances.
3) Ensure natural gas or LP water heaters and heating systems draft properly. Remedies for poor draft may include modifications to the flue or chimney, repairs or modifications to the furnace distribution system, or elimination of other negative pressures in the combustion zone.
4) In buildings with central heating systems, isolate the mechanical room (CAZ) from the rest of the building.
   a) Provide properly sized combustion air as needed.
   b) Seal forced air distribution leaks in the CAZ.
5) In buildings with individual heating systems in each unit and/or common areas, identify the CAZ in each unit or area.
   a) Ensure that there is adequate combustion air for each appliance.
   b) Test naturally drafting combustion appliances to ensure there is adequate draft under worst case depressurization conditions.
6) In buildings that incorporate an enclosed garage, determine the control methodology for managing combustion by-products.
   a) Ensure that the mechanical exhaust ventilation is controlled effectively, operates properly, and is properly sized.
   b) Where needed, install a carbon monoxide monitoring system that activates the garage ventilation equipment.

c) Where feasible, use diagnostic testing to ensure that there are no air pathways between the garage and occupied areas.

7) All air sealing shall be completed using materials with the proper fire rating. See the Weatherization Manual, Chapter 11 on Weatherization Materials for more information.
8) Install carbon monoxide alarms in all units that have gas appliances.

8.8.2 Mechanical Ventilation

Install properly sized mechanical ventilation when needed to ensure indoor air quality. Unless superseded by local codes, use the appropriate ASHRAE 62.2-2016 standard to calculate the requirements for continuous ventilation beyond the local exhaust ventilation requirements. Ventilation upgrades are not required unless the individual living unit requires more than 15 cfm of continuous ventilation.

If a customer refuses ventilation required by ASHRAE 62.2-2016, the Agency shall use discretion when proceeding with weatherization and may defer the building if there is a documented health and safety concern. If weatherization proceeds without the required ventilation, DOE funds shall not be used. All measures in the building must be invoiced to PB or EAP only.

Follow the Diagnostic Workbook instructions regarding continuous ventilation. See the Weatherization Field Guide for detailed ventilation specifications.

8.8.2.1 1-4 Unit and Mobile Home Mechanical Ventilation Specifications

The installation of mechanical ventilation is not required in buildings requiring 0 CFM or buildings with a calculated 20 CFM natural ventilation per occupant, or greater, as determined by the Diagnostic Workbook. Install whole house ventilation only in buildings requiring more than 15 CFM continuous ventilation. Exceptions include:

1) Install local exhaust ventilation for spot moisture control in buildings requiring 1 CFM or more, where the existing spot ventilation is not operated by the occupants for a reasonable amount of time per day. Provide the customer with education on proper use of spot ventilation.
2) Install local exhaust ventilation for spot moisture control in buildings requiring 1 CFM or more, where there is no ventilation. Provide the customer with education on proper use of spot ventilation.
3) Agencies may install local exhaust ventilation in any buildings where there is documented evidence of moisture or indoor air problems. Use ASHRAE 62.2-2016 to determine the needed ventilation and utilize a controller that best meets the customer's needs.

Ventilation controllers shall have a labeled on/off control option for customers. This may be accomplished by installing a controller with an on/off switch or a separate switch. Customers shall be provided with information on the current controller settings, ventilation needs and spot moisture control. This information is included in the Customer Guidebook.

8.8.2.2 Multi-Family Mechanical Ventilation Specifications

1) Whole building ventilation systems shall be properly commissioned when required by the local authority having jurisdiction.
2) Ensure that each unit has functional local exhaust ventilation for the main bathroom. This local exhaust ventilation shall operate at a minimum of 50 cfm under customer operation.

3) Install continuous mechanical ventilation as required by ASHRAE 62.2-2016 or WI Commercial Building Code SPS 364 (Table 364.0403), as applicable. When using the ASHRAE standard, the Diagnostic Workbook may be used to calculate whole building and individual unit ventilation requirements.
4) Install ventilation only in units requiring more than 25 cfm continuous ventilation. Exceptions include:
   a) Install continuous local exhaust ventilation for moisture control in each unit requiring 1-25 CFM, where the existing ventilation is not operated by the occupants for a sufficient length of time per day. Provide the customer with education on proper use of local ventilation.
   b) Install local exhaust ventilation, either customer operated or continuous, for moisture control in each unit requiring 1-25 CFM, where there is no ventilation. Provide the customer with education on proper use of local ventilation.
   c) Install local exhaust in each unit requiring 1-25 CFM and whole building ventilation in any building where there is documented evidence of indoor air problems.
   d) Document the exception conditions that generated the installation of the ventilation.
6) Install (or restore existing) whole building supply ventilation in any building where there is documented evidence of indoor air problems.
   a) Base whole building or individual unit ventilation requirements the number of bedrooms plus one or the number of occupants, whichever is greater (ASHRAE 62.2), or the persons or cfm per square feet.
   b) Document the exception conditions that justify the installation of the ventilation.
   c) Utilize a controller which allows for an adjustment to the fan cfm based on changes to the household size. Ventilation controls shall give a labeled on/off option for customers. The building owner or maintenance staff shall be supplied with the equipment manufacturer's information and instructions for the adjustment of fan cfm.
7) In buildings that incorporate a garage, determine the control methodology for managing combustion by-products. If present, ensure that the exhaust ventilation is properly operating and properly sized. See Commercial Building Code SPS 364 for the minimum sizing requirements.

8.8.3 Replacing Wood Heaters General

All replacement wood space heaters shall be listed appliances. All wood heaters shall meet applicable local codes and EPA requirements. All installations shall conform to NFPA 211. All other applicable requirements shall be followed when replacing a wood stove.

8.8.3.1 1-4 Unit and Mobile Home Replacing Wood Heaters Specifications

1) All installations shall comply with manufacturer's specifications.
2) All wood heating units shall be certified to meet EPA emission standards or local standards, whichever is most restrictive.
3) Installed units are certified and labeled by:
   a) National Fire Protection Association under 211; or
   b) International Conference of Building Officials; or
   c) Other equivalent listing organization.
4) Visually inspect chimney for safe operation in accordance with NFPA 211.

5) Install a stack thermometer where appropriate on all wood space heater installations. Follow the manufacturer's recommendation for proper installation.
6) Follow the manufacturer's recommendations for providing outdoor combustion air.
7) All customers shall receive in-home operation instructions to include proper wood-burning practices, proper maintenance and safety recommendations including the need for fire extinguishers.

It is important that customers understand the potential impact of exhaust ventilation on wood heater operation.

8.8.4 Other Health and Safety Measures General

Examples of other Health and Safety measures include:

1) Asbestos treatments, as necessary. The cost of asbestos work shall be modeled as an itemized cost and included in the SIR using the electronic energy audit or calculator required for the building type. See the Weatherization Assistant Guide.
2) When not present or when existing smoke detectors are non-functional, install a smoke detector in the basement and on each floor in the thermal envelope. When feasible, locate the alarms in the vicinity of the sleeping area(s). See Weatherization Field Guide Chapter 5.
3) When not present or when existing carbon monoxide alarms are non-functional, install a carbon monoxide alarm in the vicinity of sleeping area(s). If the sleeping areas cannot be monitored with one detector more than one detector shall be installed. See Weatherization Field Guide Chapter 5.

8.9 Repairs

Repairs are measures necessary for the effective performance or preservation of energy conservation measure materials. All repair measures shall be modeled in the Weatherization Assistant Itemized Cost tab and included in the SIR (see Weatherization Assistant Guide 4.5 Itemized Costs). Report the repair costs under the appropriate Repair category in WisWAP (see Appendix B WisWAP Reporting Guide). If the repairs reduce the cumulative SIR to below 1.0, and the building cannot be weatherized without the repairs, the building shall be deferred. Examples of repairs include minor repair of leaking roofs, major pressure boundary repairs, repair of electrical systems, or repair of hot and cold water leaks.8.9.1 Door Replacement

Model door replacements in NEAT. Primary exterior doors may be replaced ***only*** as a repair measure. Replace doors as a repair measure when there is a deteriorated door that cannot be repaired. Photographs shall be taken to document specifically why the door was replaced.

8.9.1.1 1-4 Unit, Mobile Home and Multi-Family Door Replacement Specifications

1) Premanufactured replacement doors shall be a minimum of R-5.
   a) Field-fabricated basement doors may be insulated to a minimum of R-5.
2) Replacement of patio doors is not an allowable measure.
3) Door replacements in buildings that are 50 years old or older, may be subject to historic review by the Wisconsin Historical Society if the building utilizes any federal funding (see 2.2.5 Historic Review).

4) Doors may be replaced only if the door is in the primary heating envelope and has any of the following characteristics:
   a) Rotting occurring on either the door jamb or the door blank;
   b) Holes or cracks in the door jamb or door blank that cannot be repaired; or
   c) Door repair is not feasible that will still allow the door to operate correctly.

All door replacement and/or repair shall be completed using Lead-Safe Weatherization procedures, under the supervision of a Lead-Safe Renovator. Any person who completes this work shall have been trained in Lead-Safe Weatherization procedures.

8.10 Code Compliance

It is the policy of the Wisconsin Weatherization program to minimize Health and Safety and Repair Costs and to use alternative (non-weatherization program) funding to address code compliance issues whenever feasible. Repairs and health and safety measures that are excessive in cost are cause for deferral. Occasionally a preexisting code compliance issue is triggered by an energy conservation measure and paid for with weatherization program funds. Table 8.9 below provides citations for some commonly installed measures.

Table 8.3: Weatherization Measures and Associated State Building Codes

WisWAP Measure Category	Code Citation	Notes
XHHW005 Water Heater Replacement	SPS 323.04/382.30(11)/384.20(5)(p)	Health and Safety Water Heater replacement
XHHW007 Water Heater Replacement	SPS 323.04/382.30(11)/384.20(5)(p)	Gas power vent from conventional gas (natural draft)
MWHC010 Water Heater Conversion	SPS 322.38(2),323.04/382.30(11)/384.20(5)(p)	Fuel Switch, electric to gas
MWHC035 Water Heater Conversion	SPS 323.04/382.30(11)/384.20(5)(p)	Indirect fired
MWHC05/XHHW020 Gas mobile home direct vent	SPS 323.04/382.30(11)/384.20(5)(p)	Replacement
MWHC025 Electric upgrade (MH)	SPS 323.04/382.30(11)/384.20(5)(p)	Mobil Home electric to electric water heater replacement
Flue Liners	SPS 321.30(7)(9)	Draft (orphaned water heaters)
Air Sealing	322.37(3)(b)	Air sealing of Electrical Switches and Receptacles Boxes
Air Sealing	SPS 322.37(4)(c)	Non-IC rated lights in insulated ceilings
Knob and Tube Replacement	SPS 316.003(3)(4)	Attics and walls

Condensate pump drains	SPS 323.156	Furnace replacement
Fuel Switch Oil to Gas	ATCP 93.315	Fuel oil tank removed from service
Ventilation	SPS321.05(2)	Ventilation Termination

9. Health and Safety

9.1 General Policy

An Agency shall identify existing Health and Safety (H&S) hazards during the energy audit, notify the property owner and occupants of these hazards, and, depending on their severity, treat the identified hazards prior to, or during, weatherization activities. Elimination of H&S hazards, if using weatherization program funds, shall be done in conjunction with the installation of energy conservation measures (ECMs). No H&S measures shall be performed in a home unless ECMs are also part of the scope of work. Health and Safety costs are limited to $1,000 per unit, unless a SIR ≥1 is verified by a NEAT or MHEA audit.

9.1.1 Health and Safety Checklist

A Health and Safety Checklist shall be completed as described in Table 9.1 below. The weatherization Health and Safety Checklist includes three parts and is available on the HE+ WisWAP Information page under the Field Forms heading. The Health and Safety Checklist shall be maintained per 2.2.3 Customer Files.

Health and Safety Existing Conditions
This includes the general areas inspected and documents the existing conditions at the time of the energy audit. If visual evidence of standing water, mold growth or other moisture issues exists, the Moisture Audit shall also be completed.

Moisture Audit
The Moisture Audit documents areas where moisture and/or mold are present at the time of the energy audit. If visible mold growth is encountered, complete the Mold Areas checklist. See Section 9.2 Mold Guidelines for additional information.

Indoor Air Quality
This section is designed to provide customer education on mechanical ventilation and radon prior to the start of weatherization work. Additional information specific to the installed ventilation is provided after the completion of weatherization work in the Customer Guidebook.

Customer Signature
The customer signature is designed to achieve compliance with state and federal requirements to verify the unit occupant received related educational documents and understands the risks associated with any identified health and safety hazards.

Table 9.1: Health and Safety Checklist Requirements

Housing Type	When Required	Notes	Signature Required By	Provide Signed Copy To
Single Family Home	A checklist is required for each home weatherized or deferred due to a health and safety hazard.	All hazards shall be documented on a single form with hazard location in comments.	Occupant	Owner, if different from occupant
2 to 4 Unit	A checklist is required for each unit in every building weatherized or	All hazards shall be documented with hazard location, including	Occupant[1]	Owner, if different from occupant

	deferred due to a health and safety hazard.	common area hazards, in comments.		
5+ Unit Multi-family	A single checklist is required for each building when a hazard is identified by an Agency representative.	All hazards shall be documented on a single form with location, including units, in comments.	Owner	Occupants[2]
Manufactured Home[3]	When a hazard is identified by an agency representative.	All hazards shall be documented on a single form with hazard location in comments.	Occupant	Owner, if different from occupant

[1] If unable to obtain occupant signature, document attempt on the checklist.
[2]The Agency may require the property owner provide notification to occupants.
[3] Checklist is not required for Measure List Homes.

If conditions noted on the Health & Safety Checklist are severe, it may be necessary to defer weatherization services. See Section 2.5 Deferral of Weatherization Services for more information.

9.1.2 Health and Safety Hazards

Potential or actual threats to Health and Safety vary by degree. Health and Safety hazards which are not an immediate threat to the occupants may be described as non-serious conditions. Health and Safety hazards that are an immediate threat to the occupants may be described as a serious condition.

1) **Non-serious** conditions may be addressed in part or full at the discretion of the local Agency. At a minimum, the occupants shall be informed of the concern and shall be provided with recommendations or information on how to address the concern. Examples of non-serious conditions may include minor electrical problems, maintenance problems, or a “potential” for indoor air problems.

2) **Serious** conditions shall either be addressed by the building owner prior to the weatherization work or by the Agency as a part of the weatherization work. Elimination of Health and Safety hazards using weatherization program funds shall be done in conjunction with the installation of energy conservation measures. Some “serious conditions” may be hazards that can be tied to weatherization measures, such as heating system, chimney or water heater failure, carbon monoxide leaks, or other treatable indoor air quality problems.

3) **Other serious conditions** will exceed the scope of the weatherization program. Major structural failure, lead paint contamination, major electrical overload, or faulty sewer systems are examples of conditions that exceed the scope of the weatherization program. A reasonable effort shall be made to refer building owners to other sources, such as HOME and CDBG, which may help address the hazards. Weatherization services shall be coordinated with other funding sources, where possible. If the Health and Safety hazards cannot be eliminated, the building shall be deferred until the hazards can be addressed.

9.1.3 Worker Safety

Worker safety is the responsibility of the Agency. In contracting with Agencies, the Division assumes Agency compliance with all applicable federal, state, and local safety and health regulations. The Agency is responsible for enforcing all work rules to ensure a safe working environment.

Safety Data Sheets (SDS) shall be available to workers in printed or digital format, the information contained in them shall be readily accessible from a work site and shall be kept up-to-date with products currently in use.

Weatherization field staff are required to take the OSHA 10-hour training. The Division recommends Production Supervisors and Crew Leaders take the OSHA 30-hour training. OSHA 30 may be substituted for OSHA 10; the trainings are not a progression (OSHA 10 is not a prerequisite). The OSHA training requirements do not apply to contractors.

The Agency is responsible for ensuring their personnel are properly trained and certified when certification is required (e.g., Lead-Safe Renovator), including required respirator training and fit testing.

Contractors are responsible for their own safety plans and training their workers. Agencies shall verify their contractors have obtained required certifications (e.g., Lead-Safe Renovator).

Table 9.1 below outlines the required trainings for various Agency field staff.

Table 9.1: Required Health and Safety Trainings for Agency Employees

Training	Auditor	Crew Leader	Crew Worker	Final Inspector	Hazardous Materials Coordinator
Lead Safe Renovator	Yes	Yes	Yes	Yes	Yes
Asbestos O&M and annual refresher	Yes	Yes	Yes	Yes	n/a
Asbestos Supervisor	Optional[2]	Optional[2]	Optional[2]	Optional[2]	Yes
Asbestos Inspector	Optional[2]	Optional[2]	Optional[2]	Optional[2]	Yes
Mold Awareness	Yes	Yes	Yes	Yes	Yes
OSHA 10-Hour	Yes	Yes	Yes	Yes	Yes
OSHA 30-Hour	Optional	Optional[2]	Optional	Optional	Optional[2]
Respirator Medical	Yes	Yes	Yes	Optional	Yes
Respirator Fit Test	Yes	Yes	Yes	Optional	Yes
Blood Lead Level Test[3]	Yes	Yes	Yes	Optional	Yes

Notes:
[1] Most Agencies train all field staff to Renovator level. See Section 9.3.3 Weatherization Requirements.
[2] This training is optional for these staff but recommended by the Division.
[3] Blood lead level test shall be performed annually for any staff that would come in contact with painted surfaces in a customer's home.

9.1.4 Occupant Pre-Existing Health Conditions

Agencies shall notify the customer that occupants with pre-existing health conditions may be adversely affected by installed weatherization materials or measures. If an occupant may be sensitive to certain weatherization materials or measures.

The Agency shall devise ways of installing materials to reduce exposure of the occupants so that weatherization work may be performed safely. Possible approaches may include temporary containment areas, HEPA filtered equipment, temporary removal or relocation of occupants that may be adversely affected, or alternative installation methods or materials that meet the specifications of the weatherization program.

An optional Release of Liability form is available for Agency use on the HE+ WisWAP Grantee Information page under the Field Forms heading. Use of this form can assist Agencies in meeting federal requirements to 1) inform customers of potential health risks, and 2) require customers to notify the weatherization agency of any occupant health issues that may be affected by weatherization activities.

9.1.5 Building Units Receiving HUD Funding

Local Agencies shall determine if a building unit referenced in an application for weatherization services is enrolled in a HUD funded program and if the HUD funded program requires meeting the standards of rule 24 CFR Part 35 (Subpart R), issued under sections 1012 and 1013 of Title X, the Residential Lead-Based Paint Hazard Act of 1992.

Enrollment in a HUD funded program for these purposes shall be defined as a building unit which has had HUD funds invested within the prior twelve months from the date of application for weatherization services, or will have HUD funds invested before the completion of the weatherization project.

Building units receiving HUD funds shall meet the standards established in HUD's Lead-Based Paint Poisoning Prevention in Certain Residential Structures rule (referenced above). Weatherization funds may *not* be used to meet the HUD standards. Energy conservation measures, which as a by-product meet some or all of the HUD standards, are permitted.

An Agency shall make a reasonable effort to identify resources that would enable a unit that receives HUD funding to be completed under the weatherization program and meet the HUD standards.

9.2 Radon and Weatherization

Weatherization program funds shall not be used to perform radon testing and mitigation. According to U.S. Department of Energy studies, certain allowable health and safety measures may reduce the risk of increasing radon levels in weatherized homes. These measures include installing mechanical ventilation, covering exposed dirt floors, and covering and sealing sump pits. For general information on radon in Wisconsin see the Wisconsin Department of Health Services website.

9.3 Mold Guidelines

9.3.1 Background

Mold is a potential health and safety hazard that agency personnel and contractors may encounter when working in buildings. Improperly completed weatherization work may create or exacerbate conditions conducive to the development of mold. An agency shall ensure that workers, occupants, and owners are made aware of existing mold hazards and/or conditions that may allow for mold to develop.

9.3.2 Notification and Inspection

To every extent possible, the source of any encountered mold shall be identified. Customers shall be notified of the discovery of mold, the potential conditions causing the mold, and possible remedies. The EPA pamphlet, "A Brief Guide to Mold, Moisture and Your Home", shall be given to customers at the time of audit.

9.3.3 Training for Mold and Moisture

All Agency field staff (crews, auditors and inspectors) and all contracted auditors and inspectors shall receive Division-approved training in awareness and identification of the presence of mold, the likely causes of mold outbreaks, and appropriate methods to address mold issues.

9.3.4 Testing

Weatherization program funds shall **not** be used for routine testing in every unit to determine the presence or strain of mold before weatherization work starts or after work is completed.

9.3.5 Treatment

The purpose of the weatherization program is to install energy conservation measures in eligible units. Program funds may be used to minimize and/or eliminate mold causing conditions in conjunction with the installation of energy conservation measures. Identified mold areas that comprise in total less than 10 square feet are not required to be addressed as a part of weatherization work.

9.4 Lead and Asbestos Policy

Agencies shall follow all policy requirements of the authorizing jurisdictions when disturbing possible asbestos and lead materials.Table 9.2 provides a summary of the minimum requirements. See sections 9.5 and 9.6 for additional details.

Table 9.2 Lead and Asbestos Hazards - Summary of Policy Requirements

	Lead		Asbestos	
	Minor Repair & Maintenance ***DHS 163.03(85m)***	**Renovator** ***DHS 163.10***	**Operations and Maintenance (O&M)**	**Regulated Abatement Activity**
Customer Education	• Health and Safety Checklist • EPA Renovate Right Booklet • Deferral Notification, when applicable		• Health and Safety Checklist • Deferral Notification, when applicable	
Testing	Optional	Optional but recommended	Optional but strongly recommended	
Regulated Work Threshold	• Less than or equal to 6 SF per room interior and 20 SF exterior • No windows	• More than 6 SF per room interior and 20 SF exterior • All windows	No more than one waste bag (60" by 60" properly filled & sealed)	More than one waste bag (60" by 60" properly filled & sealed)
Required Worker Certifications	n/a	• Lead-Safe Renovator • Lead-Safe Company	• n/a (O&M training required)	• Worker • Inspector • Supervisor • Asbestos Company
Required Work Practices	• Dust control • HEPA vacuum	• Dust control • HEPA vacuum • Containment • Visual inspection	• Dust control • HEPA shrouded tools • HEPA vacuum • Containment when disturbing presumed asbestos containing material or tested material is greater than or equal 1% asbestos	
Photograph Requirements	n/a	At least three photos showing containment and warning sign, goose necked trash bag and post-renovation cleaning card	At least two photos showing containment and warning sign, and goose-necked hazardous material bag	
Additional Required Documentation (see also 2.2.3 Customer Files)	n/a	• HE+ Renovation Recordkeeping Checklist	• n/a	• Project log • DHS Notification • Occupant Plan

9.5 Lead-Safe Work

9.5.1 General Policy

Lead-based paint is a potential health hazard that crews may encounter in housing constructed before 1978. Unless a building is certified as “lead-free” (DHS 163.03(68)) or painted surfaces to be disturbed have tested free of lead, all weatherization activities conducted on buildings constructed prior to 1978 shall utilize techniques that contain dust and debris to protect workers and customers from lead paint hazards, including:

- Using wet methods and tool shrouds to control and capture dust;
- Never dry sweep dust and debris from disturbed painted surfaces;
- Always using a properly operating and maintained HEPA vacuum; and,
- Always clean and inspect work areas to ensure all dust and debris is removed.

Program funds may be used to minimize the potential hazard associated with disturbing painted surfaces through the course of installing energy conservation measures. Program funds shall **not** otherwise be used for the abatement, stabilization, or control of lead-based paint hazards that may exist in a unit. Program funds shall **not** be used for routine clearance testing after work is completed.

9.5.2 Regulatory Authority

U.S. Department of Energy (DOE) Weatherization Program Notice 17-7 requires compliance with the U.S. Environmental Protection Agency (EPA) Lead Renovation, Repair and Painting (RRP) program. The State of Wisconsin is authorized by the EPA to administer its own RRP program, DHS Chapter 163. There are some areas where Wisconsin’s rule is more restrictive than EPA’s requirements. EPA regulations also allow cities to have more restrictive definitions for lead than the state. Weatherization work shall follow the most restrictive requirements of the authorities having jurisdiction.

The authorities having jurisdiction over working with lead in Wisconsin include:

- **Wisconsin Department of Health Services** (DHS) for certifications and lead-safe work activities.
- **Wisconsin Division of Energy, Housing and Community Resources** (DEHCR) for state and federal regulations in weatherization and housing programs.
- **U.S Department of Energy** (DOE) for federal regulations related to the weatherization program.
- **OSHA** and **WI Department of Safety and Professional Services** regulations for worker safety.
- **Wisconsin Department Natural Resources** (DNR) for regulation of waste disposal.
- **U.S. Department of Housing and Urban Development** (HUD) for lead-safe work activities in HUD-funded housing programs.
- **U.S. Environmental Protection Agency** (EPA) for lead-safe work activities in buildings on Tribal Lands.
- **Local Municipalities** for the definition of lead. As of January 2018 the cities of Eau Claire, Fond du Lac, Kenosha, Milwaukee, Racine and Beloit have more restrictive (lower)

definitions of lead-based paint than the EPA and State of Wisconsin. Local authorities are responsible for enforcing the more restrictive regulations. State regulations and requirements still apply. Testing results and clearance reports must reflect whether a surface coating is lead-based paint and if it is a hazard based on state regulations**.**

9.5.3 Client Education

Documentation that the occupant and/or owner received the EPA pamphlet "The Lead-Safe Certified Guide to Renovate Right" shall be maintained for every building weatherized. When a potential lead hazard is identified by the energy auditor, the weatherization file shall contain a Health and Safety Checklist that documents the hazard, testing performed, if applicable (see 9.1.1 Health and Safety Checklist). If testing is performed and a positive test causes the building to be deferred, a written description of the test result shall be included in the Deferral Notification provided to the building owner. The agency shall provide any test results requested by the customer.

Agencies shall comply with DHS 163.14(10)(b) when regulated renovation activities are required in 5+ unit rental buildings.

9.5.4 Testing for Lead

Wisconsin Department of Health Services (DHS) approved lead test kits may be used when cost-effective. Testing shall be limited to building components that will be disturbed. Note that the approved test kit must be used by a person with Certified Renovator credentials at minimum and requires the building owner's permission. See the DHS website for detailed test kit information and requirements. Agencies shall maintain documentation of all lead test results (see 2.2.3 Customer Files).

The Division strongly encourages testing for lead when the test has the potential to reduce the amount of labor required to complete weatherization work. The following basic guidelines shall be considered in determining when to test for lead:

- Houses built from 1978 on may be assumed to be free of lead-based paint.
- In houses built prior to 1930, it is logical to assume the presence of lead-based paint.
- In houses built between 1930 and 1978, testing may not be warranted if the area to be disturbed is small.

9.5.5 Recordkeeping

Using the Wisconsin Weatherization Assistance Program Health and Safety Checklist, the weatherization agency shall identify the applicability of Lead-Safe Renovator requirements to ensure customer and worker safety. The weatherization agency is responsible for ensuring that contractors are notified in advance of lead-safe requirements (such as in the Request for Bid), are trained in and practice lead-safe work, and that Certified Renovators are present and complete a Renovation Recordkeeping Checklist when required.

When Lead Renovation requirements apply, a Wisconsin Weatherization Assistance Program Renovation Recordkeeping Checklist shall be completed and maintained in the customer file for review. Documentation shall be maintained for a minimum of three years (see 2.2.5 Record Retention and DHS 163.13(3)(c)).

9.5.6 Lead Renovation Requirements

Unless a building is certified as "lead-free" (DHS 163.40) or painted surfaces to be disturbed have tested free of lead, Lead Renovation requirements apply to all work where paint will be disturbed in pre-1978 buildings and when at least one of the following is true:

- more than six square feet of interior paint per room will be disturbed
- more than twenty square feet of exterior paint will be disturbed (total paint on building)
- window(s)are removed, replaced or repaired
- a prohibited work practice is used (see DHS 163.14(e) and reference below).

Agencies shall comply with DHS 163.14(e) requirements to minimize exposure of customers and workers to lead hazards. To meet these standards, crews and contractors shall follow the general principles of working clean and working wet. Best practices for working clean and working wet are covered in the joint EPA-HUD curriculum document "Steps to Lead-Safe Renovation, Repair, and Painting."

9.5.6.1 Individual Certification Requirements

Weatherization Program agencies shall have a Certified Lead-Safe Renovator assigned to every job where Lead-Safe Renovator requirements apply. The Certified Lead-Safe Renovator:

- Shall be present at the work site while warning signs are being posted, work area containment is being established, and work area cleaning is being performed.
- Shall ensure establishment of appropriate containment areas and use of lead-safe work practices during the renovation.
- Shall be readily available to workers throughout the lead-safe renovation process. Readily available means reachable by phone and able to return to the work-site within thirty minutes of being contacted.
- Shall complete a Renovation Recordkeeping Checklist for the lead-safe work performed.
- Shall document lead-safe work with photographs to be retained in job file.
- Shall provide training on lead-safe work practices to uncertified workers, if such workers are left on-site performing work subject to the Certified Lead-Safe Renovator Requirements.
- Shall have a valid Lead-Safe Renovator certification card on-site.
- May provide pre-renovation education materials to customers.
- May conduct pre-renovation component testing using a DHS-recognized test kit.
- Shall conduct post-renovation cleaning verification.

9.5.6.2 Company Certification Requirement

Weatherization Program agencies shall be certified as a Lead-Safe Company by DHS. The EPA refers to Lead-Safe Companies as "firms." A Lead-Safe Company has at least one certified Lead-Safe Renovator on staff.

For each employed or contracted worker of a Lead-Safe Company **who is not a certified lead-safe renovator**, the Lead-Safe Company shall maintain documentation of the training provided, including the worker's name, specific topics taught to the worker, the name and department certification number of the instructor for each topic, and the training date for each topic.

9.5.6.3 Lead-Safe Certification for Tribal Lands

Weatherization program agencies that perform work in buildings on Tribal Lands shall be certified as Lead-Safe Certified Renovation Firms by EPA. Agencies can become certified by applying with EPA online at www.epa.gov/lead/lead-renovationabatement-firm-certification-application-or-update. Individual Lead-Safe Renovator certifications for each employed or contracted worker are valid on Tribal Lands.

9.5.6.4 Customer Notification Requirements

For work in common areas of multi-unit buildings (two or more units), and any child occupied housing, the agency shall either provide written notice to each affected household or post clearly visible informational signs that include:

- The general nature and locations of the planned renovation activities.
- The expected starting and ending dates.

If the scope, location, or expected starting and ending dates of the renovation activities change after the initial notification to occupants, the company performing the renovation activities shall provide further updated notification to the occupants by one of the above methods.

DHS 163.14(4) requires a signed and dated statement recording steps taken to notify customers of upcoming paint disturbing activities in these housing types. The Renovation Recordkeeping Checklist can be used to document how customer notification was completed.

Within ten business days after any renovation work, the agency shall provide a copy of each renovation document to the renovation contractor and to any occupants affected by the renovation work. This includes the completed Renovation Recordkeeping Checklist and a copy of the Work Agreement, which is provided to all customers prior to the start of any weatherization measures being installed (per the Customer Bill of Rights). All documents related to the renovation work shall be kept on file for three years.

9.5.6.6 Containment

Containment means physical measures taken to prevent any dust or debris from spreading beyond the work area to non-work areas. The level of containment shall be determined by the auditor/inspector or supervisor before work is assigned to a crew or contractor.

Every home and each weatherization measure is unique; therefore, the level and type of containment required will be based on the hazards present, the scope of work activities, and any customer health issues. Containment shall always be used when window repair or replacement will disturb a painted surface.

Containment may require the covering of all horizontal surfaces, constructing barrier walls, sealing doorways, covering HVAC registers with approved materials, and closing windows to prevent the spread of dust and debris. In addition, the following containment measures shall be followed:

- Crews and contractors shall take steps to protect occupants from lead-based paint hazards while the work is in progress by using appropriate containment measures.
- Occupants, especially young children or pregnant women, may not enter the work site. Occupants are allowed to return only after the work is complete and the home

has passed a visual inspection.

- Occupant's belongings shall be protected from lead contamination. This can be done by removing them from the work area or covering them in protective bags and sealing to prevent dust from getting on the items.
- The work site shall be set up to prevent the spread of lead dust and debris.
- Warning signs shall be posted at entrances to the work site, at the main and secondary entrances to the building, and at exterior work sites. The signs shall be readable 20 feet from the edge of the worksite. Signs shall be in the occupant's primary language, when practical.
- If containment of the work area cannot be achieved with occupants in the unit (e.g., work will take several days and involves the kitchen, bathrooms, or bedrooms that cannot be sealed off from use), occupants shall temporarily move out of the unit or the work shall be deferred until containment can be achieved.
- Ensure that containment does not interfere with occupant and worker egress in an emergency.
  Bag and gooseneck-seal all waste in heavy duty poly bags and safely dispose of all waste in accordance with federal, state, and local regulations.

The following prohibitions related to containment shall always be observed:

- NEVER allow occupants and pets access to the work area while work is in progress.
- NEVER open windows and doors allowing lead dust to migrate into other parts of the building or outside.
- NEVER allow furniture and other objects to remain in the weatherization work area while work is being performed unless they are covered and sealed in polyethylene sheeting or bags.

9.5.6.7 Prohibited Work Activities

The following work activities and methods are prohibited when performing lead-safe work in pre-1978 homes:

- Reusable cloth or fabric, such as a painter's drop cloth, as protective containment sheeting. Polyethylene and garden fabric (in some exterior cases) are the only acceptable protective containment sheeting and shall never be reused.
- Brooms and shop vacuums for cleanup. Wet cleaning and HEPA-designed vacuums are the only acceptable methods for cleanup.
- Conventional shop vacuums with HEPA filters – only HEPA-designed vacuums are acceptable.
- Dry scraping, sanding (unless needed around electrical outlets), grinding, or using abrasive blasting or planning.
- Open-flame torch or heat gun (above 1100°F) to remove paint or window glazing.
- High-pressure washers unless they contain a HEPA filter for exhaust control and water collection.
- Methylene chloride paint strippers.

9.5.6.9 Cleaning and Visual Inspection

Checking the quality of lead renovation worksite cleaning is a two-phase process:

1) **Phase 1: Cleaning**
   This phase includes worker cleaning of any visible paint chips, dust, or debris using proper techniques. Proper techniques include:
   - Clean high to low

- Clean two feet beyond containment
- HEPA vacuum
- Wash and rinse (use of a dusting mop with removal pad is acceptable)

.

2) **Phase 2: Visual Inspection**
In this phase, a visual inspection for remaining dust or debris shall be performed after work is complete. A Certified Lead-Safe Renovator shall conduct the visual inspection using the Post-Renovation Cleaning Verification Card and note the results on a Renovation Recordkeeping Checklist. There should be no evidence of settled dust following a cleanup effort. If dust is observed, the weatherization crew shall be required to repeat the cleaning process.

If work is done outside the house, the grounds around the building, and all exterior horizontal surfaces, shall also be examined visually to make certain that all dust and debris have been removed and that paint chips were not left behind.

9.5.7 Weatherization Worker Protection

At a minimum, workers shall follow these work procedures and safety precautions:

- Wear personal protective equipment specifically suited for the particular measure.
- Use National Institute for Occupational Safety and Health (NIOSH) approved respirators (covering at least half of the face) with HEPA filters.
- Use disposable overalls (with hood or a disposable painter's cap), gloves (cloth, plastic, or rubber as appropriate), goggles, and disposable shoe/boot covers.
- Keep dust to a minimum and confine dust and paint chips to the work area.
- Clean up work area during and after the work.
- Properly post a notification at all areas where lead-safe work is taking place.
- During weatherization work, wash your hands and face frequently, particularly when leaving the work area, and especially before leaving the area for the purpose of eating, drinking, or smoking.
- Before leaving the work area, remove your protective clothing and protective shoe/boot covers to avoid exposing others.
- Before leaving the work area, and before returning tools and equipment to vehicles, clean all tools to avoid exposing others and creating a lead-hazard at the next weatherization job.
- Get annual medical exams to check blood lead levels. Only perform non-lead related work if your blood lead level becomes too high.
- Inform your employer if you develop any signs of lead poisoning.

9.6 Asbestos-Containing Materials (ACM)

9.6.1 Background

Agency field staff and contractors whose work may lead to contact with known or suspect asbestos-containing materials (ACM), including vermiculite insulation, shall be protected from potential asbestos exposure and shall minimize disturbance of the material. Agencies shall provide employees with training and equipment to minimize worker and customer exposure to ACM and shall adhere to the regulations of all authorities having jurisdiction over ACM.

Program funds may be used to minimize the potential hazard associated with disturbing known or suspect ACM through the course of installing energy conservation measures. Program funds **shall not otherwise be used** for the removal of vermiculite, abatement, stabilization, or control of ACM hazards unrelated to diagnostic testing and installation of energy conservation measures. Program funds **shall not be used** for routine clearance testing of buildings after work is completed without prior approval from the Division.

When deferral is necessary due to asbestos and the building owner performs asbestos abatement to correct the deferral, prior to proceeding with weatherization the owner must provide written documentation showing that the building passed a clearance test following completion of work, and that the clearance test was performed by a contractor certified by the Department of Health Services (WPN 17-7; DHS 159). Follow the protocols below related to asbestos deferrals:

- Provide a written Deferral Notification per 3.6.1 Deferral Notification Requirements.
    - The required template available on the HE+ WisWAP Grantee Information page shall be edited to address the specific deferral reason in the home.
    - The agency may assist the customer in locating a certified contractor. The clearance test shall not be performed by the weatherization agency.
- Change the WisWAP unit status to deferred and enter deferral reason.
- Verify the clearance test results.
    - Verify the contractor that performed the clearance test is certified by the Department of Health Services per DHS 159.
- If the customer is not able to provide proof that the building passed a clearance test, contact the Help Desk for approval prior to proceeding with any work.
- After clearance test is verified and all deferral reasons have been corrected, edit unit status in WisWAP and proceed with weatherization.

Agencies shall meet the following requirements related to asbestos:

- Agencies shall have at least one person on staff who maintains Department of Health Services (DHS) certification as Asbestos Supervisor and Asbestos Inspector. This person is referred to as the Hazardous Materials Coordinator.
- All field workers who may encounter or disturb known or suspect ACM shall be trained in asbestos Operations and Maintenance (O&M) with annual refresher training at a minimum.

9.6.2 Regulatory Authority

Department of Energy policy requires state weatherization programs to comply with protocols regarding asbestos-containing materials (ACM) that may be disturbed during weatherization work. This policy does not supersede the regulations of other authorities having jurisdiction over ACM or worker safety in Wisconsin.

The authorities having jurisdiction over working with ACM in Wisconsin include:

- **Wisconsin Department of Health Services** (DHS) for regulated asbestos work activities (DHS Chapter 159).
- **Wisconsin Department Natural Resources** (DNR) regulations for waste disposal and transport. Note: An individual or business that transports less than 20 tons per year of solid waste (including asbestos) is exempt under section NR 502.06(2)(b) of Wisconsin Administrative Code from the requirement to have a solid waste transportation license.

Other asbestos transport and disposal requirements still apply.

- **OSHA** and **Wisconsin Department of Safety and Professional Services** regulations for worker safety in the private and public sectors, respectively.
- **Wisconsin Division of Energy, Housing and Community Resources (DEHCR)** for Weatherization Assistance Program funded weatherization work completed in conjunction with asbestos abatement or standard Operations and Maintenance procedures.
- **Department of Energy** for all DOE funds used in the Weatherization Assistance Program.
- **Department of Housing and Urban Development** for all HUD housing.

9.6.3 Weatherization Requirements

9.6.3.1 General Policy

Weatherization Assistance Program customers and on-site workers shall be protected from asbestos exposure when ACM may be disturbed during the course of weatherization activities. On-site workers, including energy auditors, inspectors, supervisors, installers, and contractors that inspect or complete weatherization work shall minimize the disturbance of known or suspect ACM.

When work exceeds Operations and Maintenance (O&M) limits, and is determined to be cost effective, the work shall be performed by appropriately certified staff or contractors. Agencies and contractors shall comply with all applicable regulations and ensure that any asbestos related work is performed by individuals with the appropriate training and current certifications when required.

For attics containing vermiculite insulation, the determination of whether work will exceed O&M limits shall be made on a case-by-case basis. Removal of vermiculite insulation is not allowed.

The Agency is responsible for determining how the requirements of this policy will be met, including designation of responsibilities within an Agency, whether certified staff or contractors will be used for work that exceeds O&M, and how contractor and crew performance and worker safety requirements are monitored.

9.6.3.2 ACM and Weatherization

Agency Wx staff and contractors may encounter ACM in the following building components, materials, equipment, or circumstances:

- **Attic Insulation** – Some attic insulation materials including vermiculite insulation, when inspecting or insulating attics, air sealing attics, boxing mechanical penetrations through the attic floor, or extending exhaust ventilation through the attic to the roof.
- **Siding** – Transite (slate) siding, stucco' when testing sidewalls for insulation or insulating sidewalls.
- **Heating Systems** – Insulation on boilers and forced air systems (primarily on the distribution systems) which must be addressed to seal or modify the distribution system or replace the equipment.
- **Roofing** – Some roofing materials, when installing roof ventilation or performing minor roof repair.

- **Sidewalls** – Some sidewall insulation materials including vermiculite insulation, when testing sidewalls for insulation, insulating sidewalls, or installing windows and doors.
- **Drywall** – Some older drywall or plaster applications, when testing sidewalls for insulation or insulating sidewalls from the interior, installing doors and windows, or completing minor demolition work. Some new drywall products from foreign suppliers have been found to contain asbestos.
- **Miscellaneous Materials** – Including, but not limited to, flooring, textured paints, electrical wiring insulation, older construction mastics, caulk and putty, which may be cut, drilled, removed, or otherwise disturbed in the process of weatherizing a home.

All building components, except for metal, glass, wood, and fiberglass, shall either be assumed to contain asbestos or proven not to contain asbestos through bulk sampling by a certified Asbestos Inspector and analysis performed by an accredited laboratory. Vermiculite insulation is always assumed to contain asbestos as there is currently no EPA-approved testing method to demonstrate the presence or absence of asbestos in vermiculite insulation.

9.6.3.3 Training and Certification

Training and certification includes both required and optional activities.

1) Training and Certification Requirements

Agencies shall meet the following requirements related to asbestos:

- Agencies shall have at least one person on staff who maintains DHS certification as Asbestos Supervisor and Asbestos Inspector. For the purposes of this policy, this person is referred to as the Hazardous Materials Coordinator.
- All field staff that may encounter or disturb known or suspect ACM shall be trained in asbestos Operations and Maintenance (O&M) with annual refresher training at a minimum.

2) Training and Certification Options

Work that exceeds O&M limits and is determined to be cost effective by an energy audit shall be performed by appropriately certified agency staff or contractors. All such “regulated asbestos activities” shall be performed by persons who are employed by a certified Asbestos Company. Disturbance of ACM beyond O&M limits, taking bulk samples of suspect ACM, and performing air sampling are designated “regulated asbestos activities.”

Removal of transite (slate) siding is limited by the amount of tiles that would fit in a single glove or disposal bag that is no larger than 60 inches by 60 inches properly filled and sealed. If more tiles are removed than what would fit in the disposal or glove bag, or if transported the bag would puncture it is considered an abatement activity that requires certification and notification to DHS. Slate siding exceeding O&M may be removed only by an Asbestos Supervisor, an Exterior Asbestos Supervisor, or an Asbestos Worker or Exterior Asbestos Worker while under the supervision of an Asbestos Supervisor or Exterior Asbestos Supervisor. Stucco may only be disturbed by an Asbestos Supervisor or Asbestos Worker. Exterior Asbestos Workers and Supervisors are not trained or allowed to disturb stucco.

Agencies may choose to use Training and Technical Assistance (T&TA) funding to:

- Train and certify employees in asbestos disciplines (outlined in DHS Chapter 159) including Asbestos Worker, Asbestos Supervisor, Asbestos Inspector, Exterior Asbestos Worker, and Exterior Asbestos Supervisor.
- Obtain and maintain certification as an Asbestos Company. When employees perform a DHS "regulated asbestos activity," the employer shall be a DHS certified Asbestos Company.
- Provide air sealing and insulation training to a certified Asbestos Company to complete work on Wisconsin Weatherization Assistance Program eligible homes where disturbance of ACM will exceed O&M limits. Training, but not certification as a Company, or maintenance of certifications, may be provided to contractors meeting Program retention requirements.

9.6.3.4 Limitations of Operations and Maintenance Work

Weatherization staff trained only in Operations and Maintenance shall limit their activities to working with known or suspect ACM that falls under O&M limits. This is defined as work that:

- Disturbs or incidentally removes no more suspect ACM than would fit in a single glove bag or disposal bag no larger than 60 inches by 60 inches, properly filled, sealed and transported (i.e., integrity of bag is not compromised by volume or weight).
- Is non−repetitive.
- Is not a series of small jobs that, if performed sequentially, would require certification.
- Is conducted by an individual or individuals with documented proof of completing at least a 16-hour Operations and Maintenance training course and any required annual refresher trainings, as described in 40 CFR 763.92(a).

9.6.3.5 Competent Person

On all worksites with asbestos operations, OSHA requires that employers designate a "competent person" who can identify asbestos hazards in the workplace and has the authority to correct them. For O&M work, the competent person is someone who is O&M trained at a minimum.

For all work exceeding O&M limits, the competent person is a DHS certified Asbestos Supervisor. For work disturbing ACM on the exterior of a home, either a certified Asbestos Supervisor or a certified Exterior Asbestos Supervisor may be the designated competent person.

9.6.3.6 Identification of Suspect ACM

The agency shall inform the customer of the existence and location of any suspect ACM *that is friable or otherwise presents a hazard* by documenting it on the Health and Safety Checklist. Any suspect ACM *that will be disturbed* during the weatherization work shall be identified and documented on the Health and Safety Checklist as well as in the Work Agreement (see Chapter 7, Energy Audits).

Whenever weatherization work involving known or suspect ACM may exceed O&M limits, the Hazardous Materials Coordinator shall be notified. The Hazardous Materials Coordinator shall make a determination if the work falls within or will exceed O&M limits. If the work exceeds O&M limits, the Hazardous Materials Coordinator shall ensure that the work is performed by persons and organizations with the required asbestos certifications (see Section 9.4.4.4 Hazardous Materials Coordinator Role).

9.6.3.7 Testing for Asbestos

When weatherization work will involve disturbance of suspect ACM, agencies may elect to have the material tested. Testing is an allowable program cost and may be charged to support (if building is deferred) or health and safety operations using measure code XHAS030 (see Appendix D WisWAP Reporting Guide). Bulk sampling may only be performed by a certified Asbestos Inspector who is employed by a certified Asbestos Company, as this is a DHS "regulated asbestos activity."

Testing for asbestos is an allowable cost. Analysis of bulk samples shall be performed by a National Voluntary Laboratory Accreditation Program (NVLAP) listed laboratory, using EPA approved test methods. There is no EPA recognized method to test vermiculite insulation for the presence or absence of asbestos, therefore vermiculite insulation shall always be assumed to contain asbestos.

If testing results determine that the material contains asbestos, as defined by DHS 159.04, agencies may consider proceeding with the asbestos work following the modeling guidelines outlined in Chapter 8 and the Weatherization Assistance Guide. The agency shall retain the results of testing in the customer file regardless of the outcome (see 2.2.3 Customer Files). If a positive asbestos test results in a deferral of weatherization work, then the test result shall be communicated in writing in the Deferral Notification provided to the building owner. The agency shall provide any test results requested by the customer.

9.6.4 ACM Work Procedures

9.6.4.1 General Guidance

Employers are subject to OSHA regulations which require training, protective measures, and engineering controls for workers who may be exposed to asbestos on the job. Publication OSHA 3096 outlines these requirements; therefore, agencies should review this document to become familiar with the applicable regulations. Note that agencies are responsible for ensuring that contractors follow applicable requirements while on a job site performing work under a weatherization contract.

An agency's Implementation Plan shall identify how they meet exposure protection requirements. The plan shall also include a process to be implemented when suspect ACM is encountered after the start of the weatherization work. Photographs of asbestos containment measures shall be taken to demonstrate safe work practices are used and shall be retained in the customer file.

A summary of asbestos work classifications and related protective measures is found in the tables on pages 37-42 of OSHA Pub. 3096. Agencies shall provide personal protective equipment to all employees that may encounter, or work with, suspect ACM. Equipment shall include:

- Respirators that are NIOSH approved for asbestos.
- Disposable protective clothing.
- HEPA vacuums for fiber containment and decontamination.

Power tools shall be HEPA shrouded whenever materials (other than wood, metal, glass or fiberglass) are being cut, drilled, or similarly disturbed, **unless** the material has been tested for asbestos and the test result is 0% asbestos-containing material. This requirement is to protect

the health and safety of workers and customers by controlling lead dust and suspect or confirmed ACM fiber emission.

Agencies shall follow all relevant OSHA regulations pertaining to the use of such equipment, including the required respirator fit testing, and a medical surveillance program for employees, as applicable.

Personal air monitoring may be performed, following regulations outlined in OSHA 3096. Air sampling can only be performed by a certified Asbestos Supervisor employed by a certified Asbestos Company, as this is a DHS "regulated asbestos activity."

If air sampling is not performed to establish a Permissible Exposure Limit (PEL) or Negative Exposure Assessment, then employers shall assume worker exposure will exceed the PEL and workers shall use personal protective equipment. The equipment shall include HEPA filtered respirators with a Protection Factor (PF) sufficient to prevent exposure to any level of fiber concentration that may be present in the asbestos work area. Positive pressure Supplied Air or Powered Air Purifying Respirators (PAPR) have the highest PF followed by Full Face, then Half Mask negative pressure type respirators.

9.6.4.2 Energy Audit Procedures

Energy audit procedures are described in two steps:

1) **Identifying and Documenting Suspect ACM**

   Energy auditors shall routinely look for suspect ACM during each energy audit. When suspect ACM is found, the auditor shall:

   - Avoid or minimize disturbance of suspect ACM while performing an energy audit (see next section, Blower Door Testing).
   - Document the location of suspect ACM *that is friable or otherwise presents a hazard* on the Health and Safety checklist.
   - Document any suspect ACM *that will be disturbed* during weatherization work on the Health and Safety Checklist and on the Work Agreement.
   - Inform the customer about suspect ACM verbally during the energy audit process whenever possible.
   - Provide information about suspect ACM that would be disturbed during weatherization to the Hazardous Materials Coordinator (including the Building ID number, type of building material or component, and related measure or measures to be performed).
   - Notify the Hazardous Materials Coordinator whenever disturbance of suspect ACM during weatherization work may exceed O&M limits.

2) **Work Orders with Operations and Maintenance**

   All O&M work shall be referenced in the work order as part of the ECM. The following information, at minimum, shall be detailed and included with the work order:

   - Only O&M trained workers may perform work that may disturb or remove known or suspect ACM.
   - A description and the specific location(s) of known or suspect ACM that will be disturbed.

- A determination of whether blower door tests may be completed by installers, and whether tests should be performed depressurized or pressurized.
- Instructions to use the appropriate personal protective equipment.
- Instructions to minimize disturbance of the known or suspect ACM.
- Instructions to use appropriate safety procedures and to use containment barriers if needed.
- Instructions to perform proper clean-up and disposal of any waste generated.

9.6.4.3 Blower Door Testing

A blower door should be utilized to diagnose, measure and identify air leakage for effective weatherization of all buildings (see also Section 8.2.1). If a building is being deferred due to a serious asbestos hazard, do not run a blower door. Agencies shall contact the Help Desk for guidance if damaged/deteriorated PACM prevented completing an “As-Is” blower door test at audit.

Perform blower door tests based on the type of ACM present in the building, as follows.

- When no confirmed ACM is present within the pressure boundary (as confirmed by testing) or only intact, stable PACM is present within the pressure boundary, the building may be depressurized or pressurized utilizing a blower door.
- When vermiculite that may contain asbestos is present in an attic and/or walls the building may be pressurized only utilizing a blower door.
- When deteriorating or damaged PACM is present inside the pressure boundary and at risk of becoming airborne , eliminate or minimize the hazard prior to utilizing a blower door. The identified hazard should be addressed prior to starting weatherization by crews to effectively complete air sealing work utilizing a blower door. A final test is required to calculate natural ventilation to reduce the minimum required flow rate of installed mechanical ventilation.

9.6.4.4 Hazardous Materials Coordinator Role

Agencies shall have at least one person who maintains DHS certification as Asbestos Supervisor and Asbestos Inspector. For the purposes of this policy, this person is referred to as the Hazardous Materials Coordinator. This individual shall perform or maintain oversight of the completion of tasks, and implementation of the policy in general related to this assigned role. The assignment of responsibilities identified in this policy shall be outlined in the agency’s Implementation Plan.

The primary responsibilities of the Hazardous Materials Coordinator shall be:

- Establish whether suspect ACM may be addressed using O&M procedures during installation of various energy conservation measures (ECMs).
- Ensure that all field staff who may encounter or disturb ACM have received O&M training or have appropriate DHS asbestos certification.
- Establish a process for determining when work will exceed O&M limits.
- Identify control options based on an assessment of the hazards involved with each type of measure, taking into account potential site-specific factors.

- Ensure that whenever a contractor performs work in which suspect ACM may be disturbed (such as siding, plumbing, electrical, or HVAC), they have O&M training or required DHS certification, and are performing the work appropriately.
- Ensure that consistent procedures are used for estimating costs of asbestos-related work for the purpose of modeling.
- Ensure that when "regulated asbestos activities" are performed, DHS notifications are submitted and that all other DHS requirements are being met.
- Ensure that records of asbestos abatement or management activities are maintained as required by DHS 159.19(7) and OSHA 1926.1101(n).

9.6.4.5 Work Procedures when Asbestos is Disturbed

1) **General Procedures**

All workers who may disturb known or suspect ACM while weatherizing homes shall have completed O&M training at a minimum, and shall adhere to all appropriate asbestos work protocols. Only workers trained and certified as Asbestos Worker or Asbestos Supervisor (or Exterior Asbestos Worker or Supervisor) may conduct asbestos work that exceeds O&M limits.

The following procedures shall be followed when performing weatherization work related to known or suspect ACM:

- An indication of what type of blower door test may be completed by installers shall be included on the work order. If a special situation dictates that a blower door test cannot be completed, use an infrared scanner when conditions permit, to identify heat bypasses and key junctures that may require air sealing. Perform non-blower door guided major air sealing and minor air sealing.
    - Major air sealing work is limited to probable attic bypasses and key junctures, glass repair or replacement. Seal major air leaks first. Stop when the major air leaks have been sealed. Minor air sealing is miscellaneous sealing that will affect the customer's comfort and is limited to one labor hour.
- Utilize containment methods to limit the spread of ACM that is being disturbed.
- Use wet methods whenever possible when disturbing known or suspect ACM.
- Verify wall stability and seal all cracks and holes prior to installing sidewall insulation.
- When insulating over vermiculite insulation (suspect ACM) in an attic:
    - Seal ceiling and wall fixtures, openings, and penetrations to isolate vermiculite from the living area.
    - Minimize entry into and exit from the attic.
    - Utilize an exterior access to the attic when possible (such as a large gable end or roof vent) to limit movement of workers and equipment through the living area of the home.
    - Set up poly containment barriers to prevent migration of asbestos fibers into the living area.
    - Limit the movement of the existing vermiculite insulation when completing air sealing.
    - Utilize a HEPA vacuum with an extended hose to collect dust when disturbing vermiculite insulation.

- For enclosed cavity attics, do not dense pack entire attic floor. Dense pack key junctures by drilling and using the bag method. HEPA vacuum attic floor prior to drilling and use HEPA vacuum to collect dust during drilling.
- Utilize walk planks to minimize disturbance for air sealing and to blow insulation, and leave the planks in attic.
- Do not dense-pack floor cavity junctures where knob and tube is present.
- In un-floored attics, blow attic insulation so that existing insulation disturbance is minimized.
- Install sign in attic near the entrance to alert owners and maintenance or emergency workers of the presence of potential ACM.
- Take photographs of the final insulation application and retain or reference in the customer file.

- Ensure work area is cleaned thoroughly to remove asbestos fibers that might remain.
- Decontaminate work tools, disposable protective suits, and the outside of respirators prior to leaving work area by use of a HEPA vacuum and disposable wet wipes.
- Do not remove respirator until disposable protective suit is fully removed and disposed.
- Dispose of protective suit and any tools that cannot be cleaned in a plastic containment bag sealed with duct tape.
- Label and dispose of any asbestos waste, in accordance with applicable regulations.

2) **Knob and Tube Wiring and Asbestos**

When knob and tube wiring work is performed which will disturb ACM, the following procedures shall be followed:

- Any contractors involved in the work shall have the appropriate asbestos credentials for the planned work.
- See General Procedures above and coordinate with weatherization crew so that work may be done simultaneously.
- Locate knob and tube wiring by removal of fixtures within the unit, or by sight in the attic whenever possible.
- Place locater through fixture box into the attic from inside the unit to minimize the need to move insulation to locate fixtures.
- Use proper containment.
- Leave abandoned knob and tube wiring in place. Do not remove knob and tube under floors of floored attics.
- Install junction boxes where wiring enters floor. Replace knob and tube wiring around perimeter of attic floor whenever possible.
- Seal all openings in fixture boxes from inside the unit and note location of sealed boxes for weatherization crews.

9.6.4.6 Final Inspection

At any weatherization job where ACM or suspect ACM has been disturbed, the final inspection shall be conducted according to the following guidelines:

- Review audit and completed work for compliance with asbestos O&M or abatement work procedures.

- Review photographs of any work area control methods used during asbestos work.
- Review photographs of the final insulation application to be retained in the customer file.
- Inspect typical heat by-passes and key junctures where possible to determine that proper comfort sealing was completed. If feasible, use an infrared scanner to inspect the completeness of the air and thermal barrier.
- All other aspects of the final inspection can be performed according to standard policies and practices (see Section 2.1.7 Final Inspections).

9.7 Spray Polyurethane Foam

Spray Polyurethane Foam (SPF) is a frequently used weatherization product. Given SPF's chemical components and potential to cause adverse health effects, it is important for weatherization agencies and workers to understand and practice safe use of SPF.

Based on EPA and OSHA guidelines, agencies shall address the following issues related to the use of Spray Polyurethane Foam:

- Hazard Communication – It is important that anyone who works with SPF be made aware of the health risks associated with isocyanates, a chemical component of SPF, which include the potential for causing occupational asthma. Safe storage and handling procedures shall be used according to the manufacturer's instructions and Safety Data Sheet (SDS). Customers shall be notified when SPF is being used and notified of safety precautions to prevent exposure.
- Limit Access to Area – The work area shall be contained to prevent occupants, or others not equipped with personal protective equipment, from entering the area during or directly after product application, per the Safety Data Sheet. Warning signs shall be posted at entrances to the work area when occupants are present. The signs shall be readable and shall be in the occupants' primary language, when practical.
- Personal Protective Equipment – Anyone applying SPF, or occupying an area where SPF is being applied, shall use appropriate PPE. It is recommended that workers wear a supplied air respirator, gloves, and protective clothing to prevent breathing vapor or other direct exposure to SPF. Access to the work area shall be restricted to those wearing appropriate PPE.
- Ventilation – It is necessary to properly ventilate an area where SPF is being applied and to maintain ventilation until the SPF has fully cured. Consult the SDS for estimated curing time as a guide to how long ventilation should be continued. Various products may have different curing times. Use air exhaust techniques to move air out of areas where SPF is being applied.
- Flammability – SPF can be flammable and shall not be used in the vicinity of any open flame or operating combustion appliance that may increase the hazard of fire.
- Cleanup – The area where SPF is applied shall be cleaned thoroughly so that building occupants are not exposed to particulates or dust, especially when SPF has been trimmed or cut. Restrict access to the affected area until sufficient cleanup has been done.

9.8 Cooking Stoves

Gas ovens shall be tested for carbon monoxide levels. See the Weatherization Field Guide for testing requirements and guidance on providing instruction to customers regarding cleaning ranges to reduce carbon monoxide leaks. If a gas leak is detected, repair of gas leaks is an

allowable measure. Weatherization funds shall not be used to repair or replace cooking stoves, ovens or ranges with carbon monoxide emissions. If the unit is not repairable or the cost of the repair is excessive, the unit shall be deferred until the issue is resolved.

Appendix A Summary of Changes

The table below shows significant program and policy changes for Fiscal Year 2018-2019. The effective date for all revisions is July 1, 2018.

Section	Topic	Revision
General	Lead-Safe Work	DOE no longer maintains a “lead-safe weatherization” program. All references to that program are changed to refer to “lead-safe work” that conforms to Wisconsin DHS regulations.
2	General management	Language added to reflect movement of many program working documents from the public HE+ web site to a password-secured Sharepoint site.
2.1.1	Conflict of Interest	Agencies are required to document conflicts of interest and their resolutions, making any documents available to DEHCR upon request. The requirement to report each conflict to DEHCR immediately is removed. The one exception; the requirement remains in place that DEHCR shall review and approve (or deny) the audit and work order for any weatherization-funded work at a property in which the Agency has an interest, and shall inspect the completed work
2.2.2	Timely WisWAP Data Entry	Requires entry of measures and estimated costs into WisWAP within five days of signed Work Agreement. Requires updating job status (deferral, completion, actual costs, job completion date) promptly.
2.2.3	Customer Files	Allows for use of electronic data files, as long as a hard copy file is created that includes accurate references to the location of all stored digital/electronic files.
3.2.1	Eligibility Timeline	Clarifies that, when multiple Home Energy Plus (eligibility) applications are on file, the most recent one shall be used to determine customer eligibility.
4.2.2	Freezer Replacement and Removal	Allows replacement (when cost-effective) of freezers as small as seven (7) cubic feet in size.
5.3	Allowable Costs	Integrates 2 CFR 200 standards for bonus and incentive compensation programs.
5.3.8	Blending Funds	Allows use of DOE funds in single-family units and side-by-side duplex units, where installed ventilation conforms to ASHRAE 62.2-16.
5.3.8	Blending Funds	Adopts DOE guidance that DOE funds shall not be used to replace windows or doors.
5.3.9	Average Unit Cost	Raises average unit cost from $7,212 to $7,261.
6.6	Procurement Method and Contract Cost	Revises Table 6.1 to reflect requirement that a Retention Agreement be in place with any contractor that is reimbursed through Wx funds for attending training.
6.8.1 (7)	Bid Procedures	Clarifies minor omissions policy.
6.8.1. (7)	Bid Procedures	Requires documentation (conforming to 2 CFR 200) regarding due diligence for any procurement action with less than three (3) bids received.

6.12	Specifications	In conformance with updated DOE SWS, removes requirement for expected service of at least 20 years for some weatherization measures.
7.4.1	Vehicle Disposal	Requires prior DEHCR approval to dispose of vehicles when acquired with DOE or EAP funds *and* the current fair market value ≥ $5,000.
7.4.2	Equipment and Tool Disposal	Requires prior DEHCR approval to dispose of non-consumable equipment or tools when acquired with DOE or EAP funds *and* the current fair market value ≥ $5,000.
8.2.1	Required Diagnostic Testing	Requires DEHCR guidance when an "As-Is" blower test will be bypassed because of presence of PACM.
8.3	Electronic Audits and Measures Lists General	Requires conformance to the "Weatherization Assistant Guide" in completion of electronic audits/models.
8.3.2.1 (6)	General Rules for Data Entry…	Adds requirement to include existing air conditioner characteristics in Weatherization Assistant audits/models
8.3.2.2	Fuel Records	Policy change to no longer require actual fuel records for bulk fuel homes.
8.6.1.1 (6) d	Informational Modeling	Allows existing electric baseboard heaters to be disabled and left in place.
8.7.1	Lighting	Allows DOE funds for LED lighting, removes 1.5 hour estimated burn time requirement, and allows LED torchieres.
8.7.4	Freezer Replacement and Removal	Allows replacement (when cost-effective) of freezers as small as seven (7) cubic feet in size.
8.8.2	Mechanical Ventilation	Incorporates ASHRAE 62.2-16 where applicable.
8.10	Code Compliance	Adds Table 8.3; Weatherization Measures and Associated State Building Codes
9.1.1	Health and Safety Checklist	Updates use of new unified H&S Checklist, that satisfies DOE WPN 17-7, clarifies required use of checklist and signature rquirements.
9.5 and all subsections	Lead-Safe Work	DOE no longer maintains a "lead-safe weatherization" program. All references to that program are changed to refer to "lead safe work" that conforms to Wisconsin DHS regulations.
9.6.1	Asbestos-Containing Materials (ACM)	Requires that customers who clear a deferral for ACM by removing provide proof of valid "passed" clearance test before weatherization proceeds, per DOE WPN 17-7.
9.6.3.7	Testing for Asbestos	Allows program fund for PACM testing. Requires that positive test results that result in deferral be made available to building owner.
9.6.4.3	Blower Door Testing	Clarifies test protocol in buildings with PACM.
9.8	Cooking Stoves	Requirement to test gas range-top burners for CO is removed.
Appendix B	HE+ Resources	New appendix added with a summary of Home Energy Plus electronic resources and administrators.

Appendix C	Weatherization Specifications	Required material specifications referenced in Chapter 6 were added as an appendix. Editable version is available on the HE+ Procurement SharePoint page.
Appendix D	WisWAP Reporting	Sump pit covers and sealing added to XHAQ035.

Appendix B Home Energy Plus (HE+) Resources

The table below is a comprehensive list of the Division administered and endorsed resources referenced throughout the Program Manual. Secured resources require a user account and password. Contact the appropriate administrator for access to these resources:

DEHCR Administered Resources: heat@wisconsin.gov

WECC Administered Resources: he+training@weccusa.org

Resource	Type	Content Summary	Secured?	Admin
WisWAP System	Website	WHEAP Referrals, Weatherization Jobs and Invoicing	Yes	DEHCR
HE+ System	Website	HE+ Applications, Furnace Program Jobs	Yes	DEHCR
WisWAP Grantee Information	Website	Program Manual, Field Guide, Weatherization Assistant Guide, Field Forms	No	DEHCR
HE+ Program Information	Website	HE+ Furnace Program Manual and Forms, Application Forms, Non-Disclosure Agreement, LIEAC Information, Public Benefits Report	No	DEHCR
WHEAP Grantee Information	Website	WHEAP Program Manual	No	DEHCR
HE+ Training and Technical Assistance (T&TA)	Website	Training calendars, online registration, and training reports; technical tools; Customer Guidebook; Workbooks and calculators, training modules, SDS search	Yes	WECC
HE+ Agency Transfer Site	SharePoint	Administrative Review uploads	Yes	DEHCR
Procurement Toolkit	SharePoint	Required and optional templates, material specifications	Yes	DEHCR
WisWAP Transmittals	SharePoint	Archived Information Transmittals FY 2016-2017 to present	Yes	DEHCR
WisWAP Work Group	SharePoint	Documents related to the WisWAP rewrite work group	Yes	DEHCR
WECC SharePoint	SharePoint	Agency Databases; TDWG; WORCS	Yes	WECC

Appendix C Wisconsin Weatherization Material Specifications

1. General

Installation of materials shall follow required health and safety protocols and shall be of professional quality in order to ensure the effectiveness of the measure. Materials shall be installed to meet manufacturer's specifications. All work will meet applicable codes and regulations. Products shall be designed and rated for their intended use. Materials used shall meet the requirements outlined in this appendix. All materials and workmanship shall be warranted for at least one year. Any manufacturer's warranty of longer term shall also apply. See also Chapter 6.16 Warranty Requirements.

2. Insulation Fact Sheets and Information

The Federal Trade Commission rule "Trade Regulation Rules: Labeling and Advertising of Home Insulation: (16 CFR Part 460) requires that Grantees:

1) Retain the manufacturers' fact sheets for insulation the agency installs.
2) Provide the customer with a contract or receipt for the insulation installed.
    a. The receipt shall be dated and signed by the installer.
    b. To figure out the R-value of the insulation, use the data that the manufacturer provides.
    c. If insulation is installed in more than one part of the house, put the data for each part on the receipt. Do this on one receipt, as long as it does not add up the coverage areas or R-values for different parts of the house.
    d. Do not multiply the R-value for one inch by the number of inches installed.
    e. For loose-fill insulation, the receipt shall show the coverage area, initial installed thickness, minimum settled thickness, R-value installed, total R-value, and the number of bags used.
    f. For aluminum foil, the receipt shall show the number and thickness of the air spaces, the direction of heat flow, and the R-value.

Grantees shall provide a certificate, including the information outlined above, for each building or mobile home. Agencies shall affix the certificate (more than one, if necessary for multi-units) near an attic hatch, electrical panel, or other visible location. An Insulation Labeling Template is available on the HE+ WisWAP Information page under the Field Forms heading.

3. Recycled Insulation Products

A Grantee that meets the criteria listed in Section 3.1 below, shall comply with the Environmental Protection Agency (EPA) regulations dealing with the purchase of building insulation products, as specified in EPA regulations 40 CFR Part 247. These regulations implement Section 6002 of the Resource Conservation and Recovery Act (RCRA), which encourages recycling of materials. The regulations cover insulation products used in commercial, industrial and residential applications. They apply to insulation products used to improve the thermal effectiveness of building envelopes, but do not apply to insulation for air handling units, insulation for acoustic purposes, or cold storage insulation. Commercially available insulation products that can contain recycled materials include cellulose, fiberglass, Perlite, composite board, plastic foams and boards and rock wool. There are EPA recommended minimum recovered materials standards for all of these products except fiberglass.

3.1 Criteria for Use of Recycled Products

The EPA recycling regulations apply to all direct purchases of products from vendors or suppliers or contractors of:

1) At least $10,000 worth of insulation products in the previous fiscal year, or
2) A single purchase in excess of $10,000 of a covered product in the current fiscal year.

When a Grantee meets these criteria, the Grantee shall comply with the regulations in the current and following fiscal years.

A Grantee that meets the criteria shall comply with the following:

3) Specifications for insulation products shall allow for the purchase of items containing recovered materials, and
4) Establish an affirmative procurement program to facilitate procurement of insulation products containing recovered materials.

4. Weatherization Standards for Materials

A Grantee shall purchase weatherization materials and use the installation procedures that meet or exceed the standards prescribed in this chapter. Weatherization material standards include any of the following Government standards listed here. 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.	Safety Standard in 16 CFR part 1209;1404
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.	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.	16 CFR part 1209

The following standards 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: 1-703-534-8800 http://www.ahrinet.org

- American Architectural Manufacturers Association, 1827 Walden Office Square, Suite 104, Schaumburg, Illinois 60173-4268; 1-847-303 5664 http://www.aamanet.org
- American Gas Association, 400 N. Capitol Street, NW, Washington DC 20001; 1-202-824-7000 http://www.aga.org
- Americana National Standards Institute, Inc., 11 West 42nd Street, New York, NY 10036; 1-212-642-4900 http://ansi.org
- American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990; 1-212-591-7722 www.asme.org
- American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959; 1-610-832-9585 www.astm.org
- Association of Home Appliance Manufacturers, 1111 19th Street, Suite 402, NW Washington, DC 30036; 1-202-872-5955 http://www.aham.org
- Federal Specifications, General Services Administration, Federal Supply Service, Office of the CIO and Marketing Division, Room 800, 1941 Jefferson Davis Hwy., Arlington VA 22202; 1-703-305-6288 http://www.gsa.gov/
- Gas Appliance Manufacturers Association, 2107 Wilson Boulevard, Suite 600, Arlington, VA 22201; 1-703-525-7060
- National Association of Manufacturers,1331 Pennsylvania Avenue, NW Washington, DC 20004-1790; 1-202-637-3000 http://www.nam.org
- National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101; 1-617-770-3000 http://www.nfpa.org
- Sheet Metal and Air Conditioning Contractors Association, 4201 Lafayette Center Drive, Chantilly, Virginia 20151-1209; 1-703-803-2980 http://www.smacna.org
- Solar Rating and Certification Corporation, c/o FSEC, 1679 Clearlake Road, Cocoa FL 32922-5703; 1-321-638-1537 http://solar-rating.org
- Steel Door Institute, 30200 Detroit Road, Cleveland, OH 44145-1967; 1-440-899-0010 www.steeldoor.org
- Steel Window Institute, 1300 Sumner Avenue, Cleveland, OH 44115-2851; 1-216-241-7333 http://www.steelwindows.com
- Tubular Exchanger Manufacturers Association, 25 North Broadway, Tarrytown, NY 10591; 1-914-322-0040 http://www.tema.org
- Underwriters Laboratories, Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096; 1-847-272-8800 http://www.ul.com
- Window & Door Manufacturers Association, 1400 East Touhy Avenue, Suite 470, Des Plains, IL 60018; 1-800-223-2301 http://www.wdma.com

More information regarding the standards in this reference can be obtained for the following sources:

- Environmental Protection Agency, 401 M Street, NW Washington, DC 20006; 1-202-554-1080 http://www.epa.gov
- National Institute of Standards and Technology, U.S. Department of Commerce, Gaithersburg, MD 20899; 1-301-975-2000 http://www.nist.gov
- Weatherization Assistance Program, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, https://www.energy.gov/eere/wipo/weatherization-and-intergovernmental-programs-office

4.1 Thermal Insulating Materials for Walls, Floors, Ceilings, Attics and Roofs

Insulation – mineral fiber: Blanket insulation Roof insulation board Loose-fill insulation	 ASTM[1] C665-98 ASTM C726-00a ASTM C764-99
Insulation – mineral cellular: Vermiculite loose-fill insulation Perlite loose-fill insulation Cellular glass insulation block Perlite insulation board	 ASTM C516-80 (1996) e1 ASTM C549-81 (1995) e1 ASTM C552-00 ASTM C728-97
Insulation – organic fiber: Cellulose fiber insulating board Cellulose loose-fill insulation Cellulose wet-spray insulation	 ASTM C208-95 ASTM C739-00 ASTM C1149-97
Insulation – organic cellular: Preformed block-type polystyrene insulation Rigid preformed polyurethane insulation board Polyurethane or polyisocyanurate insulation board faced with aluminum foil on both sides Polyurethane or polyisocyanurate insulation board faced with felt on both sides	 ASTM C578-95 ASTM C591-00 FS[2] HH-I-1972/1 (1981) FS HH-I-1972/2 (1981) and Amendment 1,10/03/85
Insulation – composite boards: Mineral insulation board Perlite board Gypsum board and polyurethane or polyisocyanurate composite board Materials used as a patch to reduce infiltration through the building envelope	 ASTM C726-00a ASTM C728-97 FS HH-I-1972/4 (1981) Commercially available

[1] ASTM indicates American Society for Testing and Materials
[2] FS indicates Federal Specifications

4.2 Thermal Insulating Materials for Pipes, Ducts, and Equipment such as Boilers and Furnaces

Insulation – Mineral fiber: Pre-formed pipe insulation Blanket and felt insulation (industrial type) Blanket insulation and blanket type pipe insulation (metal-mesh covered, industrial type)	 ASTM[1]C547-00 ASTM C553-00 ASTM C592-00
Block and Board Insulation Spray applied mineral fiber thermal and sound absorbing insulation High-temperature fiber blanket insulation Duct work insulation	ASTM C612-00 ASTM C1014-99ae1 ASTM C892-00 ASTM C1290-00
Insulation – Mineral cellular: Calcium silicate block and pipe insulation Cellular glass insulation Expanded Perlite block and pipe insulation	 ASTM C553-95 ASTM C552-00 ASTM 610-99
Insulation – organic cellular: Preformed flexible electrometric cellular insulation in sheet and tubular form Unfaced preformed rigid cellular polyurethane insulation	 ASTM C534-99 ASTM C591-00
Insulation Skirting	Commercially available

[1] ASTM indicates American Society for Testing and Materials

4.3 Fire Safety Requirements for Insulating Materials According to Insulation Use

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

4.4 Storm Windows and Window Replacements

Storm windows: All storm windows Aluminum frame storm windows Frameless plastic glazing storm Movable insulation systems for windows	 AAMA/NWWDA [1] 101/I.S.2-97 AAMA [2] 1002.10-93 ASTM[3] D4726-00 Required minimum thickness for windows is 6 mil (0.006“)[4] Commercially available
Replacement windows: All windows Steel frame windows Rigid vinyl frame windows	Replacement windows shall meet ENERGY STAR® standards[4] AAMA/NWWDA 101/I.S 2-97 Steel Window Institute recommended specifications for steel windows, 1990 ASTM D4726-00

[1] AAMA/NWWDA indicates American Architectural Manufacturers Association/National Wood Window and Door Association (Now the Window and Door Manufacturers Association)
[2] AAMA indicates American Architectural Manufacturers Association
[3] ASTM indicates American Society for Testing and Materials
[4] Wisconsin Weatherization Specifications

4.5 Storm Doors and Door Replacements

Storm (glass) doors: All storm (glass) doors Aluminum frame storm doors Sliding glass storm doors	 AAMA/NWWDA[1] 101/I.S.2-97 AAMA 1102.7-97 AAMA 1002.10-93
Rigid vinyl storm doors:	ASTM [2] D3678-97 and D4726-00
Vestibules: Materials to construct vestibules	 Commercially available
Replacement doors: All replacement doors Steel doors Wood doors Flush doors Stile and rail door	Replacement doors shall have a minimum value of R-5. For mobile homes a commercial mobile home replacement door is acceptable.[3] AAMA/NWWDA[5] 101/I.S 2-97 ANSI[4] A250.8-98 ANSI.NWWDA[5] I.S, 1-97 (Amendment, exterior door provisions) ANSI/NWWDA[5] I.S. 6-97

[1] AAMA/NWWDA indicates American Architectural Manufacturers Association/National Wood Window and Door Association (now the Window and Door Manufacturers Association
[2] ASTM indicates American Society for Testing and Materials
[3] Wisconsin Weatherization Specifications
[4] ANSI indicates American National Standards Institute
[5] ANSI/NWWDA indicates American National Standards Institute/National Wood Window and Door Association (now the Window and Door Manufacturers Association)

4.6 Caulks and Sealants

Caulks and Sealants: Glazing compounds for metal sash Oil and resin based caulks Acrylic (solvent types) sealants Butyl rubber sealants Chlorosulfonated polyethylene sealants Latex sealing compounds Elastometric joint sealants (normally considered to include polysulfide, polyurethane, and silicone) Preformed gaskets and sealing materials Duct sealing mastic	 ASTM[1] C669-00 ASTM C570-00 ASTM C920-98e1 FS[2] Commercial Item Description A-A-272 (6/7/95) ASTM C920-98e1 ASTM C834-00e1 ASTM C920-98e1 ASTM C509-00 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 Laboratory

4.7 Weather Stripping and Vapor Retarders

Weather stripping: Vapor retarders:	Commercially available Selected according to the provisions cited in ASTM[1] C755-97. Permeance rating not greater than 1 perm when determined according to the desiccant method described in ASTM E96-00. Ground moisture vapor retarders shall meet tear and puncture resistance standard ASTM[1] E1745.

Items to improve attic ventilation	Commercially available

[1] ASTM indicates American Society for Testing and Materials

4.8 Heat Exchangers

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

4.9 Boiler/Furnace Control Systems

Automatic set-back thermostats:	Listed by UL[1] Conformance to NEMA [2] DC3-2013
Line voltage or low voltage room thermostats	NEMA DC3-2013
Automatic gas ignition systems	ANSI[3] Z21.21-2000 AGA Certification Seal
Energy management systems	Listed by UL
Hydronic boiler controls	Listed by UL
Other burner controls	Listed by UL

[1] UL indicates Underwriters Laboratory
[2] NEMA indicates National Electrical Manufacturers Association
[3] ANSI indicates American National Standards Institute

4.10 Water Heater Modifications

Insulate tank and distribution piping	(See insulation section of this chapter)
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-R 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 70-21999 (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 Institute
[4] IEEE indicates Institute of Electrical and Electronics Engineers

4.11 Replacement Water Heaters

See also 5. Additional Minimum Requirements for Replacement Mechanical Equipment

Electric (resistance) Water Heaters	10 CFR[1] 430 and UL[2] 174. Minimum .95 EF/ .93 UEF rated.[3]
Heat Pump Water Heaters	UL 1995, Second edition, 1995. Electrical components to be listed by UL.
Gas Water Heaters	Non-mobile home: ▪ 30 gallon – minimum .63 EF / .60 UEF[3] (only if 40 gallon upgrade not feasible) ▪ 40 and 50 gallon - minimum .67 EF / 0.65 UEF[3] Mobile homes: All replacements shall be mobile-home rated. ▪ 30 gallon – minimum .63 EF / .60 UEF[3] ▪ 40 gallon – minimum .62 EF / .59 UEF[3] ▪ 50 gallon – minimum .60 EF / .57 UEF[3]
Rated ≤75 kBtu/hr Rated ≥75 kBtu/hr	10 CFR 430 and ANSI[4] Z21.10.1-1998 ANSI Z21.10.3-1998
Oil Water Heaters	UL 732, Fifth Edition, 1995, Revised 2/3/05

[1] CFR indicates Code of Federal Regulations
[2] UL indicates Underwriters Laboratories
[3] Wisconsin Weatherization Specifications
[4] ANSI indicates American National Standards Institute

4.12 Solar Water Heating Systems

Solar water heating systems, including forced circulation, integral collector storage, thermo-siphon, and self-pumping systems:	System shall be certified per SRCC[1] OG 300, July 16, 1998

[1] SRCC indicates Solar Rating and Certification Corporation

4.13 Waste Heat Recovery Devices

Desuperheater/water heaters:	ARI [1] 470-1995 and UL[2] 1995, Second Edition
Condensing heat exchangers	Commercially available components installed per manufacturers' specification. NFPA[3] 211-2000 (same as ASSI A52.1) may apply in certain instances. See also 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[4])

[1] ARI indicates Air Conditioning and Refrigeration Institute
[2] UL indicates Underwriters Laboratories
[3] NFPA indicates National Fire Prevention Association
[4] SMACNA denotes Sheet Metal and Air Conditioning Contractors' National Association

4.14 Boiler Repair and Modifications/Efficiency Improvements

See also 5. Additional Minimum Requirements for Replacement Mechanical Equipment

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 [4] 31-2001
Install burners (oil/gas)	ANSI Z223.1-1999 for gas equipment and NFPA 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 shall be Hydronics Institute Division of AHRI equipment.
Clean heat exchanger, adjust burner air shutter(s), and check smoke number on oil-fueled equipment. Check operation of pump(s) and replacement filters.	Per manufacturer's instructions
Replace combustion chambers	Refractory linings may be required for conversions
Replace heat ex-changers, 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 Institute
[3] UL indicates Underwriters Laboratories
[4] NFPA indicates National Fire Prevention Association
[5] ASME indicates American Society for Mechanical Engineers

4.15 Heating and Cooling System Repairs and Tune-ups/Efficiency Improvements

Install duct insulation	ASTM[1] C612-00 (see insulation sections of this chapter)
Reduce input of burner; de-rate 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 CO2 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 Reduce excess combustion air: A. Reduce vent connector size of gas-fueled appliances B. Adjust barometric draft regulator for oil fuels	Applicable sections of NFPA 31-2001 for installation and in conformance with UL[4] 17, Third Edition, 1994 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
Replace constant burning pilot with electronic 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)[5]
Install/replace duct furnaces (gas) Install/replace heat pumps	ANSI Z223.1-1999 (same as NFPA 54-1999). ARI[6] 210/240-1994. UL 1995, Second Edition, 1995. (See 11.4.16 Replacement Furnaces)
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] Wisconsin Weatherization Specifications
[6] ARI indicates Air Conditioning and Refrigeration Institute

4.16 Replacement Furnaces, Boilers and Wood Stoves

See also 5. Additional Minimum Requirements for Replacement Mechanical Equipment

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 Z223.1p1999 (same as NFPA 54-1999).
Oil-fired furnaces	UL[4] 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	Shall meet ENERGY STAR® standards[3], UL 507, Ninth Edition, 1999.

[1] NFPA indicates National Fire Prevention Association
[2] ANSI indicates American National Standards Institute
[3] Wisconsin Weatherization Specifications
[4] UL indicates Underwriters Laboratories

4.17 Air Conditioning and Cooling Equipment

Air Conditioners:	
Central air conditioners	ARI [1] 210/240-1994, SEER rating of 13
Room size units	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

4.18 Screens, Window Films, and Reflective Materials

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 awnings, window louvers, doors, and exterior duct work (exposed)	Commercially available

4.19 Refrigerators and Freezers

Refrigerators/Freezers	Technical specifications are available on the HE+ Procurement SharePoint site in Refrigerator/Freezer Attachment 4. ***Refrigerators only:*** Preference may be given to ENERGY STAR® rated products.

4.20 Lamps and Fixtures

Compact fluorescent lamps (CFLs) and fixtures Light-emitting diode (LED) lamps Note: Grantees may use https://www.energystar.gov/productfinder/ to check for availability of ENERGY STAR® rated lamps and use non-rated lamps when ENERGY STAR® is not available, documenting this in the customer file.	Shall meet ENERGY STAR® standards:[1] https://www.energystar.gov/sites/default/files/ENERGY%20STAR%20Lamps%20V1%201_Specification.pdf When applicable and feasible, LED lamps installed in enclosed fixtures shall be suitable for enclosed locations. LED lamps installed in exterior locations shall be rated for wet or damp environments.

[1] Wisconsin Weatherization Specifications

5. Additional Minimum Requirements for Replacement Mechanical Equipment

Equipment	ENERGY STAR® Required	AHRI Rating Required	Minimum AFUE, EF or Thermal Efficiency	Other Specifications
Heating Systems: 1 to 4 Unit Buildings				
Gas Forced Air	No	Yes	≥ 95%	Condensing sealed combustion.
Oil Forced Air	No	Yes	≥ 83%	
High Efficiency Gas Boilers	No	Yes	≥ 90%	Modulating boiler.
Standard Efficiency Gas Boilers	No	Yes	≥ 84%	Based on energy audit modeling protocol.
Oil Boilers	No	Yes	≥ 83%	
Direct Vent Gas Space Heaters	No	Yes	≥ 80%	Air circulating fan required. Electronic Intermittent Pilot or Electronic Ignition. No Standing Pilot Lights. No vent free units.
"B" Vent/Inside Wall Gas Space Heaters	No	Yes	≥ 75%	Air circulating fan required. Electronic Intermittent Pilot or Electronic Ignition. No Standing Pilot Lights. No vent free units.
Condensing Gas Space Heaters	No	Yes	≥ 90%	Installer shall implement a means to drain condensate (or deliver condensate to an approved drain). An evaporator pan is not an acceptable condensate management system. Air circulating fan required. Electronic Intermittent Pilot or Electronic Ignition. No Standing Pilot Lights. No vent free units.
Oil Space Heaters	No	No	NA	Air circulating fan required.
Heating Systems: Mobile Homes (all equipment shall be rated for manufactured housing)				
Forced air gas	No	Yes	≥ 95%	Condensing sealed combustion; shall fit footprint of existing system and door should close fully.
Forced air oil	No	Yes	≥ 79%	Shall fit footprint of existing system and door should close fully.
Forced air electric	No	NA	NA	Repair only; conversion recommended.
Other	NA	NA	NA	Default to 1-4 unit space heaters.
Water Heaters: **Mobile Homes** (all equipment shall be rated for manufactured housing)				
Gas: 30 gallon	No	Yes	.63 EF / .60 UEF	
Gas: 40 gallon	No	Yes	.62 EF / .59 UEF	
Gas: 50 gallon	No	Yes	.60 EF / .57 UEF	
Electric: 30 to 50 gallon	No	Yes	.95 EF / .93 UEF	
Water Heaters: **1 to 4 Unit Buildings**				
Gas: 30 gallon	No	Yes	.63 EF / .60 UEF	Natural vent allowed for Health & Safety replacements of leaking water heaters with no draft issues; commercially available.
Gas: 40 and 50 gallon	Yes	Yes	.67 EF / .65 UEF	Power vented.
Electric: 30 to 50 gallon	No	Yes	.95 EF / .93 UEF	

Water Heaters: **5+ Unit Buildings** (Commercial Equipment exempt from Energy Star requirements; shall be properly commissioned)				
Gas: 30 gallon	No	Yes	.63 EF / .60 UEF	When serving a single unit, see 1 – 4 unit specifications.
Gas: 40 and 50 gallon	Yes	Yes	.67 EF / .64 UEF	When serving a single unit, see 1 – 4 unit notes.
Electric: 30 to 50 gallon	No	Yes	.95 EF / .93 UEF	When serving a single unit, see 1 – 4 unit notes.
Gas: 75+ gallons or FHR>75 gallons	No	Yes	.88 UEF	For units serving multiple apartments; “High” UEF usage rating
Indirect water heater	No	No	NA	Follow manufacturer instructions when installing indirect water heaters.
Heat Pump Water Heater	Yes	No	≥ 2.0	
Heating Systems: 5+ Unit Buildings (Residential Systems)				
Gas Forced Air	No	Yes	≥ 95%	Condensing/ sealed combustion.
Oil Forced Air	No	Yes	≥ 83%	
Gas Boilers	No	Yes	≥ 92%	Condensing/ sealed combustion.
Oil Boilers	No	Yes	≥ 83%	
Heating Systems: 5+ Unit Buildings (Commercial Systems)				
Furnace (including rooftop units)	N/A	Yes	≥ 80% EF	
Gas Boilers	N/A	Yes	≥ 94% EF	Condensing/ sealed combustion.
Light Oil Boilers	N/A	Yes	≥ 85% EF	
Heavy Oil Boilers	N/A	Yes	≥ 83% EF	

Appendix D WisWAP Reporting Guide

Code	Name	Measure Detail	Reporting Tips	Allowable Funds
ENERGY CONSERVATION MEASURES (ECMs)				
ABD Air Sealing				
ABD016	Multi 5+ Sealing	Includes blower door setup and all minor and major air sealing. Does not include auditor or final inspection blower door setup. Enter the As Is CFM50 Test and total CFM50 reduction in the Actual "Qty" (Quantity) field. The unit of measure for costs is CFM50 Reduction. Include the reason for no blower door test in the comments box.	Report crew labor and materials with measure. Examples of materials include: rigid insulation board, replacement glass (missing), foam, caulk, silicone, weather-stripping, etc. Include the cost of minor blown insulation used to repair damage from air sealing when attic insulation will not be included in the job.	EAP, PB
ABD035	7/1/16 Non-Guideline Sealing – MHML	Air sealing completed on natural gas mobile homes being treated with the Mobile Homes Measures List (MHML). Enter the total cost of performing air sealing for homes that are treated with the use of the MHML. Limited to 3 total labor-hours or $450, whichever comes first.	Report crew labor and materials with measure.	EAP, PB
ABD040	Air Sealing – Mobile Home	Air sealing completed on bulk fuel mobile homes modeled with Weatherization Assistant. Includes blower door setup and all minor and major air sealing. Does not include auditor or final inspection blower door setup. Enter the As Is CFM50 Test and total CFM50 reduction in the Actual "Qty" (Quantity) field. The unit of measure for costs is CFM50 Reduction. Include the reason for no blower door test in the comments box.	Report crew labor and materials with measure. Examples of materials include: rigid insulation board, replacement glass (missing), foam, caulk, silicone, weather-stripping, etc. Include the cost of minor blown insulation used to repair damage from air sealing when attic insulation will not be included in the job.	EAP, PB

Code	Name	Measure Detail	Reporting Tips	Allowable Funds
ABD045	Air Sealing	Air sealing completed on 1 to 4 unit modeled with Weatherization Assistant. Includes blower door setup, all minor and major air sealing, and Pressure Diagnostic testing. Does not include auditor or final inspection blower door setup. Enter the As Is CFM50 Test and total CFM50 reduction in the Actual "Qty" (Quantity) field. The unit of measure for costs is CFM50 Reduction. Include the reason for no blower door test in the comments box.	Report crew labor and materials with measure. Examples of materials include: rigid insulation board, replacement glass (missing), foam, caulk, silicone, weather-stripping, etc. Include the cost of minor blown insulation used to repair damage from air sealing when attic insulation will not be included in the job.	DOE, EAP, PB
PCFL Lighting				
PCFL005	CFL Bulb	Replacement of incandescent bulb with a compact fluorescent lamp.	Report the number of bulbs installed and total cost. WisWAP will calculate the cost per bulb. All bulbs regardless of style can be reported in one measure.	DOE, EAP, PB
PCFL010	Halogen Torchiere Replacement	Replacement of a halogen torchiere with a compact fluorescent floor lamp.	Report the number of lamps installed and total cost.	EAP, PB
PCFL015	LED Exit Light	Replacement or installation of an LED Exit Light in a multi-family building.	Report the number of lamps installed and total cost.	EAP, PB
PCFL030	Fixture Replacement	Replacement of existing incandescent lighting fixture with a light emitting diode fixture. LED fixtures **shall only** be installed if participating in a Division approved pilot project.	Report the number of fixtures installed and total cost.	PB
PCFL035	CFL Bulb – Mobile Home	Replacement of incandescent bulb with a compact fluorescent lamp.	Report the number of bulbs installed and total cost. WisWAP will calculate the cost per bulb. All bulbs regardless of style can be reported in one measure.	EAP, PB

Code	Name	Measure Detail	Reporting Tips	Allowable Funds
PCFL040	Halogen Torchiere Replacement – Mobile Home	Replacement of a halogen torchiere with a compact fluorescent floor lamp.	Report the number of lamps installed and total cost.	EAP, PB
PCFL055	LED Bulb – Mobile Home	Replacement of incandescent bulb with a light emitting diode lamp.	Report the number of bulbs installed and total cost. WisWAP will calculate the cost per bulb. All bulbs regardless of style can be reported in one measure.	EAP, PB
PCFL070	LED Bulb	Replacement of incandescent bulb with a light emitting diode lamp.	Report the number of bulbs installed and total cost. WisWAP will calculate the cost per bulb. All bulbs regardless of style can be reported in one measure.	EAP, PB
PCFL085	LED Can Light Insert	Replacement of existing can light with a light emitting diode insert. LED can lights **shall only** be installed if participating in a Division approved pilot project.	Report the number of can lights installed and total cost.	PB
DIA Attic Insulation				
DIA	Attic Insulation	The cost of attic insulation and standard attic preparation for insulation. Attic preparation includes the proper boxing and damming of the access, electrical junction boxes and other hazards, vent stacks including chimneys, and the insulating and sealing of the attic access. Include the cost of attic access insulation and air sealing of attic access with the insulation of the attic.	When installing additional insulation, all associated attic costs are reported with the attic insulation measure. This includes materials used to prepare the attic for the installation of insulation. Material examples are: Insul-shield; wood boards; plywood.	DOE, EAP, PB

Code	Name	Measure Detail	Reporting Tips	Allowable Funds
DIA120	Attic Prep - No Attic Insulation	The cost of attic prep and attic access when no insulation is installed. Attic preparation includes the proper boxing and damming of the access, electrical junction boxes and other hazards, vent stacks including chimneys, and the insulating and sealing of the attic access.	Material examples are: Insul-shield; wood boards; plywood.	DOE, EAP, PB
DIF Floor Insulation				
DIFL	Floor Insulation (MH)	Belly insulation installation. Includes belly repairs unless the SIR is <1. Also includes board insulation installed under ducts and plumbing.	See Weatherization Program Manual Chapter 8 and Weatherization Assistant Guide for MHEA modeling and measure options. Report repairs separately when modeled separately. See also ZRRS040	EAP, PB
JBM Boiler Modifications				
JBM	Boiler Modifications	All required modifications that are not included with a basic boiler installation. Reported modifications may occur with or without a boiler replacement.	Examples include outdoor reset, auto fill valves, distribution system work, and compression tanks.	DOE, EAP, PB
JHSM Heating System Modifications				
JHSM	Heating System Modifications	Includes all modifications needed aside from what would be included with basic furnace installation. These may occur with or without a furnace replacement.	Examples for existing forced-air systems include ductwork modifications, insulating ducts and filters. Do not include ductwork costs associated with electric conversions in this measure category.	DOE, EAP, PB
JHSM005	Clean and Tune	Includes primarily cleaning surfaces, adjusting burners, oxygen, diaphragms, gas pressure; it also includes work needed to increase the efficiency while reducing carbon monoxide as part of a Clean & Tune.	Do not include other modifications or repairs to the balance of the heating system (e.g. ductwork) with the clean and tune. Report those measures separately.	DOE, EAP, PB .

Code	Name	Measure Detail	Reporting Tips	Allowable Funds
JHSM015	Setback Thermostat	Limited to programmable thermostats only.	Conventional thermostats are reported in ZRHS030 Thermostat Replacement.	DOE, EAP, PB
JHSM020	Repair/ Replace/ Add Ductwork - First Floor	Includes ductwork that is installed to improve the heating system distribution. Includes filter covers and filter racks.	Ductwork completed primarily to address CAZ pressure is reported under Health & Safety as *XHHS030 Ducts repair or replace*. Report the ductwork repair or replacement separately from the heating system in WisWAP (exception: electric conversions).	DOE, EAP, PB
JHSM025	Repair/ Replace/ Add Ductwork - Second Floor	Includes ductwork that is installed to improve the heating system distribution.	Report the ductwork separately from the heating system repair or replacement activity in WisWAP (exception: electric conversions).	DOE, EAP, PB
JHSM035	Seal Ducts	Includes sealing ductwork to improve the heating system distribution. Duct sealing should be limited to the following conditions: distribution is outside of the heating envelope, distribution leaks are causing excessive negative or positive pressure in the CAZ, and large leaks in the distribution system are causing heat to not reach the intended occupiable space. DOE funds may not be used for this measure.		EAP, PB
JHSR Heating System Replacement				
JHSR	Heating System Replacement	Heating systems reported under this category have been modeled as an ECM and have an SIR ≥1.0. The exception is the conversion of electrical heating systems in 1-4 unit buildings. See JHSR060 for additional information.	Does not include replacements that are done due to Health and Safety problems. Items that are bid with the base installation cost can be included in this measure.	DOE, EAP, PB
JHSR060	Electric Conversion	All electric conversions that are not Health and Safety. Use the Electric Fuel Switch calculator to generate the savings information.	The total cost of the electric conversion, including ductwork, shall be reported in this measure.	DOE, EAP, PB

HEALTH AND SAFETY MEASURES (H&S)				
XHAR Ventilation				
XHAR005	62.2 Ventilation	Includes whole building mechanical ventilation running continuous or intermittently. Also known as whole house or continuous.	The Diagnostic Workbook summary page will indicate when this measure is required and the job is eligible for use of DOE funds. DOE funds shall not be used if customer refuses 62.2 ventilation.	DOE, EAP, PB
XHAR007	Local Exhaust Ventilation	An exhaust fan controlled with a switch or motion sensor.	Local exhaust or spot ventilation is turned on and off by the customer. It may include a timer to allow the fan to run for a certain period of time after use.	DOE, EAP, PB
XHAR009	Venting Existing Exhaust	Venting existing fans to the outside of the building.	Includes correcting incorrect venting.	DOE, EAP, PB
XHAR013	Make Up Air	Installation of makeup air for combustion safety.		DOE, EAP, PB
XHAP Health and Safety Appliance				
XHAP015	Appliance Repair	Gas leak repair only.	Cannot be used to repair high CO in cook stoves.	DOE, EAP, PB
XHAS Health and Safety Asbestos				
XHAS005	Attic with Vermiculite	The additional cost to follow procedures (O&M or certified supervisor and workers) when vermiculite insulation is present in the attic.	Model the additional asbestos costs with the related measure(s). Report the costs separately.	DOE, EAP, PB
XHAS010	Attic with Non-Vermiculite ACM	The additional cost to follow procedures (O&M or certified supervisor and workers) when suspect or confirmed ACM (non-vermiculite) was present in the attic.	Model the additional asbestos costs with the related measure(s). Report the costs separately.	DOE, EAP, PB
XHAS015	Sidewalls with Vermiculite	The additional cost to follow procedures (O&M or certified supervisor and workers) when vermiculite insulation was present in the sidewalls.	Model asbestos costs with the related measure(s). Report the costs separately.	DOE, EAP, PB

XHAS020	Sidewalls Slate/ Stucco Siding	The additional cost to follow procedures for certified supervisor and workers to remove and re-install slate side or disturb stucco.	Model additional asbestos costs with the related measure(s). Report the costs separately.	DOE, EAP, PB
XHAS025	HVAC/ Distribution	The additional cost to follow procedures (O&M or certified supervisor and workers) when suspect or confirmed ACM was present on HVAC/distribution.	Model additional asbestos costs with the related measure(s). Report the costs separately.	DOE, EAP, PB
XHAS030	Miscellaneous ACM	The additional cost to follow procedures (O&M or certified supervisor and workers) when suspect or confirmed ACM (not vermiculite, slate, stucco, or HVAC/ distribution) was disturbed during weatherization.	Model additional asbestos costs with the related measure(s). Report the costs separately.	DOE, EAP, PB
XHAQ Health and Safety Air Quality				
XHAQ005	Worst Case Draft Test	Standardized test procedures that include an appliance draft test under worst case depressurization conditions. Complete worst case depressurization tests on every dwelling with natural draft or assisted draft appliances.	The Worst Case Draft (WCD) test includes both a worst case depressurization measurement of all of a structure's CAZs and a draft test of naturally drafting combustion appliances under those worst case conditions. This measure is excluded from the $1,000.00 H/S threshold.	DOE, EAP, PB
XHAQ006	Worst Case Depressur-ization w/o Draft	Standardized test procedures that determine the depressurization of building. No draft test is taken. This test is important to determine the impact of ventilation on a building. Complete worst case depressurization tests on every dwelling.	With Category I natural draft and fan assisted draft appliances, this measure cannot be used. See Worst Case Draft Test. Use this measure with sealed combustion appliances only. This measure is excluded from the $1,000.00 H/S threshold	DOE, EAP, PB
XHAQ010	Health and Safety Dryer Venting	Installation of UL listed materials for ducting and necessary supplies or hardware (i.e., hose clamp) to address an existing moisture or combustion gas hazard. See Field Guide Section 5.9.11.	Effective July 1, 2018 dryer venting shall be reported as a Health and Safety measure, not a repair. This measure is included in the SIR if H/S reaches the $1,000.00 threshold.	DOE, EAP, PB

XHAQ025	Dehumidifier New or Replace	Installation of a dehumidifier to address an existing moisture problem which cannot be addressed in any other way.	This is not a baseload measure.	DOE, EAP, PB
XHAQ035	Other Remediation	Measures performed to decrease indoor air quality pollutants in the home. Includes sealing of open core blocks and installing 6 mill poly in crawlspaces not receiving an insulation measure. Can also include oil tank capping or removal when a documented health and safety issue was identified during the energy audit and the oil tank work is not associated with a heating system fuel switch.	Report crew labor and materials with measure.	EAP, PB
XHAQ045	Gas Leak Repair	Gas leak repair throughout the building. Natural gas leaks on the utility side of the meter should be addressed by the utility or the building owner. Limited repair is allowed when the LP tank and distribution are owned by the low-income customer.	This measure is excluded from the $1,000.00 H/S limit.	DOE, EAP, PB
XHEL Health and Safety Electrical				
XHEL015	Upgrade or Repair Electric	Includes necessary weatherization related electrical wiring installation and upgrades. Includes separate circuit for the heating system when required, the installation of GFCI receptacles, wiring for condensate pumps, the proper bonding of the electrical systems to gas service, or repairs to correct unsafe wiring, including junction box covers in attics to be insulated.	The replacement of knob and tube wiring is reported as a repair. Charge service repair or upgrade to ZREL005. Charge knob and tube wiring replacement to ZREL015 (attic) or ZREL020 (walls).	DOE, EAP, PB

XHHS Health and Safety Heating System				
XHHS	Heating System Replacement	Generally limited to the replacement of unsafe heating systems that do not have an SIR ≥1.0 and where the job has a cumulative SIR ≥1.0.	**Note for all Health and Safety heating system replacements:** DOE funds shall not be used on in-progress replacements when the cumulative SIR<1.0. See Program Manual 8.3.2.3 End-State Planning and Informational Modeling. Items that are bid with the base installation cost can be included in this measure.	DOE, EAP, PB
XHHS005	Boiler Replace	Limited to the replacement of unsafe boilers that do not have an SIR ≥1.0 and where the job has a cumulative SIR ≥1.0.	Report heating system modifications separately. Items that are bid with the base installation cost can be included in this measure.	DOE, EAP, PB
XHHS010	Boiler Repair	Includes miscellaneous boiler repair not included in JBM Boiler Modifications category or XHHS015.	Including, but not limited to venting modifications, condensate pumps, and repairs to improve high CO level.	DOE, EAP, PB
XHHS015	Boiler Radiators, Repair or Replace	Includes repairs to address a safety problem.	Including, but not limited to distribution system leaks and repair or replacement of radiators.	DOE, EAP, PB
XHHS020	Furnace Replace	Limited to the replacement of unsafe heating systems that do not have an SIR ≥1.0 and where the job has a cumulative SIR ≥1.0.	Report heating system modifications separately. Items that are bid with the base installation cost can be included in this measure.	DOE, EAP, PB
XHHS025	Furnace Repair	Includes repairs to address a safety problem.	Includes miscellaneous furnace repair such as condensate pump or plumbing, venting modifications, items not listed in JHSM Heating System modification category.	DOE, EAP, PB

XHHS030	Ducts Repair or Replace	Includes duct repairs that are linked directly to health and safety measures.	Includes ductwork for health and safety heating system replacement or duct repair based on worst-case depressurization tests (Can include filter covers when natural draft appliances will remain in the CAZ.)	DOE, EAP, PB
XHHS035	Space Heater or Wall Furnace Replace	Limited to the replacement of unsafe space heaters that do not have an SIR ≥1.0 and where the job has a cumulative SIR ≥1.0.	Items that are bid with the base installation cost can be included in this measure.	DOE, EAP, PB
XHHS040	Space Heater or Wall Furnace Repair	Includes repairs to address a safety problem, where no space heater replacement or other ECM heating system repair is planned.		DOE, EAP, PB
XHHS055	Electric Replace	Includes the replacement of electrical heating systems with electrical heating systems. This must be a health and safety measure based on unsafe conditions. When possible convert electric heating systems to another fuel.	Report conversions as an ECM, using JHSR060.	DOE, EAP, PB
XHHS060	Electric Repair	Includes the repair of an existing electrical heating system.		DOE, EAP, PB
XHHW Health and Safety Hot Water				
XHHW	Health and Safety Hot Water	Limited to unsafe or leaking water heater replacements that do not have an SIR ≥1.0 and where the job has a cumulative SIR ≥1.0.	Items that are bid with the base installation cost can be included in this measure. **Note for all Health and Safety water heater replacements:** DOE funds shall not be used on in-progress replacements when the end-state cumulative SIR<1.0. See Program Manual 8.3.2.3 End-State Planning and Informational Modeling.	DOE, EAP, PB

XHHW003	Electric to Electric Mobile Home .90	For the replacement of an unsafe mobile home electric water heater with an electric water heater of higher efficiency which is rated for mobile home installation.		EAP, PB
XHHW004	Electric to Electric .94	Includes the replacement of an unsafe electric water heater with an electric water heater of higher efficiency.		DOE, EAP, PB
XHHW005	Water Heater Replace	Includes the replacement of an unsafe or leaking water heater that doesn't fit into the other health and safety water heater replacement categories.	May include the cost of electric circuit installation and interior gas piping.	DOE, EAP, PB
XHHW007	Gas power vent from conventional gas	Includes the conversion of an unsafe atmospheric gas water heater with a power vented gas water heater.	Can include the cost of electric circuit installation and interior gas piping.	DOE, EAP, PB
XHHW008	Gas power vent from electric	Includes the conversion of an unsafe electric water heater with a power vented gas water heater.	Can include the cost of electric circuit modifications and interior gas piping. Verify this water heater was initially modeled as an ECM. Most electric to gas water heaters modeled as an ECM have an SIR ≥1.0.	DOE, EAP, PB
XHHW010	Water Heater Repair	Includes the repair of an unsafe water heater.		DOE, EAP, PB
XHHW015	Plumbing Repair or Replace	Includes plumbing repair that is linked directly to an unsafe or leaking water heater.	Includes installing TPR valve and pipe on a water heater when tank insulation is installed.	DOE, EAP, PB

REPAIR MEASURES				
ZREL Repair Electric Service				
ZREL	Repair Electric Service	Measures in this category are meant to protect an ECM.		DOE, EAP, PB
ZREL005	Upgrade or Repair Electric Service	Upgrade or repair of the electric system that is directly linked to protecting or assuring the effectiveness of a weatherization measure.		DOE, EAP, PB
ZREL015	Knob and Tube Replace Attic	Replacement of knob and tube wiring to allow for the proper air sealing and the installation of attic insulation.	Model the wiring replacement in the itemized cost tab.	DOE, EAP, PB
ZREL020	Knob and Tube Replace Walls	Replacement of knob and tube wiring to allow for the proper the installation of sidewall insulation.	Model the wiring replacement In the itemized cost tab.	DOE, EAP, PB
ZRHS Repair Heating System				
ZRHS030	Thermostat Replacement - Non-programmable	Installation of a non-programmable thermostat.	Report programmable thermostats under JHSM015 Setback Thermostat. Non-programmable thermostats can only be installed as a repair.	DOE, EAP, PB
ZRHS035	Fuel Switching	Costs related to fuel switching that are not part of the base bid price for installing a heating system. Allowable activities include oil tank capping or removal when performed in conjunction with an oil to gas heating system replacement, installation of exterior gas lines (lateral), and orifice replacement for LP to natural gas conversions.	For heating system replacements report the bid costs with the appropriate heating system measure and all additional costs in ZRHS035. For heating system conversions where existing system is not replaced report all costs in ZHRS035. Include the total linear feet of natural gas lateral (utility + weatherization) and the type of fuel switch (Oil to NG/LP; LP to NG) in comments.	DOE, EAP. PB
ZRHW Repair Hot Water				
ZRHW	Repair Hot Water	Measures in this category are meant to protect and ECM.		DOE, EAP, PB

ZRHW005	Water Heater Repair	Repairs to the water heater that are not for health and safety, but protect ECMs.	This could include items such as a replacement sacrificial anode, controls, clean and tune, replacement elements.	DOE, EAP, PB
ZRHW010	Plumbing Repair or Replace	Repairs to the hot water plumbing system that are not for health and safety, but protect ECMs.	Examples might include resizing intake and output pipes, repairing leaks, repairing dripping tub spouts, and modifying distribution to accommodate related measures.	DOE, EAP, PB
ZRRS Repair Structure				
ZRRS	Repair Structure	Measures in this category are solely to allow installation of an ECM or to assure that other weatherization measures are effective.		DOE, EAP, PB
ZRRS005	Chimney	Repairs to the chimney to improve performance or structural integrity.		DOE, EAP, PB
ZRRS030	Door Replacement R5	Door replacement.	Includes field fabricated wood doors for basements.	EAP, PB
ZRRS035	Window Replacement Energy Star Rated	Includes window replacement that is a repair not an ECM.	Includes basement window replacements that are not Energy Star rated.	EAP, PB
ZRRS040	Repair Structure Other	Cost of repairs not covered by other measures.	Includes belly repairs that are modeled as Itemized Costs, cold water plumbing repairs that affect ECM's.	DOE, EAP, PB
ZRRS045	Ventilation - Soffit/Roof/ Gable	Ventilate the attic based on local code requirements or if unsealed bypasses remain in the attic.	Includes passive ventilation added to the attic via roof, gable end or soffit.	DOE, EAP, PB
ZRRS085	Major Pressure Boundary	Includes the costs associated with addressing major pressure boundary issues	Includes preparations for and installing drywall in tuck under garages, attics, rooms. Indicate in comments box what portion of the home is receiving this measure. Examples being; Tuck Under Garage, Attic, Bedroom.	DOE, EAP, PB