



Department of Energy
Washington, DC 20585

WEATHERIZATION PROGRAM NOTICE 08-4
EFFECTIVE DATE: March 3, 2008

SUBJECT: SPACE HEATER POLICY

PURPOSE: To update the policy relating to space heaters for the Low-Income Weatherization Assistance Program (Weatherization). This policy supersedes the previous space heater policy issued by memoranda on March 18, 1992.

SCOPE: The provisions of this guidance apply to all grantees applying for financial assistance under the Department of Energy (DOE) Weatherization Assistance Program. This policy applies to electric and gas- and liquid-fueled space heaters only. Wood-burning stoves are addressed in separate guidance, which will be updated at a later date and will likely be expanded to include coal-burning stoves. This policy applies to electric and gas- and liquid-fueled space heaters whether the appliance is the primary or secondary heat source.

LEGAL AUTHORITY: Title IV, Energy Conservation and Production Act, as amended, authorizes the Department of Energy to administer the Low-Income Weatherization Assistance Program. All grant awards made under this program shall comply with applicable law including regulations contained in 10 CFR Part 440 (most recently issued June 22, 2006), and other procedures applicable to this regulation as DOE may from time to time prescribe for the administration of financial assistance.

INTRODUCTION: An estimated three million low-income households in the United States rely on space heaters as their primary method of heating their homes. An additional four million low-income households use space heaters as a secondary method of heating. Potential health and safety risks associated with the use of space heaters, especially portable and unvented devices include elevated levels of carbon monoxide, fire hazards, and excessive moisture resulting in mold and rot.

The previous space heater policy was issued March 18, 1992. Since then, Weatherization providers have improved their ability to reduce air infiltration in weatherized dwellings, which can exacerbate carbon monoxide and moisture hazards. Within the past ten years, local jurisdictions in at least 48 and 44 States have adopted the International Residential Code (IRC) and International Fuel Gas Code (IFGC), respectively, that include requirements related to space heaters. Most of these States have adopted the codes and enforce them statewide. The space

heater policy issued by this Weatherization Program Notice (WPN 08-4) is consistent with the IRC and IFGC and clarifies how to best address eligible dwelling units containing space heaters.

INCIDENTAL REPAIRS: Incidental repairs under the Weatherization Program are not affected by the policy contained herein. Agencies may continue making incidental repairs necessary to allow weatherization work to proceed safely, including to space heaters.

SPACE HEATER POLICY: Separate guidance is provided for vented space heaters and unvented space heaters.

Vented Space Heaters: Vented gas- and liquid-fueled space heaters should be treated the same as furnaces in terms of repair and replacement, as well as combustion appliance safety testing. This policy applies to vented natural gas-fired space heaters, vented propane-fired space heaters, and oil-fired space heaters (which are always vented).

Unvented Space Heaters: Separate guidance applies to electric space heaters and unvented gas- and liquid-fueled space heaters.

Electric Space Heaters – DOE will not permit any DOE-funded weatherization work other than incidental repairs on electric space heaters. DOE will not preclude the use of other funding sources for the replacement or major repair of electric space heaters, but the Department does not encourage it because of:

- The high cost of electricity as compared to fossil fuels;
- Lower output ratings (size);
- Risk of fire hazards; and,
- Inadequate electrical systems in older homes frequently cannot safely carry the power required to operate an electric heater.

Work on such systems may make local agencies liable for inadequate electric wiring and damages that may result.

Unvented Gas- and Liquid-Fueled Space Heaters – DOE will not permit any DOE-funded weatherization work where the completed dwelling unit is heated with an unvented gas- and/or liquid-fueled space heater as the primary heat source. This policy applies to unvented natural gas-fired space heaters, unvented propane-fired space heaters, and unvented kerosene space heaters. This policy is consistent with the IRC and the IFGC.

DOE strongly encourages removal of all unvented gas- and liquid-fueled space heaters and replacement with vented, code-compliant heating systems as a prerequisite to weatherization. However, DOE will allow unvented gas- or liquid-fueled space heaters to remain as secondary heat sources in single-family houses provided they comply with the IRC and the IFGC. DOE is allowing this flexibility primarily to provide low-income clients an emergency back-up source of heat in the event of electrical power outages. Therefore, preference should be given to code-compliant units that do not require electricity.

Specifically, any unvented gas- and liquid-fueled space heaters that remain in a completed single-family house after weatherization:

- Shall not have an input rating in excess of 40,000 Btu/hour;
- Shall not be located in, or obtain combustion air from sleeping rooms, bathrooms, toilet rooms, or storage closets, unless:
 - Where approved by the authority having jurisdiction, one listed wall-mounted space heater in a bathroom:
 - Has an input rating that does not exceed 6,000 Btu/hour;
 - Is equipped with an oxygen-depletion sensing safety shut-off system; and
 - The bathroom meets required volume criteria to provide adequate combustion air;
 - Where approved by the authority having jurisdiction, one listed wall-mounted space heater in a bedroom:
 - Has an input rating that does not exceed 10,000 Btu/hour;
 - Is equipped with an oxygen-depletion sensing safety shut-off system; and
 - The bedroom meets required volume criteria to provide adequate combustion air.
- Shall require the enforcement of minimum ventilation guidelines as determined by the greater of:
 - 15 cubic feet per minute (CFM) per person,
 - 15 CFM per bedroom plus one [(# of bedrooms + 1) x 15 CFM], or
 - .35 air changes per hour.

The above minimum ventilation guidelines are natural ventilation rates, not with the house depressurized to -50 Pascal with a blower door.

Alternately, the minimum ventilation guidelines in the American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings, may be used if the State desires.

DOE funds may only be used to replace the primary heating source. DOE funds may not be used to replace unvented space heaters to be left in the weatherized dwelling unit as secondary heating sources. For example, a home has several older gas- or liquid-fueled, unvented space heaters that do not comply with the International Residential Code because they do not have oxygen-depletion sensing safety shut-off systems. The Weatherization Program can replace the primary unvented space heater with a vented unit, but cannot expend DOE funds to replace one of the existing secondary space heaters with a code-compliant unvented unit with an oxygen-depletion sensing safety shut-off system. DOE will not preclude the use of other funding sources to replace secondary space heaters with code-compliant units.

The Manufactured Home Construction and Safety Standards require all fuel-burning, heat-producing appliances in mobile homes, except ranges and ovens, to be vented to outside. Further, all fuel-burning appliances in mobile homes, except ranges, ovens, illuminating appliances, clothes dryers, solid fuel-burning fireplaces and solid fuel-burning fireplace stoves, must be installed to provide for the complete separation of the combustion system from the interior atmosphere of the manufactured home (i.e., to draw their combustion air from outside).

Cost Effectiveness: Current regulations governing weatherization activities require that measures installed in a dwelling unit be selected on the basis of cost effectiveness, with the most cost effective installed first. Unvented space heaters have very high efficiency ratings because they discharge their exhaust gases directly into the space being heated rather than outside, allowing the energy embodied in the hot exhaust gases to be released into the heated space. Vented space heaters exhaust combustion products and considerable amounts of energy out of the residence, and, therefore, are far less energy efficient.

The replacement of an unvented space heater with a vented one may not be cost-justified through energy savings. However, DOE strongly encourages States to combine other weatherization measures and health and safety considerations with vented space heaters as replacements for unvented space heaters. In such instances, the heat energy demanded by the structure can be lowered by energy-saving, cost-effective weatherization measures so that total energy costs are less or the same, while the indoor air quality is greatly improved through the use of a vented space heater paid for with health and safety funds.

Smoke and Carbon Monoxide Detectors: Any space heater replacement or repair procedure should include inspection to ensure that working smoke and carbon monoxide detectors are installed on the same floor as the space heater. In instances where smoke and carbon monoxide detectors are not present or are not operating properly, new detectors may be purchased and installed with DOE funds. The purchase and installation cost of the smoke and carbon monoxide detectors may be charged to the health and safety category or to program operations at the State's discretion.

Client Education: Client education, including information on the proper operation of the heating equipment and installed smoke or carbon monoxide detectors, should be provided. Of critical importance is strong client education regarding the dangers of carbon monoxide and excessive moisture levels, particularly if any unvented space heaters are left in the dwelling as a secondary heat source, or emergency back-up.

Other Health and Safety Consideration: Electrical wiring and chimneys should be checked to ensure they are in good condition and that no obvious building code violations are evident. Masonry chimneys used by vented space heaters should be properly lined in compliance with the IFGC. Safety inspection related to the space heater should include, but not be limited to, a check for adequate floor protection and code-compliant clearances to walls and other combustible materials. Even though many vented space heaters are manufactured with spill switches, it is still a requirement that a worst-case depressurization draft test be performed on all vented units.

Compliance with Local Code, Permitting, and Inspection Requirements: Installation of space heaters requires knowledge of appropriate industry standards and adherence to all aspects of the applicable building code(s) in the municipality where installation is taking place. Building permits should be secured, where required, (this is a program operations cost) for all space heater work and final inspection by competent professionals should take place before any heater is put into operation. States are reminded that even licensed heating contractors may not be aware of

the stringent requirements of the Weatherization Program, so their work should be reviewed by Program staff.

IMPLEMENTATION: Grantee health and safety policy, especially as it relates to space heater repair and replacement, in compliance with the above guidance, must be explained in the applicable State plan or appropriate amendment in order to permit Project Management Center review and approval. Funds to address these items as part of weatherization work will be allowable costs. It is especially important to insure that adequate inspection, safety, liability, and insurance procedures exist and are followed. In all cases, an education component for clients should be a part of the space heater work. Further, testing for indoor air quality, especially carbon monoxide levels in homes with unvented space heaters, should be performed. The cost to purchase the testing device and mechanical tools necessary to check for indoor air quality and to train personnel to do the testing are allowable program expenses. These charges may be made to the program operations cost category.

RELATED MATERIALS AND DOCUMENTS:

The following pamphlets and fact sheets may be useful for educating clients and training staff.

CONSUMER PRODUCT SAFETY COMMISSION PAMPHLETS (CPSC,
http://www.cpsc.gov/cpscpub/pubs/pub_idx.html):

Smoke Detectors Can Save Your Life (English and Spanish versions)
Carbon Monoxide Detectors Can Save Lives
Carbon Monoxide Questions and Answers (English and Spanish versions)
The Invisible Killer (CO) (English)
The Senseless Killer (CO) (Spanish)
What You Should Know About Space Heaters

Product Safety Fact Sheet - No. 98: Electric Space Heaters
Product Safety Fact Sheet - No. 97: Kerosene Space Heaters Product Safety Fact Sheet -
No. 99: Ground-Fault Circuit Interrupter (GFCI)
Product Safety Fact Sheet - No. 566: Home Fire Safety Checklist (English and Spanish
versions)



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Attachment 3-1.2

WEATHERIZATION PROGRAM NOTICE 11-6
EFFECTIVE DATE: January 12, 2011

SUBJECT: WEATHERIZATION HEALTH AND SAFETY GUIDANCE

PURPOSE: To update and provide clarification and additional information related to the implementation and installation of health and safety measures as part of the Department of Energy (DOE) Weatherization Assistance Program (WAP). This guidance also provides recommendations to Grantees as they develop their Health and Safety Plans and procedures. This Program Notice replaces Weatherization Program Notice 02-5 and related guidance, and in conjunction with other referenced guidance materials should be used when making decisions on how to address health and safety issues while conducting weatherization work. The information in this guidance as well as many additional health and safety resources related to weatherization are available on the Internet at www.waptac.org.

SCOPE: The provisions of this guidance apply to all Grantees applying for financial assistance under the DOE WAP.

LEGAL AUTHORITY: Title IV, Energy Conservation and Production Act, as amended, authorizes the Department of Energy to administer the Weatherization Assistance Program. All grant awards made under this Program shall comply with applicable law including regulations contained in 10 CFR Part 440, the Energy Policy Act of 2005, the Energy Independence and Security Act of 2007, the American Recovery and Reinvestment Act of 2009 (Recovery Act), and the Occupational Safety and Health Act of 1970 (29 USC §651), 29 CFR Part 1900, 1926, general industry and construction respectively.

BACKGROUND: Based upon DOE reviews and reports from Grantees, DOE determined that health and safety issues were being inconsistently addressed across the weatherization network. In order to create clarity and consistency in how health and safety issues are approached by Grantees, DOE reconvened its Health and Safety Committee to review current trends and practices for the health and safety concerns of the WAP network.

This Program Notice will assist Grantees in their development of a comprehensive approach to health and safety matters.

GUIDANCE: Over the years, a number of issues have been addressed to ensure that weatherization activities do not cause or exacerbate health and safety problems for workers and occupants. According to 10 CFR Part 440, allowable energy related health and safety actions are those actions necessary to maintain the physical well being of both the occupants and/or weatherization workers where:

- Costs are reasonable as determined by DOE in accordance with the Grantee's approved Grantee Plan; **AND**
- The actions must be taken to effectively perform weatherization work; **OR**
- The actions are necessary as a result of weatherization work.

Two questions to ask here are:

1. What must we do within reasonable costs to get the home to a point we can go forward with weatherizing, where the weatherization work will be lasting and effective?
2. What must we do to ensure that the weatherization work we conducted does not create a health or safety problem for the occupant?

Health and safety measures are allowed where, cumulatively, they do not exceed reasonable costs, as approved by DOE, outlined in each Grantee's approved Health and Safety Plan. DOE considers Grantees' proposed Health and Safety Plans on a case-by-case basis and determines whether submitted costs are reasonable. Health and safety measures are allowed to be conducted only where energy efficiency measures are identified for installation. Grantees are required to identify health and safety procedures and the percentage of costs involved as a part of their overall Health and Safety Plan to be approved by DOE. This approach gives Grantees and Subgrantees the ability to incorporate new technologies and their costs into their programs by removing health and safety costs from the per-house limitation; if they are budgeted separately. In providing this approach, DOE encourages Grantees to be prudent in their oversight of the percentage of funds approved for health and safety mitigation on homes weatherized by their Subgrantees.

The regulations do not mandate a separate health and safety budget cost category, but rather encourages Grantees to budget health and safety costs as a separate category and, thereby, exclude such costs from the average per-unit cost calculation. This separate category also allows these costs to be isolated from energy efficiency costs in program evaluations. Grantees are reminded that, if health and safety costs are budgeted and reported under the program operations category, the related health and safety costs should be included in the calculation of the average cost per home and cost-justified through the audit.

Grantees should carefully consider the approach to be taken when they draft their health and safety procedures. While ease of accounting is an important consideration, Grantees should keep in mind that activities assigned to the health and safety budget category do not have to be cost justified by the energy audit. The same items assigned to incidental repair, weatherization material, or installation cost categories must be cost-justified.

There are some instances where, depending on circumstances, the measure can be considered either a health and safety measure OR an energy conservation measure (e.g., furnaces). In those instances where the measure has a cost-effective savings-to-investment ratio (SIR) of one (1) or greater, the measure should be treated as a weatherization efficiency measure¹.

Deferral may be necessary if health and safety issues cannot be adequately addressed through this guidance. The decision to defer work in a dwelling is difficult but necessary in some cases. This does not mean that assistance will never be available, but that work must be postponed until the problems can be resolved and/or alternative sources of help are found. In the judgment of the auditor, any conditions that exist, which may endanger the health and/or safety of the workers or occupants, should be deferred until the conditions are corrected. Deferral may also be necessary where occupants are uncooperative, abusive, or threatening.

The following Health and Safety Guidance Table was developed within applicable legislation and DOE regulations. While not every possible health and safety issue is addressed herein, the guidance should provide enough relevant examples and direction to provide clarity to the many issues presented to DOE. The section following the Guidance Table provides direction on what must be addressed within the Grantee's Approved Health and Safety Plan as part of their Grantee Plan.

Some common themes and requirements that should be considered when utilizing the Guidance Table are as follows:

- Where removal or replacement is addressed in the document, proper disposal is required, and allowed as a health and safety cost.
- Where hazards are identified, clients must be informed in writing and the document must be signed by the client and a copy maintained in the client file.
- State and local (or jurisdiction having authority) codes must be followed while installing health and safety measures.
- Workers must be qualified and adequately trained according to state and local (or jurisdiction having authority) codes specific to the work being conducted (electrical, plumbing, etc.).
- Where Actions/Allowability, Testing, Client Education, and Training are allowed or required, DOE funds may be used unless specified otherwise. Health and safety expenditure limits apply to the specific action being taken to address the health and safety issue.

¹ Any measures being considered as an efficiency measure that is not on the DOE-approved priority list for the Grantee will require a site-specific audit to be performed on the dwelling in order to justify the measure being installed as an efficiency measure.

Health and Safety Issue	Action/Allowability	Testing	Client Education	Training
Air Conditioning and Heating Systems	“Red tagged”, inoperable, or nonexistent heating system replacement, repair, or installation is allowed where climate conditions warrant, unless prevented by other guidance herein. Air conditioning system replacement, repair, or installation is allowed in homes of at-risk occupants where climate conditions warrant.	Make sure systems are present, operable, and performing. Determine presence of at-risk occupants.	Discuss and provide information on appropriate use and maintenance of units and proper disposal of bulk fuel tanks when not removed.	Awareness of guidance.
Appliances and Water Heaters	Replacement of water heaters is allowed on a case by case basis. Replacement and installation of other appliances are not allowable health and safety costs. Repair and cleaning are allowed. Also see Air Conditioning and Heating Systems and Combustion Gases.	Determine whether appliances/water heaters are performing safely. Combustion safety testing is required when combustion appliances are present.	Discuss and provide information on appropriate use, maintenance, and disposal of appliances/water heaters.	Awareness of guidance. Conducting diagnostic training.
Asbestos - in siding, walls, ceilings, etc	Removal of siding is allowed to perform energy conservation measures. All precautions must be taken not to damage siding. Asbestos siding should never be cut or drilled. Recommended, where possible, to insulate through home interior.	Inspect exterior wall surface and subsurface for asbestos siding prior to drilling or cutting.	Inform the client that suspected asbestos siding is present and how precautions will be taken.	Safe practices for siding removal and replacement. How to identify asbestos containing materials.
Asbestos - in vermiculite	When vermiculite is present, unless testing determines otherwise, take precautionary measures as if it contains asbestos, such as not using blower door tests and utilizing personal air monitoring while in attics. Where blower door tests are performed, it is a best practice to perform pressurization instead of depressurization. Encapsulation by an appropriately trained asbestos control professional is allowed. Removal is not allowed.	Assess whether vermiculite is present. Asbestos Hazard Emergency Response Act of 1986 (AHERA) certified prescriptive sampling is allowed by a certified tester.	Clients should be instructed not to disturb suspected asbestos containing material. Provide asbestos safety information to the client. Formally notify client if test results are positive for asbestos and signed by the client.	Audit training on how to recognize vermiculite. AHERA course for testing. AHERA or other appropriately trained or certified asbestos control professional training for encapsulation.
Asbestos - on pipes, furnaces, other small covered surfaces	Assume asbestos is present in covering materials. Encapsulation is allowed by an AHERA asbestos control professional and should be conducted prior to blower door testing. Removal may be allowed by an AHERA asbestos control professional on a case by case basis.	AHERA testing is allowed by a certified tester.	Clients should be instructed not to disturb suspected asbestos containing material. Provide asbestos safety information to the client.	AHERA course for testing and asbestos control professional training for abatement. How to identify asbestos containing materials.

Health and Safety Issue	Action/Allowability	Testing	Client Education	Training
Biologicals and Unsanitary Conditions - odors, mustiness, bacteria, viruses, raw sewage, rotting wood, etc.	Remediation of conditions that may lead to or promote biological concerns and unsanitary conditions is allowed. Addressing bacteria and viruses is not an allowable cost. Deferral may be necessary in cases where a known agent is present in the home that may create a serious risk to occupants or weatherization workers. Also see Mold and Moisture guidance below.	Sensory inspection.	Inform client of observed conditions. Provide information on how to maintain a sanitary home and steps to correct deferral conditions.	How to recognize conditions and when to defer. Worker safety when coming in contact these conditions.
Building Structure and Roofing	Building rehabilitation is beyond the scope of the Weatherization Assistance Program. Homes with conditions that require more than incidental repair should be deferred. See Mold and Moisture guidance below.	Visual inspection. Ensure that access to areas necessary for weatherization is safe for entry and performance of assessment, work, and inspection.	Notify client of structurally compromised areas.	How to identify structural and roofing issues.
Code Compliance	Correction of preexisting code compliance issues is not an allowable cost other than where weatherization measures are being conducted. State and local (or jurisdiction having authority) codes must be followed while installing weatherization measures. Condemned properties and properties where “red tagged” health and safety conditions exist that cannot be corrected under this guidance should be deferred.	Visual inspection. Local code enforcement inspections.	Inform client of observed code compliance issues.	How to determine what code compliance may be required.
Combustion Gases	Proper venting to the outside for combustion appliances, including gas dryers is required. Correction of venting is allowed when testing indicates a problem.	Combustion safety testing is required when combustion appliances are present. Inspect venting of combustion appliances and confirm adequate clearances. Test naturally drafting appliances for draft and spillage under worst case conditions before and after air tightening. Inspect cooking burners for operability and flame quality.	Provide client with combustion safety and hazards information, including the importance of using exhaust ventilation when cooking and the importance of keeping burners clean to limit the production of CO.	How to perform appropriate testing, determine when a building is excessively depressurized, and the difference between air free and as-measured.

Health and Safety Issue	Action/Allowability	Testing	Client Education	Training
Drainage - gutters, down spouts, extensions, flashing, sump pumps, landscape, etc.	Major drainage issues are beyond the scope of the Weatherization Assistance Program. Homes with conditions that may create a serious health concern that require more than incidental repair should be deferred. See Mold and Moisture guidance below.	Visual inspection.	Importance of cleaning and maintaining drainage systems. Information on proper landscape design.	How to recognize drainage issues.
Electrical, other than Knob-and-Tube Wiring	Minor electrical repairs are allowed where health or safety of the occupant is at risk. Upgrades and repairs are allowed when necessary to perform specific weatherization measures.	Visual inspection. Voltage drop and voltage detection testing are allowed.	Provide information on overloading circuits, electrical safety/risks.	How to identify electrical hazards. Local code compliance.
Electrical, Knob-and-Tube Wiring	Minor upgrades and repairs necessary for weatherization measures and where the health or safety of the occupant is at risk are allowed. Must provide sufficient over-current protection prior to insulating over knob-and-tube wiring.	Inspect for presence and condition of knob-and-tube wiring. Check for alterations that may create an electrical hazard. Voltage drop and voltage detection testing are allowed.	Provide information to client on over-current protection, overloading circuits, basic electrical safety/risks.	How to identify electrical hazards. Local code compliance.
Fire Hazards	Correction of fire hazards is allowed when necessary to safely perform weatherization.	Check for fire hazards in the home during the audit and while performing weatherization.	Inform client of observed hazards.	How to identify fire hazards.
Formaldehyde, Volatile Organic Compounds (VOCs), and other Air Pollutants	Removal of pollutants is allowed and is required if they pose a risk to workers. If pollutants pose a risk to workers and removal cannot be performed or is not allowed by the client, the unit must be deferred.	Sensory inspection.	Inform client of observed condition and associated risks. Provide client written materials on safety and proper disposal of household pollutants.	How to recognize potential hazards and when removal is necessary.
Injury Prevention of Occupants and Weatherization Workers - Measures such as repairing stairs and replacing handrails.	Workers must take all reasonable precautions against performing work on homes that will subject workers or occupants to health and safety risks. Minor repairs and installation may be conducted only when necessary to effectively weatherize the home; otherwise these measures are not allowed.	Observe if dangers are present that would prevent weatherization.	Inform client of observed hazards and associated risks.	Awareness of potential hazards.

Health and Safety Issue	Action/Allowability	Testing	Client Education	Training
Lead Based Paint	Follow EPA's Lead; Renovation, Repair and Painting Program (RRP). In addition to RRP, Weatherization requires all weatherization crews working in pre-1978 housing to be trained in Lead Safe Weatherization (LSW). Deferral is required when the extent and condition of lead-based paint in the house would potentially create further health and safety hazards.	Testing is allowed. Job site set up and cleaning verification is required by a Certified Renovator.	Follow RRP requirements.	All weatherization crews working on pre-1978 homes must receive LSW training and be accompanied by an EPA Certified Renovator. Grantee Monitors/Inspectors must be Certified Renovators and receive LSW training.
Mold and Moisture	Limited water damage repairs that can be addressed by weatherization workers and correction of moisture and mold creating conditions are allowed when necessary in order to weatherize the home and to ensure the long term stability and durability of the measures. Where severe Mold and Moisture issues cannot be addressed, deferral is required.	Visual assessment is required and diagnostics such as moisture meters are recommended pre and prior to final inspection. Mold testing is not an allowable cost.	Provide client notification and disclaimer on mold and moisture awareness.	National curriculum on mold and moisture or equivalent.
Occupant Preexisting or Potential Health Conditions	When a person's health may be at risk and/or the work activities could constitute a health or safety hazard, the occupant at risk will be required to take appropriate action based on severity of risk. Temporary relocation of at-risk occupants may be allowed on a case by case basis. Failure or the inability to take appropriate actions must result in deferral.	Require occupant to reveal known or suspected health concerns as part of initial application for weatherization. Screen occupants again during audit.	Provide client information of any known risks. Provide worker contact information so client can inform of any issues.	How to assess occupant preexisting conditions and determining what action to take if the home is not deferred. Awareness of potential hazards.
Occupational Safety and Health Administration (OSHA) and Crew Safety	Workers must follow OSHA standards and Material Safety Data Sheets (MSDS) and take precautions to ensure the health and safety of themselves and other workers. MSDS must be posted wherever workers may be exposed to hazardous materials.	Grantees must perform assessments to determine if crews are utilizing safe work practices.	Not applicable.	Use and importance of personal protection equipment. OSHA 10 hour training is required for all workers. OSHA 30 hour training is required for crew leaders.

Health and Safety Issue	Action/Allowability	Testing	Client Education	Training
Pests	Pest removal is allowed only where infestation would prevent weatherization. Infestation of pests may be cause for deferral where it cannot be reasonably removed or poses health and safety concern for workers. Screening of windows and points of access is allowed to prevent intrusion.	Assessment of presence and degree of infestation and risk to worker.	Inform client of observed condition and associated risks.	How to assess presence and degree of infestation, associated risks, and need for deferral.
Radon	Whenever site conditions permit, exposed dirt must be covered with a vapor barrier except for mobile homes. In homes where radon may be present, precautions should be taken to reduce the likeliness of making radon issues worse.	Testing may be allowed in locations with high radon potential.	Provide client with EPA consumer's guide to radon.	What is it, how it occurs. What factors may make radon worse. Weatherization measures that may be helpful. Vapor barrier installation.
Refrigerant	Reclaim refrigerant per Clean Air Act 1990, section 608, as amended by 40 CFR82, 5/14/93.	EPA testing protocols.	Clients should not disturb refrigerant.	EPA-approved section 608 type I or universal certification.
Smoke, Carbon Monoxide Detectors, and Fire Extinguishers	Installation of smoke/CO detectors is allowed where detectors are not present or are inoperable. Replacement of operable smoke/CO detectors is not an allowable cost. Providing fire extinguishers is allowed only when solid fuel is present.	Check for operation.	Provide client with verbal and written information on use of smoke/CO detectors and fire extinguishers where allowed.	Where to install detectors. Local code compliance.
Solid Fuel Heating (Wood Stoves, etc.)	Maintenance, repair, and replacement of primary indoor heating units is allowed where occupant health and safety is a concern. Maintenance and repair of secondary heating units is allowed.	Required inspection of chimney and flue and combustion appliance zone depressurization.	Provide safety information including recognize depressurization.	How to perform CAZ depressurization test and proper inspection.
Space Heaters, Stand Alone Electric	Repair, replacement, or installation is not allowed. Removal is recommended.	Check circuitry to ensure adequate power supply for existing space heaters.	Inform client of hazards and collect a signed waiver if removal is not allowed.	Awareness of guidance.
Space Heaters, Unvented Combustion	Removal is required, except as secondary heat where the unit conforms to ANSI Z21.11.2. Units that do not meet ANSI Z21.11.2 must be removed prior to weatherization but may remain until a replacement heating system is in place.	Testing for air-free carbon monoxide (CO) is allowed. Check units for ANSI Z21.11.2 label.	Inform client of dangers of unvented space heaters - CO, moisture, NO ₂ , CO can be dangerous even if CO alarm does not sound.	How to perform air-free CO testing. Understanding the dangers of unvented space heaters.

Health and Safety Issue	Action/Allowability	Testing	Client Education	Training
Space Heaters, Vented Combustion	Should be treated as furnaces.	Venting should be tested consistent with furnaces.	Not applicable.	Proper testing methods for safe operation (draft and CO) should be conducted and for steady state efficiency if possible.
Spray Polyurethane Foam (SPF)	Use EPA recommendations (available online at http://www.epa.gov/dfe/pubs/projects/spf/spray_polyurethane_foam.html) when working within the conditioned space or when SPF fumes become evident within the conditioned space. When working outside the building envelope, isolate the area where foam will be applied, take precautions so that fumes will not transfer to inside conditioned space, and exhaust fumes outside the home.	Check for penetrations in the building envelope. Sensory inspection inside the home for fumes during foam application.	Provide notification to the client of plans to use two-part foam and the precautions that may be necessary.	Training on use of various products with specification for each application type. MSDS sheets. Temperature sensitivity.
Ventilation	2010 (or most current) ASHRAE 62.2 is required to be met to the fullest extent possible, when performing weatherization activity (must be implemented by January 1, 2012). Implementing ASHRAE 62.2 is not required where acceptable indoor air quality already exists as defined by ASHRAE 62.2. Existing fans and blower systems should be updated if not adequate.	ASHRAE 62.2 evaluation, fan flow, and follow up testing are required to ensure compliance.	Provide client with information on function, use, and maintenance of ventilation system and components. Include disclaimer that ASHRAE 62.2 does not account for high polluting sources or guarantee indoor air quality.	ASHRAE 62.2 training required including proper sizing, evaluation of existing and new systems, depressurization tightness limits, critical air zones, etc.
Window and Door Replacement, Window Guards	Replacement, repair, or installation is not an allowable health and safety cost but may be allowed as an incidental repair or an efficiency measure if cost justified.	Not applicable	Provide information on lead risks.	Awareness of guidance.

Grantee Health and Safety Plan Updates

All Grantees must amend their Health and Safety Plans in their master files of their Grantee Plan to be effective in Program Year 2011. Before any DOE funds can be expended for health and safety, Grantees must provide in the master file the hazards to be remedied and anticipated approaches including testing, training, client education, and conditions that require referral to other agencies that, therefore, necessitate a delay of weatherization services.

As a part of the Health and Safety Plan, Grantees must set health and safety expenditure limits for their Subgrantees, providing justification by explaining the basis for setting these limits and providing related historical experience. It is possible that these limits may vary depending upon conditions found in different geographical areas. These limits must be expressed as a percentage of the average cost per dwelling unit. For example, if the average cost per dwelling is \$5000, 10 percent would equal an average of \$500 per dwelling unit for health and safety. These funds are to be expended by subgrantees in direct weatherization activities.

At minimum, grantees must develop and include within their Health and Safety Plan, separate detailed components and explanations for:

- A system with guidelines for determining and documenting if the potential health and safety issue should be remedied, referred to other agencies, result in partial weatherization, or lead to deferral. Subgrantees are expected to pursue reasonable options on behalf of the client, including referrals, and to use good judgment in dealing with difficult situations. Documentation forms must be developed and should include the client's name and address, dates of the audit/assessment and when the client was informed, a clear description of the problem, conditions under which weatherization could continue, the responsibility of all parties involved, and the client(s) signature(s) indicating that they understand and have been informed of their rights and options.
- Procedures that include a method used to determine when DOE monies will be used to remedy the health and safety issue, and how the Grantee will treat problems that cannot be remedied with DOE monies after discovery.
- How training will be provided in order to meet the requirements of the health and safety issues.
- Testing for the presence of health and safety issues, including, at a minimum, those tests required in the above Guidance Table.
- Implementation of ASHRAE 62.2, which will be required one year after the date this guidance becomes effective. Grantees must provide justification if making changes to AHRAE 62.2 specific to their housing stock and local considerations in their Grantee Plan.
- Implementation of Smoke/CO Detector installation parameters and procedures.
- Implementation protocols on Air Conditioning and Heating System installation and repair including justification for allowability that includes degree days for cold weather and hot weather climates, and how to define at-risk occupants.

- Detailed procedures on how the Grantee will handle problems discovered during testing of Combustion Gases.
- Implementation of OSHA and MSDS requirements related to crew and worker safety, how the 10 and 30 hour training requirements will be met, and what the process is for determining if crews are utilizing good safe work practices according to all requirements (EPA, OSHA, etc.).
- Protocols for addressing mold found in the client's homes. The protocol should include a method of identifying the presence of mold during the initial audit or assessment, notification to the client, and crew training on how to alleviate mold and moisture conditions in homes.
- Implement and verification of compliance with RRP and LSW.
- Developing procedures and protocols for informing clients of hazards that are identified during weatherization. Clients must be informed in writing and the document must be signed by the client and a copy maintained in the client file.
- Developing procedures for requiring clients to reveal known or suspected occupant health concerns as part of the initial application for weatherization, additional screening of occupants again during the audit, and how steps will be taken to ensure that weatherization work will not worsen the health concern.

CONCLUSION: The Weatherization Assistance Program continues to make progress in addressing health and safety issues and ensuring the health and safety of weatherization workers and recipients of weatherization services. In addition to this guidance, DOE will continuously update and provide best practices and referral opportunities on the Internet at www.waptac.org.



LeAnn M. Oliver

Program Manager

Office of Weatherization and Intergovernmental Program

Energy Efficiency and Renewable Energy



Department of Energy
Washington, DC 20585

Attachment 3-1.3

WEATHERIZATION PROGRAM NOTICE 11-6a
EFFECTIVE DATE: April 21, 2011

SUBJECT: SUPPLEMENTAL WEATHERIZATION HEALTH AND SAFETY GUIDANCE

PURPOSE: To update and provide additional time for implementation of Weatherization Program Notice (WPN) 11-6 as part of the Department of Energy (DOE) Weatherization Assistance Program (WAP). This guidance also provides direction to Grantees as they develop their Health and Safety Plans and procedures. The information in this guidance as well as many additional health and safety resources related to weatherization are available at www.waptac.org.

SCOPE: The provisions of this guidance pertain to all Grantees applying for financial assistance under DOE WAP.

LEGAL AUTHORITY: Title IV, Energy Conservation and Production Act, as amended, authorizes DOE to administer the WAP. All grant awards made under WAP shall comply with applicable law including regulations contained in 10 CFR Part 440, the Energy Policy Act of 2005, the Energy Independence and Security Act of 2007, the American Recovery and Reinvestment Act of 2009 (Recovery Act).

BACKGROUND: DOE issued updated Health and Safety Guidance on January 12, 2011 to provide clarity and consistency in how health and safety issues are addressed in Weatherization. This Guidance document provides additional guidance from the DOE Health and Safety Committee to address health and safety issues raised by the WAP network.

GUIDANCE: While the components outlined in WPN 11-6 must be addressed in the 2011 Grantee Health and Safety Plans as part of the Grantee Plans (as outlined below), DOE has determined that in order to avoid undue hardship on any Grantee or to cause delays in their Application review process; Grantees may use the 2011 Program Year to **implement** the various applicable components of WPN 11-6. This extension provides the necessary time for Grantees to conduct research, solicit public input, and conduct any training necessary to effectively implement and enforce their Health and Safety Plans. It is still required that Grantees are in full compliance with WPN 11-6 in their 2012 Plan submissions.

Special Note: While the majority of the WPN 11-6 Guidance allows for flexibility in Grantee policy and application, continuing activities that are expressly restricted in WPN 11-6 must be addressed in the 2011 Grantee's Health and Safety Plans and ***enforced immediately***. The restricted use of DOE funds for health and safety activities include:

- Actions that are unreasonable in cost as determined by DOE in accordance with the Grantee's approved Grantee Plan.
- Actions that are either not necessary to effectively perform weatherization work, where the work will be lasting and effective; OR are not necessary as a result of weatherization work so as not to create a health or safety problem for the occupant.
- Activities that are conducted where no efficiency measures are identified for installation.
- Installing health and safety measures that could have otherwise achieved a cost-effective savings-to-investment ratio and been treated as a weatherization efficiency measure.
- Performing work in homes that should have been deferred in accordance with the Grantee Plan.
- Performing work by an untrained worker where a trained professional is required.
- Replacement and installation of appliances other than water heaters.
- Removal of asbestos, unless on small covered surfaces.
- Addressing bacteria and viruses.
- Correction of preexisting code compliance issues other than where weatherization measures are being conducted.
- Conducting mold testing.
- Replacement of operable smoke/CO alarms, unless required by code compliance.
- Window and door replacement, repair, or installation.

In the 2011 Program Year, DOE will provide additional assistance to Grantees with their Health and Safety Plan development. DOE will review Grantee Plans based on the revised guidance as a tool to help Grantees move toward compliance. Grantees must submit 2011 plans in accordance to normal Program Year schedules and must demonstrate movement toward 2012 implementation of WPN 11-6 strategies and requirements. It is assumed that some Grantees must still improve their capacity to address specific health and safety issues. Grantees are encouraged to provide as much detail as possible in their Plans and include a statement for those standards not yet ready for implementation but planned to begin in the 2012 Program Year. In the interim, Grantee's should perform the following:

1. Update portions of the Health and Safety Plan that are ready for Grantee implementation and enforcement, while removing any conflicts with WPN 11-6.
2. Include those portions of the Health and Safety Plan that may not be ready for implementation with a statement that the specific items are in place for DOE review.

3. Include strategies that will be used to finalize that portion of the Plan for future implementation, no later than the beginning of the 2012 Program Year.
4. Submit revised Health and Safety Plan as part of the 2011 Grantee Plan.
5. Full implementation and enforcement of WPN 11-6 by the Grantee must begin in the 2012 Program Year.

Project Officers will review and approve Grantee Plans for compliance with WPN 11-6 using standard procedures. Any conflicts with WPN 11-6 will be noted and resolved prior to approval. DOE will provide support materials, such as best practice documents and frequently asked questions, on its web site to help guide Grantees in formulating their Health and Safety Plans.

CONCLUSION: The Weatherization Assistance Program continues to make progress in addressing health and safety issues and ensuring the health and safety of weatherization workers and the families who receive the Weatherization services. In addition to this guidance, DOE will continuously update and provide best practices and referral opportunities at www.waptac.org.



LeAnn M. Oliver

Program Manager

Office of Weatherization and Intergovernmental Program
Energy Efficiency and Renewable Energy



Department of Energy
Washington, DC 20585

WEATHERIZATION PROGRAM NOTICE 12-09
EFFECTIVE DATE: JUNE 27, 2012

**SUBJECT: WEATHERIZATION ASSISTANCE PROGRAM INCIDENTAL
REPAIR MEASURE GUIDANCE**

PURPOSE: To provide guidance on incidental repair measures (IRM) allowable under the Department of Energy (DOE) Weatherization Assistance Program (WAP).

SCOPE: The provisions of this guidance relate to financial assistance Grantees and Subgrantees under the DOE WAP.

LEGAL AUTHORITY: Title IV, Energy Conservation and Production Act, as amended, authorizes the DOE to administer the WAP. (42 U.S.C. § 6861, *et. seq.*) All grant awards made under this program shall comply with applicable law and regulations including the WAP regulations contained in 10 CFR part 440.

BACKGROUND: Recent DOE Project Officer monitoring, DOE Inspector General reports, third party quality assurance reviews, and comments collected from Grantees indicate a widespread inconsistency in interpretation of DOE policy concerning Incidental Repair Measures. The WAP federal regulations 10 CFR §440.3 defines *Incidental Repairs* as follows: “those repairs necessary for the effective performance or preservation of weatherization materials. Such repairs include but are not limited to, framing or repairing windows and doors which could not otherwise be caulked or weatherstripped and providing protective materials, such as paint, used to seal materials installed under this program.” Grantees and Subgrantees are reminded that the WAP is not a rehabilitation or general repairs program. Program policies strictly prohibit roof replacements, structural repairs, or other non-energy related rehabilitation work. Units requiring this type of repair should be referred to a rehabilitation program or the Subgrantee must use other sources of funds to cover these costs. **Incidental repairs must be justified in the client file with an explanation for their need and relationship to a specific energy conservation measure (ECM) or group of ECMs.**

The introduction of advanced energy audits in 1993 altered the concept of tracking just materials costs to installed measures costs (materials, including warehouse and delivery, as well as labor and on site supervision costs). Instead of separate limits on dollars spent for weatherization and/or incidental repair materials to control spending, the cost of ECM and incidental repair measures (IRM) was limited by requiring a Savings-to Investment Ratio (SIR) of 1.0 or greater, and a maximum average expenditure for each home weatherized. Although IRM continue to have a requirement to be justified by an *association* (necessary for effective performance or preservation) with one or more ECM, the WAP enabling statute indicates the *costs* for IRMs must be limited by inclusion in the “cost of the package of measures installed in a dwelling 10 CFR § 440.21(d).” This Program Notice will assist Grantees in appropriately including ECM ancillary item costs and IRM costs as part of a package of measures.

DEFINITIONS: The following terms used in this guidance apply to the entire WAP and can be referred to with respect to other related Program Notices:

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

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

Health and Safety Measure – Health and safety measures are those actions necessary to maintain the physical well being of both the occupants and/or weatherization workers where the actions **MUST** be taken to effectively perform weatherization work *or* the actions are necessary as a result of weatherization work. Grantees are required to identify health and safety procedures and an estimate with rationale for the percentage of costs involved as a part of their overall Health and Safety Plan to be approved by DOE.

Incidental Repair Measure (IRM) –Includes incidental repair materials and installation, which are performed because they are deemed necessary for the effectiveness of one or more ECMs. The ECM(s) that require the installation of an IRM must be documented in the client file. The IRM costs are not added to an individual or partial group of ECM costs. The total cost of all IRMs is added to the cost of the package of weatherization measures to calculate the whole unit (SIR).

Package of Weatherization Measures – The cost of all ECMs included in an audit or priority list and/or installed in a home. The estimated cost of each ECM will include the estimated cost of its ancillary items. The cost of all IRMs is added to the cost of the package of weatherization measures when calculating the SIR for the whole building.

Weatherization Materials – Materials that are purchased for installation in a building that are anticipated to have a direct impact on saving energy. A definition of approved weatherization materials can be found in Federal Regulations 10 CFR §440.3.

Weatherization materials must be listed and must comply with the standards in 10 CFR Part 440, Appendix A.

Examples:

Energy Conservation Measure (ECM)	Ancillary Items (Cost must be included in SIR for associated individual ECM)	Incidental Repair Measure (IRM) (Cost must be included in SIR for whole unit package of ECM)	Health and Safety Measure (Separate cost justification. Not included in SIR)
Attic insulation	Eave baffles, hatch dam, dams for heat producing devices	Attic vents. Minor roof repair to preserve insulation. (if identified as IRM in Grantee Plan)	Minor repair of leaking roof that may create moisture/mold issue in attic insulation. (if identified as H/S measure in Grantee Plan)
Wall insulation	Sealing high and low openings in balloon framing	Sealing unusual openings as in void areas between double ceilings. Minor roof repair to preserve insulation. (if identified as IRM in Grantee Plan)	Minor repair of leaking roof that may create moisture/mold issue in new wall insulation. (if identified as H/S measure in Grantee Plan)
Air sealing	Fasteners for patches	Unusually large (defined by Grantee), such as more than 1 sheet of sheetrock, patching materials and labor	
Attic hatch – (a required part of the larger air sealing	Items to complete proper construction such	Demolition and/or framing for a new hatch, new ceiling	

ECM, sealing the access opening with a rigid lid and weatherstripping)	as: hold down clasps, handles, caulk for ceiling-to hatch frame seal, insulation	trim and stop	
Crawl space or knee wall access door (a required part of the larger air sealing ECM, sealing the access opening with a rigid door and weatherstripping)	Hinges, latches, insulation	Demolition of deteriorated existing frame, new framing, new trim and stop	
Caulking, weatherstripping existing windows (done as a part of the larger air sealing ECM)	Backer rod, cleaning off old caulk	Primer or sealer, replacing deteriorated framing, other prep repair	
Vinyl replacement windows for double hung sashes	Fasteners, interior and exterior caulk materials & labor	Replace broken stops, replace or repair rotted jambs and wall framing	
Replacement or repair of heating/cooling systems	All typical accessories for proper installation	Flue repair, providing combustion air from outside the CAZ as needed	All, including flue repair and combustion air from outside CAZ as needed, if the system is inoperable, per Grantee H&S plan
Heating/cooling system replacement	Include all associated costs within replacement cost	Construction of separate CAZ per code requirement	Include all associated costs if SIR disqualifies as ECM, per Grantee H&S plan
CFL		Replace hazardous light socket or fixture. (if identified as IRM in Grantee Plan)	Replace hazardous light socket or fixture. (if identified as H/S measure in Grantee Plan)

The IRM category is intended for a measure that is not typically part of the installation of an ECM, is outside the manufacturers or industry standard for installation.

GUIDANCE: The primary goal of the WAP is to lower the home energy costs of qualified households without negatively affecting the health and safety of the occupants. Justification for the cost of each IRM and how each IRM is necessary for the effective performance or preservation of an ECM must be documented in the client file. Further, each ECM, including any associated ancillary items and installation costs, must have a calculated SIR of 1.0 or greater to be eligible for DOE funding. For each weatherized building, the cost of the total package of ECMs, added to the cost of all IRMs for the building, must have a calculated SIR of 1.0 or greater.

After the first audit run, a package of measures may not have a qualifying SIR. It would be necessary to remove the combination of the ECM and its related IRM with the lowest SIR. If the IRM was deemed necessary for effective performance of the ECM, then both the ECM and the IRM must be removed in the attempt to meet the dwelling SIR. This process (removing the lowest ECM and its associated IRM) would continue until the package of measures (and each ECM) has a qualifying SIR.

If one IRM is necessary to protect or enhance more than one ECM, (e.g. roof repair protecting attic insulation, sidewall insulation, and foundation insulation; and the Grantee plan designates roof repair as an incidental repair) then all of those ECMs together must be considered for removal until the SIR for the package of measures is 1.0 or greater. This process may result in deferral of the weatherization work until another funding source can be found to pay for the IRM(s).

IRMs must be limited to those *minor repairs* necessary for effective performance or preservation of measures installed by the Subgrantee. WAP funds cannot be used to install IRMs deemed necessary to protect materials in the building before the WAP audit is performed.

A cost limit for per unit IRMs must be included in the cost of the audits submitted for approval of a priority list. If a subsequent audit determines more extensive IRMs are needed in a building, a full computerized energy audit must be run on the building to justify additional IRM cost.

Grantees that use priority lists must set cost limitations in their annual plan for IRM or perform a site specific audit to justify the cost of the incidental repairs.

Any Grantee policy or procedure dealing with IRM that does not comply with this program notice, must be reviewed and revised as necessary to reflect the changes in this guidance. If IRM costs are not limited, all previously approved priority lists must be amended. Effective immediately, all Grantees should begin the process of implementing this guidance with their Project Officer with all necessary actions completed prior to the beginning of Program Year 2013, when full compliance will be required.

CONCLUSION: Frequently Ask Questions are attached and will be posted on the EERE website http://www1.eere.energy.gov/eere_faq/default.aspx?pid=10&spid=2 with additional questions as they are answered. If you have additional questions, please contact the Project Officer assigned to your grant.



For AMB

AnnaMaria Garcia
Acting Program Manager
Office of Weatherization and Intergovernmental Program
Energy Efficiency and Renewable Energy

Attachment

Missouri Weatherization Assistance Program Client Interview & Auditor Assessment Form

Name:		Job #:		Date:	
Address:		City/Zip:		Phone:	
General Information					
How long have you lived here?		Years		Approximate age of home?	
		Years		Years	
Is this home age exempt from Section 106 review?		<input type="checkbox"/> Yes <input type="checkbox"/> No		Auditor Signature:	
Does your home or certain rooms get too warm?		<input type="checkbox"/> Yes <input type="checkbox"/> No		If yes where:	
Does your home or certain rooms get too cold?		<input type="checkbox"/> Yes <input type="checkbox"/> No		If yes where:	
Do you have any noticable drafty areas?		<input type="checkbox"/> Yes <input type="checkbox"/> No		If yes where:	
Do you close off any rooms during heat season?		<input type="checkbox"/> Yes <input type="checkbox"/> No		If yes where:	
Any noticealbe moisture problems?		<input type="checkbox"/> Yes <input type="checkbox"/> No		If yes where:	
Exhaust fans? <input type="checkbox"/> Yes <input type="checkbox"/> No		If Yes what type? <input type="checkbox"/> Bath exhaust <input type="checkbox"/> Kitchen exhaust <input type="checkbox"/> Whole-house fan			
Do you have a cloths dryer? <input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Electric <input type="checkbox"/> Gas		Is dryer vented to outside? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Do you have a fireplace? <input type="checkbox"/> Yes <input type="checkbox"/> No		If Yes, working damper? <input type="checkbox"/> Yes <input type="checkbox"/> No		Use fireplace often? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Heating, Air Conditioning & Domestic Hot Water					
Did the primary heating system work last winter?		<input type="checkbox"/> Yes <input type="checkbox"/> No		Any repairs on heating system in last 2-3 years? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Heating system clean & tune in past 2-3 years?		<input type="checkbox"/> Yes <input type="checkbox"/> No		Do you change your filter regularly? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Do you use separate space heaters for heating?		<input type="checkbox"/> Yes <input type="checkbox"/> No		If yes fuel type: <input type="checkbox"/> Electric <input type="checkbox"/> Gas <input type="checkbox"/> Kerosene <input type="checkbox"/> Other	
Do you use your cook stove for heating?		<input type="checkbox"/> Yes <input type="checkbox"/> No		Cook stove fuel type: <input type="checkbox"/> Electric <input type="checkbox"/> Gas	
Do you have a setback thermostat?		<input type="checkbox"/> Yes <input type="checkbox"/> No		If yes high setting is: _____ F° Low setting: _____ F°	
If no programmable thermostat, do you practice manual setback at certain times?		<input type="checkbox"/> Yes <input type="checkbox"/> No			
Health & Safety Issues					
Any dizziness, headaches, nausea flu-like symptoms during heating season?		<input type="checkbox"/> Yes <input type="checkbox"/> No			
Is there any condensation build-up in your home?		<input type="checkbox"/> Yes <input type="checkbox"/> No		If Yes where:	
Is there mold or mildew in your home?		<input type="checkbox"/> Yes <input type="checkbox"/> No		If Yes where:	
Does your basement get wet during certain times of the year?		<input type="checkbox"/> Yes <input type="checkbox"/> No		If Yes where:	
Has your home been certified as free from lead-based paint?		<input type="checkbox"/> Yes <input type="checkbox"/> No			
Has any member of your household been tested for lead exposure?		<input type="checkbox"/> Yes <input type="checkbox"/> No			
If tested for lead, what were the results?					
Do you have any concerns I have not addressed?					
Auditor Pollution & Moisture Assessment (Check all that apply)					
Moisture		Mold/Mildew		Other Hazards	
<input type="checkbox"/> Dirt Floor	<input type="checkbox"/> Kitchen Vent	<input type="checkbox"/> Crawlspace	<input type="checkbox"/> Lead Paint	<input type="checkbox"/> Standing Water	<input type="checkbox"/> Bathroom Vent
<input type="checkbox"/> Sump Pump	<input type="checkbox"/> Sill Rot	<input type="checkbox"/> Basement	<input type="checkbox"/> Asbestos	<input type="checkbox"/> Water Staining	<input type="checkbox"/> Roof Leaks
<input type="checkbox"/> Firewood	<input type="checkbox"/> Gutters	<input type="checkbox"/> Bathroom	<input type="checkbox"/> Radon	<input type="checkbox"/> Clothes Drying	<input type="checkbox"/> Kitchen
<input type="checkbox"/> Dryer Not Vented	<input type="checkbox"/> Plumbing Leaks	<input type="checkbox"/> Attic	<input type="checkbox"/> Unsafe Wiring	<input type="checkbox"/> Unvented Heater	<input type="checkbox"/> Aquarium
<input type="checkbox"/> Unvented Heater	<input type="checkbox"/> Windows	<input type="checkbox"/> Ceiling	<input type="checkbox"/> Carbon Monoxide		<input type="checkbox"/> Walls
	<input type="checkbox"/> Walls		<input type="checkbox"/> Unvented Combustion		

Missouri Weatherization Assistance Program Worst Case Draft Test Form

Name:		Job #		Pre Test Date:
				Post Test Date:
COMBUSTION APPLIANCE ZONE (CAZ) WORST CASE DRAFT TEST				
Test Steps (refer to Technical Standards for details)			Pre Test	Post Test
1. Inspect combustion appliances and venting before test setup.				
2. Put dwelling in wintertime condition.				
3. Record outdoor temperature.			°F	°F
4. Deactivate all combustion appliance and exhaust fans.				
5. Close all operable vents.				
6. If furnace, replace or clean filter if needed.				
7. Check or clean lint filter in dryer.				
8. Setup and adjust manometer to measure CAZ with reference to (WRT) outdoors.				
9. Setup pressure hoses to measure CAZ with reference to WRT outdoors.				
10. With all interior doors open, record Baseline Pressure, CAZ WRT outdoors.			Pa	Pa
11. Turn on all exhaust fans and record Exhaust Pressure, CAZ WRT outdoors.			Pa	Pa
12. If furnace, activate air handler. Record Air Handler Pressure, CAZ WRT outdoors.			Pa	Pa
13. Position all interior doors for worst-case depressurization in CAZ.				
14. Position CAZ door for worst-case depressurization in CAZ. (circle door position)			Open / Closed	Open / Closed
15. Is worst-case depressurization with air handler on or off? (circle switch position)			On / Off	On / Off
16. Record worst-case depressurization CAZ WRT outdoors.			Pa	Pa
17. What are the dominant forces causing depressurization?				
18. Under worst-case conditions, fire appliance. Does it spill after 1 minutes.				
a. Appliance 1 description:			Yes / No	Yes / No
b. Appliance 2 description:			Yes / No	Yes / No
c. Appliance 3 description:			Yes / No	Yes / No
d. Appliance 4 description:			Yes / No	Yes / No
19. Under worst-case conditions, fire appliance and measure draft.				
a. Appliance 1			Pa	Pa
b. Appliance 2			Pa	Pa
c. Appliance 3			Pa	Pa
d. Appliance 4			Pa	Pa
20. If appliance fails correct problem.			Minimum Draft For Temperature	Minimum Draft For Temperature
21. If dwelling has other combustion appliance zones, repeat test there.				
22. Return dwelling, exhaust fans, and combustion appliances to normal settings.				
23. Do all appliances pass under worst case conditions? If no, re-run under natural conditions and document draft under natural conditions in Notes section below.			Yes / No	Yes / No
IF FURNACE OR WATER HEATER REPLACED, PROVIDE REASON OF REPLACEMENT:				
Notes:				

--- For Use with Worst-Case Draft Test ---

Acceptable Draft Test Ranges	
Outside Temperature (degree F)	Draft Pressure Standard (Pa)
<10	-2.5
10-90	$(T_{out} / 40) - 2.75$
>90	-0.5

Acceptable Appliance Spillage Periods	
Appliance Type	Spillage Test Period (minutes)
Water Heater, Gravity Furnace, Boiler	1.0
Space Heater	1.0
Forced Air Furnace	1.0

Combustion Safety Test Action Levels			
CO Test Results*	And/Or	Spillage & Draft Test Results	Retrofit Action
0-25 ppm	And	Passes	Proceed with work
26-100	And	Passes	Recommend the CO problem be fixed
26-100	And	Fails at worst case only	Recommend a service call for the appliance and/or repairs to the home to correct the problem.
100-400 ppm	Or	Fails under natural conditions	Stop Work: Work may not proceed until the system is serviced and the problem is corrected
>400 ppm	And	Passes	Stop Work: Work may not proceed until the system is serviced and the problem is corrected
>400 ppm	And	Fails under any condition	Shut off fuel to the appliance and make arrangements to service the appliance immediately

CAZ Depressurization Limits	
Venting Condition	Limit (Pascals)
Orphan natural draft water heater (including outside chimneys) without a properly sized chimney liner	-2
Natural draft boiler or furnace commonly vented with water heater	-3
Stand-alone natural draft water heater with properly sized chimney or an orphan water heater with a properly sized chimney liner	-5
Natural draft boiler or furnace with cent damper commonly vented with water heater	-5
Individual natural draft boiler or furnace	-5
Induced draft boiler or furnace commonly vented with water heater	-5
Power vented or induced draft boiler or furnace alone	-15
Exhaust to chimney-top draft inducer; high static pressure flame retention head oil burner; direct vented appliances; sealed combustion appliances	-50

Missouri Weatherization Assistance Program Diagnostic Field Form

Name:			Job #:			Date:																									
BLOWER DOOR TEST DATA & BLOWER DOOR GUIDED AIR SEALING																															
Test Conditions:		Baseline Pressure:		Pa		Flow Ring Used: <input checked="" type="radio"/> Oper <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3																									
Test		CFM₅₀		CEG/100 CFM50 = \$75.00																											
Initial Test				No. in Crew		Minutes		CFM ₅₀ Reduction																							
Test 1								Cost / 100 CFM ₅₀																							
Test 2																															
Test 3																															
Test 4																															
Test 5																															
Final Test				Minimum Airflow Requirement =				CFM ₅₀																							
ZONE PRESSURE TESTING (ZPT)																															
Zone:		Test 1		Test 2		Zone:		Test 1	Test 2																						
House/Zone, P ₁		Pa		Pa		House/Zone, P ₁		Pa	Pa																						
Zone/Outside, P ₁		Pa		Pa		Zone/Outside, P ₁		Pa	Pa																						
Hole Added		<input type="checkbox"/> H/Z <input type="checkbox"/> Z/O				Hole Added		<input type="checkbox"/> H/Z <input type="checkbox"/> Z/O																							
Hole in ² or Door-Open CFM ₅₀		In ²		In ²		Hole in ² or Door-Open CFM ₅₀		In ²	In ²																						
House/Zone, P ₂		Pa		Pa		House/Zone, P ₂		Pa	Pa																						
Zone Outside, P ₂		Pa		Pa		Zone Outside, P ₂		Pa	Pa																						
CFM ₅₀ House/Zone						CFM ₅₀ House/Zone																									
CFM ₅₀ Zone/Outside						CFM ₅₀ Zone/Outside																									
CFM ₅₀ Total Path						CFM ₅₀ Total Path																									
DUCTWORK LEAKAGE/AIR HANDLER ASSESSMENT																															
Room-to-Room Pressure Testing					Duct Leakage to Outdoors																										
#	Room	Test	#	Room	Test			Test 1	Test 2																						
1		Pa	6		Pa	Tests Pressure		Pa	Pa																						
2		Pa	7		Pa	Flow Ring Used: <input type="checkbox"/> Open <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3																									
3		Pa	8		Pa	Fan Pressure		Pa	Pa																						
4		Pa	9		Pa	Fan Flow (leakage to outdoors)		CFM _{Leak}	CFM _{Leak}																						
5		Pa	10		Pa	Inches ² leakage to outdoors		in ²	in ²																						
If a room is more than 3 Pascals different from main body of house or if a fireplace or a wood stove draws any portion of its combustion from a zone that is depressurized more than -3 Pascals WRT outside then relieve pressure.							CFM leakage as percentage of conditioned floor area		%	%																					
PRESSURE PAN TESTING AND LEAKAGE ASSESSMENT																															
#	Duct	Test 1	Test 2	Can't reach fifty factors <table style="margin: auto; border: none;"> <tr> <td style="padding-right: 10px;">House/ Zone Pressure</td> <td>Pressure Pan Multiplier</td> </tr> <tr> <td>50</td> <td>1.00</td> </tr> <tr> <td>45</td> <td>1.10</td> </tr> <tr> <td>40</td> <td>1.25</td> </tr> <tr> <td>35</td> <td>1.42</td> </tr> <tr> <td>30</td> <td>1.66</td> </tr> <tr> <td>25</td> <td>2.00</td> </tr> <tr> <td>20</td> <td>2.50</td> </tr> <tr> <td>15</td> <td>3.50</td> </tr> <tr> <td>10</td> <td>5.00</td> </tr> <tr> <td>5</td> <td>10.0</td> </tr> </table>		House/ Zone Pressure	Pressure Pan Multiplier	50	1.00	45	1.10	40	1.25	35	1.42	30	1.66	25	2.00	20	2.50	15	3.50	10	5.00	5	10.0	#	Duct	Test 1	Test 2
House/ Zone Pressure	Pressure Pan Multiplier																														
50	1.00																														
45	1.10																														
40	1.25																														
35	1.42																														
30	1.66																														
25	2.00																														
20	2.50																														
15	3.50																														
10	5.00																														
5	10.0																														
1		Pa	Pa	11		Pa	Pa																								
2		Pa	Pa	12		Pa	Pa																								
3		Pa	Pa	13		Pa	Pa																								
4		Pa	Pa	14		Pa	Pa																								
5		Pa	Pa	15		Pa	Pa																								
6		Pa	Pa	16		Pa	Pa																								
7		Pa	Pa	17		Pa	Pa																								
8		Pa	Pa	18		Pa	Pa																								
9		Pa	Pa	19		Pa	Pa																								
10		Pa	Pa	20		Pa	Pa																								

Missouri Weatherization Assistance Program Mechanical Systems Audit Form

Name:		Job #		Date:	
GENERAL HEATING SYSTEM INFORMATION					
Manufacturer:			Serial No:		
Model No.:			Input: _____ kBtu	Output: _____ kBtu	
Primary Fuel Type:	<input type="checkbox"/> Natural Gas <input type="checkbox"/> Propane <input type="checkbox"/> Oil <input type="checkbox"/> Electric <input type="checkbox"/> Wood <input type="checkbox"/> Other				
Secondary Fuel Type:	<input type="checkbox"/> Natural Gas <input type="checkbox"/> Propane <input type="checkbox"/> Oil <input type="checkbox"/> Electric <input type="checkbox"/> Wood <input type="checkbox"/> Other				
Existing System Type:	<input type="checkbox"/> Atmospherically Drafting <input type="checkbox"/> Induced Draft <input type="checkbox"/> Condensing Unit <input type="checkbox"/> Other: _____				
Is Heating System Working?	<input type="checkbox"/> Yes <input type="checkbox"/> No		Cracked Heat Exchanger	<input type="checkbox"/> Yes <input type="checkbox"/> No	
High Carbon Monoxide	<input type="checkbox"/> Yes <input type="checkbox"/> No		Clean and Tune Needed	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Gas Leaks	<input type="checkbox"/> Yes <input type="checkbox"/> No		Open Air Returns:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Venting Problems:	<input type="checkbox"/> Yes <input type="checkbox"/> No		Asbestos Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Carbon Indicators:	<input type="checkbox"/> Yes <input type="checkbox"/> No		Safety Disconnects Present	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Ductwork Holes:	<input type="checkbox"/> Yes <input type="checkbox"/> No		Adequate Combustion Air	<input type="checkbox"/> Yes <input type="checkbox"/> No	
HEATING SYSTEM CONTROLS & COMPONENTS					
Thermostat Location:	<input type="checkbox"/> OK <input type="checkbox"/> Relocate		Blower Drive	<input type="checkbox"/> Belt <input type="checkbox"/> Direct Drive	
Anticipator:	<input type="checkbox"/> OK <input type="checkbox"/> Needs Adjustment		Blower Wheel	<input type="checkbox"/> Clean <input type="checkbox"/> Dirty	
High Limit Setting	<input type="checkbox"/> OK <input type="checkbox"/> Needs Adjustment		Air Conditioning Coil	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Fan On/Off Control	<input type="checkbox"/> OK <input type="checkbox"/> Needs Adjustment		A-Coil Condition	<input type="checkbox"/> Clean <input type="checkbox"/> Dirty	
GENERAL AIR CONDITIONING AND HEAT PUMP SYSTEM INFORMATION					
Manufacturer:			Serial No:		
Model No.:			SEER*:	HSPF (for heat pumps):	
Cooling Output: _____ kBtu			Heat Pump Heating Output: _____ kBtu		
Type:	<input type="checkbox"/> Central Air Conditioner <input type="checkbox"/> Room Air Conditioner <input type="checkbox"/> Air Source Heat Pump <input type="checkbox"/> Geothermal Heat Pump <input type="checkbox"/> No AC				
GENERAL WATER HEATER INFORMATION					
Manufacturer:			Serial No:		
Model No.:			Gallons:	Tank Leak: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Fuel Type:	<input type="checkbox"/> Natural Gas <input type="checkbox"/> Propane <input type="checkbox"/> Electric <input type="checkbox"/> Heat Pump <input type="checkbox"/> Other: _____				
Venting:	<input type="checkbox"/> Orphaned (No Liner) <input type="checkbox"/> Orphaned (with Liner) <input type="checkbox"/> Commonly Vented <input type="checkbox"/> Power Vented <input type="checkbox"/> N/A (Electric)				
MECHANICAL VENTILATION INFORMATION					
KITCHEN	Operable Window: <input type="checkbox"/> Yes <input type="checkbox"/> No		Bath 1	Operable Window: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Kitchen Exhaust Fan: <input type="checkbox"/> Continuous <input type="checkbox"/> Intermittent <input type="checkbox"/> N/A			Kitchen Exhaust Fan: <input type="checkbox"/> Continuous <input type="checkbox"/> Intermittent <input type="checkbox"/> N/A		
Measured Exhaust Fan Flow Rate: _____ CFM			Measured Exhaust Fan Flow Rate: _____ CFM		
Kitchen Volume: _____ cu. ft.					
Bath 2	Operable Window: <input type="checkbox"/> Yes <input type="checkbox"/> No		Bath 3	Operable Window: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Kitchen Exhaust Fan: <input type="checkbox"/> Continuous <input type="checkbox"/> Intermittent <input type="checkbox"/> N/A			Kitchen Exhaust Fan: <input type="checkbox"/> Continuous <input type="checkbox"/> Intermittent <input type="checkbox"/> N/A		
Measured Exhaust Fan Flow Rate: _____ CFM			Measured Exhaust Fan Flow Rate: _____ CFM		
Comments Relevant to Workslope Development:					

* Note: SEER values are not given on Room Air Conditioners, EER values are given and must be converted to SEER.

DIAGNOSTIC TESTS: Pre-Test

Return Air Temp (F°)

Supply Plenum (F°)

Heat Rise (F°)

-- Pre-Test -- -- Pre-Test --

Furnace

-- Pre-Test -- -- Pre-Test --

Port 1

Port 2

Port 3

Port 4

Water Heater

Port 1

Port 2

Gas Oven

Other

Attach the Combustion Gas Analyzer Printouts to This Page

-- Pre-Test -- -- Pre-Test --

September 2012

DIAGNOSTIC TESTS: Post-Test

Return Air Temp (F°)

Supply Plenum (F°)

Heat Rise (F°)

-- Post-Test-- -- Post-Test--

Furnace

-- Post-Test-- -- Post-Test--

Port 1

Port 2

Port 3

Port 4

Water Heater

Port 1

Port 2

Gas Oven

Other

Attach the Combustion Gas Analyzer Printouts to This Page

-- Post-Test-- -- Post-Test--

Missouri Weatherization Assistance Program

Incidental Repair Justification Form

Name:		Job #		Date:	
Incidental Repair Justification					

- Incidental repairs, as defined by 10 CFR 440, means those repairs necessary for the effective performance or preservation of weatherization materials.
- From DOE WPN 12-9 Weatherization Assistance Program Incidental Repair Measure Guidance:
 - Incidental repairs must be justified in the client file with an explanation for their need and relationship to a specific energy conservation measure or group of energy conservation measures
 - Incidental repairs must be limited to those minor repairs installed by the Subgrantee and can only be installed in association with energy conservation measures (ECM) installed by the Subgrantee
- On the form below for each incidental repair, fill out the incidental repair measure name, the associated ECM(s) for the incidental repair and the justification for installing the incidental repair (how it is necessary for the ECM(s))

Incidental Repair #1	Incidental Measure:
Associated ECM(s):	
Justification for Tying to ECM(s): _____	
Incidental Repair #2	Incidental Measure:
Associated ECM(s):	
Justification for Tying to ECM(s): _____	
Incidental Repair #3	Incidental Measure:
Associated ECM(s):	
Justification for Tying to ECM(s): _____	
Incidental Repair #4	Incidental Measure:
Associated ECM(s):	
Justification for Tying to ECM(s): _____	
Incidental Repair #5	Incidental Measure:
Associated ECM(s):	
Justification for Tying to ECM(s): _____	
Incidental Repair #6	Incidental Measure:
Associated ECM(s):	
Justification for Tying to ECM(s): _____	

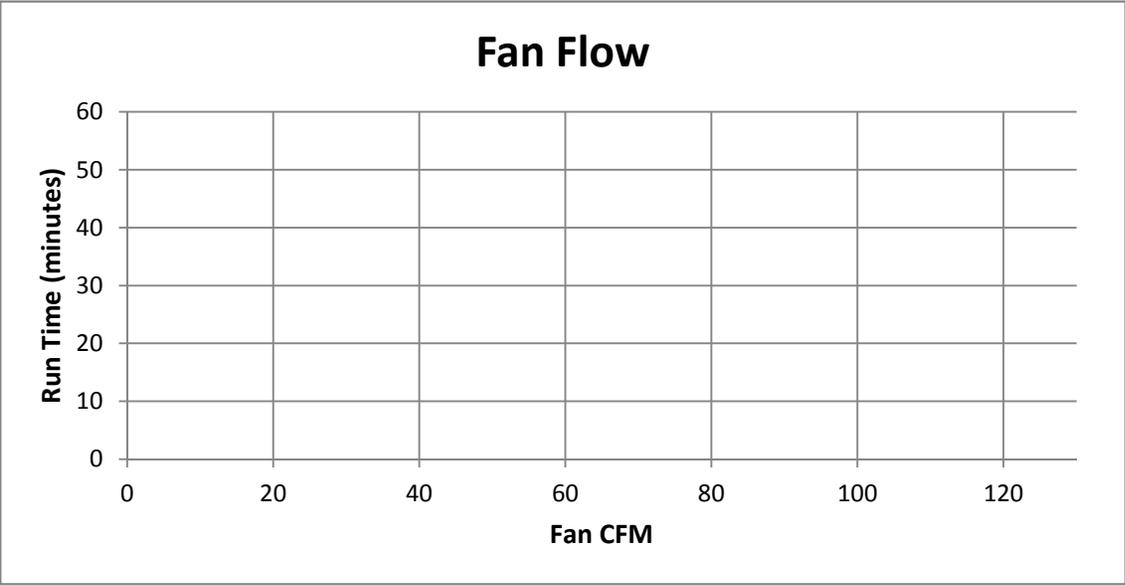
Missouri Weatherization Assistance Program ASHRAE 62.2 Form

Client Name:		Date:		Initial Audit or Final Inspection	
Job Number:		Initial Auditor Initials:		Final Inspector Initials:	

INPUT RELEVANT DATA IN RED CELLS

Existing Home Information (Section 4.1)

Living Space (sq. ft.)	
Volume (cu. ft.)	
Avg Ceiling Height (ft.)	
Average Total Structure Height (ft.)	
Is the structure being used for combustion air?	
Final Inspection CFM50	
# Bedrooms	
# Occupants	
Location:	



Local Exhaust (Section 5.1)

	Kitchen	Bathroom 1	Bathroom 2	Bathroom 3	Bathroom 4
Kitchen volume (cu. ft.)		Does this bathroom exist?			
Is the fan rated for continuous use?		Is the fan rated for continuous use?			
Measured fan flow rate (cfm)		Measured fan flow rate (cfm)			
Is there an operable window?		Is there an operable window?			
In compliance?	NO		NO	NO	NO

Combustion Air Analysis

.4 ACH MVR	#N/A	CFM50
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Not applicable

Whole House Ventilation Requirement:	8	CFM
Local Ventilation Deficit:	0	CFM
Infiltration Credit:	#N/A	CFM

No need to Ventilate Rate	#N/A	CFM50
---------------------------	------	-------

Continuous Mechanical Ventilation Needed:	#N/A	CFM
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Comments: _____

MoWAP interface for the Weatherization Assistant Work Orders

The MoWAP / Weatherization Assistant 8.6.0.4 (W.A.) interface is designed to communicate energy audit information between the two programs. It imports client information to the W.A. so that the user can avoid duplicate data entry. Once the specific energy audit data is entered into W.A. the user can then export the work orders to the MoWAP program – again avoiding duplicate data entry. Below is a step-by-step process for using the MoWAP / W.A. interface.

Exporting from MoWAP to W.A.

1. To Export the client file data to NEAT, navigate to the client file to be exported.
2. Scroll down to the Pre-Audit section of the client file, and click the ‘Export Data to NEAT/MHEA’ button.
3. If this is the first time an export or import is being performed, click on ‘Find DB’ and then browse for the location of the weatherization database.
4. Select the appropriate agency from the drop down.
5. Review the selected client to make sure it is correct, and then click the ‘Export’ button.
6. The client data is now exported to NEAT, and can be used for energy audits and generation of work orders. Click on ‘Return to File’ to return to the client file.

Using W.A. with MoWAP data entered.

1. Navigate to the Client section on the W.A. home screen.
2. Search for the exported client information by clicking on the search box on the lower left-hand corner
3. Select the ‘Audits’ tab at the top of the screen, then select the appropriate audit button on the lower-right of the window.
4. Enter into the W.A. program all relevant Energy Audit data, and then select the ‘Run Audit’ button on the right-hand side of the window.
5. Once the audit has been run, select the measures tab on the top of the screen, then select the ‘Create Work Orders’ tab on the lower-right corner.

Importing from W.A. to MoWAP

1. To import the Work Order information from NEAT, again navigate to the client file in MoWAP.
2. Scroll down to the Pre-Audit section, and click ‘Import NEAT/MHEA Data.’
3. The client file should be automatically found in the NEAT database, unless it was not exported to the one currently in use. If this is the case, click on ‘Find DB’ and then browse for the location of the weatherization database used.
4. Once the client file is found, click on ‘Import’ to pull the Work Order and Work Order measures from NEAT.
5. Click on ‘Return to File’ to return to the client file.

MoWAP Annual Energy Savings Worksheet Calculations

SITE-BUILT HOUSES

Savings estimated by NEAT and printed out in the Annual Energy and Cost Savings table on the NEAT Recommended Measures form will be used to estimate savings for site-built houses.

Space-Heating

If the primary space-heating system is electric, add up the savings under the Heating column and multiply by 293 to convert MMBtu to kWh:

$$\underline{\hspace{2cm}} \text{ MMBtu} \times 293 \text{ kWh/MMBtu} = \underline{\hspace{2cm}} \text{ kWh saved.}$$

OR

If the primary space-heating system is non-electric (e.g., natural gas, propane), add up the savings under the Heating column: $\underline{\hspace{2cm}}$ MMBtu saved.

Space-Cooling

Add up the savings under the Cooling column: $\underline{\hspace{2cm}}$ kWh saved.

Lighting and Refrigerators

Add up the savings for all lighting and refrigerator measures under the Baseload column: $\underline{\hspace{2cm}}$ kWh saved.

Water-Heating

If the hot water system is electric, add up the savings for all water-heating measures under the Baseload column: $\underline{\hspace{2cm}}$ kWh saved.

OR

If the hot water system is non-electric (e.g., natural gas, propane), add up the savings for all water-heating measures under the Baseload column and multiply by 0.003413 to convert kWh to MMBtu:

$$\underline{\hspace{2cm}} \text{ kWh} \times 0.003413 \text{ MMBtu/kWh} = \underline{\hspace{2cm}} \text{ MMBtu saved.}$$

Total House

Add up the MMBtu and kWh savings estimated for space-heating, space-cooling, lighting and refrigerators, and water-heating, and multiply by 0.65 to account for NEAT's over prediction tendencies to estimate the total savings for the house:

$$\begin{array}{l} \underline{\hspace{2cm}} \text{ MMBtu} \times 0.65 = \underline{\hspace{2cm}} \text{ total MMBtu saved} \\ \underline{\hspace{2cm}} \text{ kWh} \times 0.65 = \underline{\hspace{2cm}} \text{ total kWh saved} \end{array}$$

Window Leakiness Guidelines

May 21, 2009

In the Weatherization Assistant, there is a data field under the “Windows” tab of both NEAT and MHEA called “Leakiness” that allows the user to describe the air leakage characteristics of each window entered. NEAT and MHEA use this input to calculate the energy savings due to reduced air infiltration for window replacements, storm windows, and window weatherization (NEAT only). For each window retrofit measure, NEAT and MHEA add the energy savings due to reduced air infiltration to other energy savings associated with the measure to obtain the total energy savings.

Five options are allowed under the “Leakiness” data field: very tight, tight, medium, loose, and very loose. Guidance on the applicability of these options to various window types is described below. In addition, the leakiness of a typical window that is frequently encountered in homes served by the Weatherization Assistance Program across the country is identified.

- ❖ **Fixed windows** — Fixed windows are sealed in their frames and cannot be opened. Fixed windows can include most skylights (windows in the ceiling), decorative windows in doors, and large picture windows. *The leakiness of a typical fixed window is **very tight**.*
- ❖ **Casement windows** — Casement windows have one or two sashes that are hinged at the side and almost always project outwards. They usually have a cranking mechanism to open and close the sashes, and the sashes close by pressing against the frame. They also usually have a locking/latching mechanism that seals the window by forcing the sash against the frame and any installed weatherstripping. On casement windows with two sashes, a vertical framing bar is often present in the middle of the window that houses the locking mechanism. *The leakiness of a typical casement window is **tight**.*
 - Very tight (typical) — Weatherstripping is present and in good condition. The locking mechanism is operable and securely presses the sash into the weatherstripping and window frame.
 - **Tight (typical)**— *A good seal is visually achieved between the sash and frame with the aid of a functional locking mechanism even though weatherstripping is absent or deteriorated.*
 - Medium — A reasonable seal is visually achieved between the sash and frame when the window is closed as far as the cranking mechanism allows even though weatherstripping is absent. The locking mechanism is inoperative or does not help press the sash into the weatherstripping or frame.
 - Loose — A gap 1/8 inch or smaller exists between the sash and window frame when the sash is closed as far as the cranking/locking mechanism allows.
 - Very loose — A gap 1/8 inch or larger exists between the sash and window frame when the sash is closed as far as the cranking/locking mechanism allows.

- ❖ **Single- or double-hung (vertical slider) windows** — Windows with sashes that move up and down are vertical slider windows. In double-hung units, both sashes can slide vertically past one another. Only the bottom sash slides up and down in a single-hung window. *The leakiness of a typical new vertical slider window is **tight** and the leakiness of a typical older window found in older homes is **medium**.*
 - Very tight — Each moveable sash is secure in its track and weatherstripping is present and must be in excellent condition (especially the brush-type weatherstripping at the sash to sash interface and the compression weatherstripping at the head (i.e., top) or sill (i.e., bottom)). A locking mechanism presses the two sashes together at their interface and presses each moveable sash into the head and/or sill.
 - ☛ **Tight (typical of newer windows)** — *Each moveable sash is secure in its track although some slight play may be present. Weatherstripping is present and in good to fair condition (especially the brush-type weatherstripping at the sash to sash interface and the compression weatherstripping at the head or sill). A locking mechanism presses the two sashes together at their interface and presses each moveable sash into the head and/or sill.*
 - ☛ **Medium (typical of older windows found in older homes)** — *Each moveable sash is still operable in its track although play may be present and the sash may not sit perfectly horizontal when closed. Weatherstripping is absent or deteriorated (especially the brush-type weatherstripping at the sash to sash interface), but there are no visible gaps. A locking mechanism helps press each moveable sash into the head and/or sill but is not effective at pressing the two sashes together at their interface.*
 - Loose — One (or both) moveable sash is loose in its track and the sash cannot be closed without leaving a gap 1/8 inch or smaller at the head or sill. There is some play (rattling) between sashes. Weatherstripping is absent or deteriorated (especially the brush-type weatherstripping at the sash to sash interface). The locking mechanism does not hold the two sashes together at their interface nor does it press each moveable sash into the head and/or sill.
 - Very loose — One (or both) moveable sash no longer fits in its track and the sash cannot be closed without leaving a gap 1/8 inch or greater at the head or sill. There is considerable movement (rattling) between sashes. Weatherstripping is absent (especially the brush-type weatherstripping at the sash to sash interface). The locking mechanism is inoperative.

- ❖ **Horizontal slider windows** — Windows with sashes that move sideways are horizontal slider windows. Both sashes can slide horizontally past one another in a double-sliding window, and only one sash slides in a single-sliding window. Sliding glass doors are included in this window type. Horizontal slider windows are usually a little more leaky than comparable vertical slider windows. *The leakiness of a typical horizontal slider window is medium.*
 - Very tight — Each moveable sash is secure in its track and weatherstripping is present and must be in excellent condition (especially the brush-type weatherstripping at the sash to sash interface and the compression weatherstripping at the end jamb (i.e., side)). A locking mechanism presses the two sashes together at their interface and presses each moveable sash into the end jamb .
 - Tight — Each moveable sash is secure in its track although some slight play may be present. Weatherstripping is present and in good to fair condition (especially the brush-type weatherstripping at the sash to sash interface and the compression weatherstripping at the end jamb). A locking mechanism presses the two sashes together at their interface and presses each moveable sash into the end jamb.
 - **Medium (typical)** — *Each moveable sash is still operable in its track although play may be present and the sash may not sit perfectly vertical when closed. Weatherstripping is absent or deteriorated (especially the brush-type weatherstripping at the sash to sash interface), but there are no visible gaps. A locking mechanism helps press each moveable sash into the end jamb but is not effective at pressing the two sashes together at their interface.*
 - Loose — One (or both) moveable sash is loose in its track and the sash cannot be closed without leaving a gap 1/8 inch or smaller at the end jamb. There is some play (rattling) between sashes. Weatherstripping is absent or deteriorated (especially the brush-type weatherstripping at the sash to sash interface). The locking mechanism does not hold the two sashes together at their interface nor does it press each moveable sash into the end jamb.
 - Very loose — One (or both) moveable sash no longer fits in its track and the sash cannot be closed without leaving a gap 1/8 inch or larger at the end jamb. There is considerable movement (rattling) between sashes. Weatherstripping is absent (especially the brush-type weatherstripping at the sash to sash interface). The locking mechanism is inoperative.

- ❖ **Awning and hopper windows** — One type of awning window and most hopper windows are like casement windows. Both usually have just one sash, with the awning window being hinged at the top and opening outward and the hopper window being hinged at the bottom and opening inward. Like casement windows, the sash closes by pressing against the frame and a locking/latching mechanism is usually present that seals the window by forcing the sash against the frame and any installed weatherstripping. They may or may not have a cranking mechanism to open and close the sashes. The leakiness guidelines for casement windows should be followed to determine the leakiness of these types of awning and hopper windows. *The leakiness of a typical awning and hopper window that are like casement windows is **tight**.*

Another type of awning window is like a jalousie window in that several window sashes are connected to a common crank so that the sashes open and close together at the same angle. Compared to jalousie windows, awning windows of this type have fewer sashes (just two to four sashes per window versus multiple window panes in jalousie windows), larger sashes (10 to 18 inches wide rather than 3 to 8 inches), and framed sashes (a lightweight frame supports each pane in the awning window) as apposed to the use of just window panes in jalousie windows. Awning windows of this type may have a locking mechanism that helps ensure complete window closure, whereas jalousie windows close and seal only as well as the cranking mechanism allows. *The leakiness of a typical awning window that is like a jalousie window is **medium**.*

- Very tight — Generally not applicable to awning windows that are like jalousie windows.
- **Tight (typical of awning windows that are like casement windows)** — *The cranking mechanism is in good working order and all window sashes are securely attached to the cranking mechanism. Weatherstripping is present and must be in excellent condition. A locking mechanism presses the separate sashes to one another and to the window frame so that a tight seal is visually evident.*
- **Medium (typical of awning windows that are like jalousie windows)** — *The cranking mechanism is in good working order and all window sashes are securely attached to the cranking mechanism. Weatherstripping is present but is only in fair condition. A locking mechanism helps to put the separate sashes in contact with one another and to the window frame, but the seals are not tight.*
- Loose — One or two window sashes are not securely attached to the cranking mechanism. Weatherstripping is absent or deteriorated. One or more of the interfaces where the window sashes overlap or the sash meets the window frame are not tight (1/8 inch gap or smaller) when the window is closed as far as the cranking/locking mechanism allows.
- Very loose — Multiple window sashes are not securely attached to the cranking mechanism. Weatherstripping is absent. Visible gaps (1/8 inch or larger) are evident at several of the interfaces where the window sashes overlap or the sash meets the window frame when the window is closed as far as the cranking

mechanism allows. The locking mechanism is inoperative or does not help press the sashes together or into the frame.

- ❖ **Jalousie windows** — Jalousie windows are louvered windows, typically constructed of multiple horizontal panes (usually about 3 to 8 inches wide) that all open at the same angle when a crank near the bottom of the window is turned. *The leakiness of a typical jalousie window is loose.*
 - Very tight — Generally not applicable to jalousie windows.
 - Tight — Generally not applicable to jalousie windows.
 - Medium — The cranking mechanism is in good working order, all window panes are securely attached to the cranking mechanism, and a tight glass to glass seal is visually obtained at the overlap of all windows panes.
 - ***Loose (typical)*** — *One or two window panes are not securely attached to the cranking mechanism, or one or more of the glass to glass interfaces where the window panes overlap are not tight when the window is closed as far as the cranking mechanism allows.*
 - Very loose — Multiple window panes are not securely attached to the cranking mechanism, or visible gaps are evident at several of the glass to glass interfaces where the window panes overlap when the window is closed as far as the cranking mechanism allows.

The guidance provided above based on window type should be modified as follows to take into account the condition of the window panes and the presence of storm windows:

- ❖ **Window panes tightness** — Degrade the leakiness description one level if the window panes themselves have become significantly loose in their mounting and/or a small (i.e., half-dollar-sized) piece of window is broken out. Degrade the leakiness two levels if there is a larger hole in a window pane and/or an entire pane is missing.
- ❖ **Storm window presence** — Upgrade the leakiness description one level if a storm window in average or better condition is installed.

Fuel Conversions Needed in the Weatherization Assistant

Mark Ternes
Oak Ridge National Laboratory
January 31, 2006

NEAT AND MHEA UTILITY BILLS TAB

NEAT and MHEA require that natural gas billing data be entered in units of therms (data on bulk fuels such as propane, kerosene, and fuel oil may also be entered but should be used with caution because the amount of fuel delivered may not be equal to the amount of fuel consumed since the previous delivery). To convert energy use of natural gas, propane, kerosene, and fuel oil into units of therms, do the following:

1. Multiply energy use of natural gas in units of MBtu by 10.0 to obtain therms
2. Multiply energy use of natural gas in units of Mcf by 10.25 to obtain therms
3. Multiply energy use of propane in units of gallons by 0.916 to obtain therms
4. Multiply energy use of kerosene in units of gallons by 1.35 to obtain therms
5. Multiply energy use of fuel oil in units of gallons by 1.4 to obtain therms

For example, if a monthly bill said that 7 MBtus of natural gas had been used, then this is equivalent to a use of 70 therms of natural gas. If 150 gallons of propane were delivered to a house, this would be equivalent to a delivery of 137.4 therms of energy.

FUEL COSTS IN THE SETUP LIBRARY

NEAT and MHEA need costs for natural gas to be in units of \$/Mcf. To convert the cost of natural gas from \$/MBtu or \$/therm to \$/Mcf, do the following:

1. Multiply \$/MBtu by 1.025 to obtain the cost in units of \$/Mcf.
2. Multiply \$/therm by 10.25 to obtain the cost in units of \$/Mcf.

For example, if the cost of natural gas is \$8.00/MBtu, then this is equivalent to a cost of \$8.20/Mcf. If the cost of natural gas is \$0.75/therm, then this is equivalent to a cost of \$7.69/Mcf.

Sources:

U.S. Department of Energy from Cornell paper: kerosene (No. 1 fuel oil) – 134,000 Btu/gal; No. 2 fuel oil – 140,000 Btu/gal; and propane – 91,600 Btu/gal.

ASHRAE Fundamentals, page 17.4: No. 1 fuel oil – 134,950 Btu/gal (midpoint of range); No. 2 fuel oil – 139,400 Btu/gal (midpoint of range); and natural gas 1025 Btu/ft³ (1.025 MBtu/Mcf).

DOE 2004 Buildings Energy Databook, Table 4.1.1, Note 3: average natural gas price was \$7.15/MBtu (\$7.40/Mcf), so that Mcf = 1.035 MBtu.

DNR Multi-Family Submittal Information Requirements:

I. General Project Narrative

1. Information to Include in the Narrative
 - a. Age of the Building(s)
 - b. Condition of the building(s)
 - i. Site general information, but do provide some detail into the reasoning of why the building(s) is/are considered to be in said condition
 - c. Number of Units
 - i. Total number of units in all buildings
 - ii. Number of units in each building
 - d. Spatial orientation of all buildings
 - i. DNR will need individual TREAT/NEAT evaluations for each building to be weatherized
 - e. Heating and Cooling Types
 - i. Description of how units are heated and cooled
 1. Is there a central distribution system for all units, if so what kind?
 2. Is each unit individually heated and cooled, if so what kind of system for each unit?
 3. What is/are the condition(s) of the heating and cooling system(s) for the units
 - f. Health and Safety Concerns
 - i. List and describe any health and safety concerns that are being proposed to be addressed with the WAP
 - g. Other Notable Conditions
 - i. Include any additional information that is pertinent to the evaluation and weatherization of the building(s) and/or units
 1. i.e. the property on the DOE approved HUD list (include Property ID)
2. General Narrative Information
 - a. Narrative is not a thesis
 - i. A 1-2 page narrative should suffice
 - ii. The narrative should paint a verbal picture
 1. Use the narrative to describe the project for the perspective of someone who will not be on-site
 - iii. The additional information outside of the narrative should be used as supporting information to the narrative, not as a substitute for the narrative

II. Building Assessment

1. List of Assessments to Submit
 - a. Lighting Inventory Assessment
 - b. Heating and Cooling Equipment and Controls
 - c. Water Heating Equipment and Controls
 - d. Air Leakage Determination
 - i. Provide a description of how the air leakage was determined

- e. Combustion Testing
 - i. Provide all testing results from testing of all combustion appliances
 - ii. Include CO and CAZ tests
 - f. Insulation Assessment
 - i. Include type of insulation and level/amount of insulation
 - ii. If vermiculite is present, what will be done (testing, etc)
 - g. Baseload Assessment
 - i. Provide assessment information and description of how information was obtained
 - h. Door and Window Assessment
 - i. Detailed information will be needed for any doors or windows to be replaced
 - ii. Note: DNR policy of more than two windows to be installed requires DNR approval if more than two windows are being installed per building (not per unit)
 - i. Health and Safety Assessment
 - j. Any Additional Assessments
2. Assessment Information
- a. Provide any and all forms used in the assessment and evaluation of the building(s) and units
 - b. Much of this information can be provided in a narrative
 - i. Reference associated forms within the narrative
 - c. TREAT/NEAT audits should be supporting to narrative and submitted assessments

III. Additional Information

- 1. Additional Information to Submit
 - a. Photographs of the Building
 - i. Photographs shall include the exterior and interior of the building
 - 1. Photographs of every issue are not necessary, but the submitted photographs need to convey the issues of the building and necessity of work to be performed
 - ii. Photographs need to be submitted in color and can be emailed separately, if necessary
 - b. Weatherization Statement of Work
 - i. Includes all work orders/scopes developed to be given to crew/contractors
 - ii. TREAT printouts are not acceptable in lieu of a work order
 - iii. NEAT Recommended Measures printout is not acceptable in lieu of a work order
 - c. Project Timeline
 - d. Projected Costs and Associated SIR
 - i. Costs must include both labor and materials
 - ii. TREAT/NEAT printouts will suffice
 - 1. Must show individual measure SIR and cumulative SIR
 - e. Documentation for Landlord Contribution

- i. Documentation showing amount of contributions and the percentage of the contribution
 - f. Buy-down Documentation
 - i. Buy-down is only acceptable in multi-family
 - ii. Buy-down cannot be part of the landlord contribution
 - g. Complete Copy of the Computerized Audit
 - i. Must provide a copy of all the inputs and outputs of the computerized audit
 - ii. Include a narrative describing the methodology used to assess the building(s)
 - 1. Describe that each building was assessed individually
 - a. Note: DNR will need individual TREAT/NEAT evaluations for each building to be weatherized
 - iii. If an engineering assessment is done, then the assessment and narrative from the engineering firm must be provided

Additional Notes Regarding Multi-Family

- Submittals must be in electronic format, with PDF being the preferred format
 - Hard copy submittals may be submitted with prior approval from DNR
- Additional information, on top of the above information, may be required on a case by case basis during the submittal review by DNR and/or DOE
- If an engineer is used for the evaluation of a measure, the cost of the engineer must be included in the cost of the measure
- Number of Units Breakdown for Required Approval and Computerized Audits:

Number of Units per Building	TREAT or NEAT	Approval Prior to Work	
		DNR	DOE
1 - 4	NEAT	No	No
5 - 25 (individual HVAC/unit)	NEAT	Yes	No
5 - 25 (not individual HVAC/unit)	TREAT	Yes	Yes
Greater than 25	TREAT	Yes	Yes

- TREAT can be used for Multi-Family with 5-25 units that have individual HVAC systems, but will require DNR and DOE approval prior to work commencing
- DNR and DOE may require on-site visits as part of the evaluation of the submittal
- Please contact the DNR/DE Weatherization Program if you have any questions

**INTERAGENCY AGREEMENT
AMONG
THE MISSOURI STATE HISTORIC PRESERVATION OFFICE
AND
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES ENERGY CENTER
FOR THE ADMINISTRATION OF FEDERAL ENERGY PROGRAMS**

WHEREAS, the Department of Natural Resources – Energy Center, State of Missouri (“MDNR/EC”), administers or may administer federal assistance from the U.S. Department of Energy (“DOE”) under the Energy Conservation in Existing Buildings Act of 1976, 42 U.S.C. 6861, enacted as Title IV, Part A of the Energy Conservation and Production Act, P.L. 94-385, 90 Stat. 1150, and amended by Title II, Part 2, of the National Energy Conservation Policy Act, P.L. 95-619, 92 Stat. 3206; by the Energy Security Act, P.L. 96-294, 94 Stat. 611, and the State Energy Efficiency Programs Improvement Act, P.L. 101-440, 104 Stat 1006, and

WHEREAS, MDNR/EC administers or may administer the Energy Efficiency and Conservation Block Grant Program through federal assistance from DOE under the Energy Independence and Securities Act of 2007, enacted as Title V, Part E, Section 541 – 548, and

WHEREAS, MDNR/EC administers or may administer the State Energy Plan through federal assistance from DOE under the Energy Policy and Conservation Act of 1975, P.L. 94 – 163, and the State Energy Efficiency Programs Improvement Act of 1990, P.L. 101 – 440, and

WHEREAS, MDNR/EC may administer other DOE funded, licensed or permitted energy related programs in the future, and

WHEREAS, pursuant to 10 CFR Part 440, community action agencies, municipalities, counties, K-12 school districts, colleges and universities, corporations, individuals, and nonprofit entities may be recipients (“Subgrantees”) of federal assistance in these DOE Programs and, therefore, assume responsibility for compliance with the requirements of Section 106 of the National Historic Preservation Act, as amended [16 USC Sec. 470f] (“Section 106”); and

WHEREAS, Subgrantees may undertake activities that may be an undertaking (“Undertaking”) as defined pursuant to 36 CFR § 800.16 of the regulations implementing Section 106 that include, but are not limited to, improvement of the energy efficiency of building envelopes, energy-using equipment or appliances, lighting systems, heating or air conditioning systems, agricultural operations, manufacturing operations, renewable energy projects focused on conversion of biomass to energy uses or installation of solar power systems. As part of the energy-efficiency projects, subgrantees may undertake limited repair of buildings.

WHEREAS, MDNR/EC, in keeping with its agency mandate to administer DOE Programs and to maintain regulatory oversight of Subgrantees once funds have been awarded, hereby represents Subgrantees in the formulation and signatory execution of this agreement and in any future amendments thereto; and

WHEREAS, Subgrantees, upon entering into grant agreement with MDNR/EC and under DOE environmental regulation at 10 CFR. Part 440, certify and bind themselves to the roles, responsibilities and stipulations of this agreement and its appendix; and

WHEREAS, MDNR/EC has determined that it can assist Subgrantees to more effectively carry out their Section 106 responsibilities by streamlining procedures for Undertakings having limited potential to affect properties included in or eligible for inclusion in the National Register of Historic Places and, on behalf of Subgrantees, has consulted with the Missouri State Historic Preservation Office (“SHPO”) pursuant to 36 CFR § 800.14 of the regulations implementing Section 106; and

WHEREAS, DOE, on behalf of MDNR/EC, shall contact federally recognized Indian Tribes, as listed in Appendix A, to solicit their views on which types of undertakings may have potential to affect resources to which the Tribes may attach religious and cultural significance, and shall request that the tribes communicate how they wish to be consulted, and will invite the tribes to review and comment upon this agreement in the capacity of a concurring party; and

WHEREAS, all references within this Interagency Agreement (“Agreement”) are with respect to regulation at 36 CFR Part 800 that became effective on August 5, 2004.

NOW, THEREFORE, MDNR/EC and SHPO agree that the Federal Energy Programs shall be administered in accordance with the following stipulations to satisfy Subgrantees Section 106 responsibilities for all individual Undertakings of the programs.

STIPULATIONS

The MDNR/EC will ensure that the following measures are carried out:

A. Roles of MDNR/EC and Subgrantees

The role of MDNR/EC under this Agreement includes but is not limited to MDNR/EC assisting Subgrantees in identifying historic properties, determining the eligibility of historic properties, and determining the effect an Undertaking may have on historic properties. MDNR/EC may also assist in facilitating consultations between the SHPO and Subgrantees regarding an Undertaking that may have an adverse effect on an historic property. However, Subgrantees retain responsibility for compliance with 36 CFR Part 800, and this responsibility is not assumed by MDNR/EC under this Agreement.

B. Qualifications of Personnel

1. MDNR/EC personnel designated to carry out the stipulations of this Agreement must meet the Secretary of the Interior’s *Professional Qualifications Standards* outlined in 36 CFR Part 61, Appendix A, or attend a minimum of one (1) Section 106 training session,

as provided by the SHPO or ACHP. SHPO shall hold a Section 106 training session at the earliest date possible that will be open to MDNR/EC staff and their subgrantees as well as other interested parties. MDNR/EC is responsible for inviting the subgrantees to this training session. In addition, SHPO will hold a separate training session for MDNR/EC staff involved with federally funded projects by December 31, 2009 or at the earliest feasible date. For subgrantees unable to attend the SHPO sponsored training session, MDNR/EC staff will be responsible for providing Section 106 training. Additional training may be provided by SHPO as needed. SHPO may assist MDNR/EC during the grant application review process, upon request and to the extent feasible.

2. MDNR/EC must notify the SHPO of the personnel responsible for complying with this Agreement and will notify the SHPO when there is a change in personnel. In such event, MDNR/EC and the SHPO shall meet to review the terms, conditions and implementation of this Agreement.
3. When conditions dictate, MDNR/EC will ensure that Subgrantees employ or contract with qualified professionals who at minimum meet the Secretary of the Interior's *Professional Qualifications Standards* at 36 CFR Part 61 in the field of archaeology, history, architectural history, as appropriate, or other qualified preservation professional. MDNR/EC or a Subgrantee will make the professional's resume and contact information available to the SHPO upon request.
4. The Department of Natural Resources maintains a "List of Qualified Professionals" that meet the Secretary of the Interior's *Professional Qualifications Standards* and the SHPO shall make the list available to MDNR/EC and Subgrantees upon request. In no way does this mean that the SHPO requires applicants to use someone from this list.
5. MDNR/EC will provide technical assistance initially and on an ongoing basis to Subgrantees as needed and, in consultation with the SHPO and to the extent feasible, will provide training sessions or workshops as deemed appropriate or necessary for the Subgrantees to ensure their understanding of the terms of this Agreement. The scope of training will include a basic outline of the Section 106 process; research and identification of historic properties; obtaining qualified professional services; and limitations imposed by this Agreement (e.g., examples of Undertakings not exempted by the Agreement). Training may include additional topics relevant to the terms of this Agreement.

C. Process of Section 106 Review

1. For projects involving ground disturbing activities, MDNR/EC or the Subgrantee shall submit a completed Section 106 Project Information Form and all applicable documents listed on page 2 in the checklist (ex.: photographs, topographic map, construction drawings if buildings will be altered, project description) to the SHPO for review.
2. For projects involving alterations to a building, MDNR/EC or the Subgrantee shall review the list below of Undertakings Exempt from Further Review. If the proposed activity is included in this list, no further review is necessary, and the only required

action is to complete proper documentation as referenced in the Recordkeeping requirements, section J below.

3. If the proposed activity is not included in the list of Undertakings Exempt from Further Review, then MDNR/EC or the Subgrantee shall submit a completed Section 106 Project Information Form and all applicable documents listed on page 2 in the checklist (ex.: photographs, topographic map, construction drawings if buildings will be altered, project description) to the SHPO for review.
4. The SHPO will review the submitted information within their regulated 30 day review timeframe, or less. More information from MDNR/EC or the Subgrantee may be needed at any point in the review process. Every time information is requested, the 30-day review timeframe starts anew, so it is imperative that MDNR/EC and the Subgrantees submit complete information initially in order to minimize review timeframes. In their review, the SHPO will determine:
 - a. Whether the property involved is considered a historic resource. If the property is determined not to be a historic resource, no further action is necessary.
 - b. If the property is determined to be a historic resource, the extent of the adverse effect of the proposed activities will be assessed. If the proposed activities are determined to have no adverse effect on the historic resource, no further action is necessary.
 - c. If the property is determined to be a historic resource and the proposed activities will adversely effect the property, the SHPO will explore alternatives with the Subgrantee and MDNR/EC to avoid or reduce the adverse effect of the proposed activities. Input from the public may apply as part of this discussion, should SHPO and MDNR/EC be unable to resolve the adverse effect promptly.
 - d. Agreement on the alternative proposed activities between the SHPO, the Subgrantee and MDNR/EC will be sent to DOE.

D. Undertakings Exempt from Further Review

1. Categorical Exemptions

The following Undertakings have little or no potential to cause effect and, therefore, are categorically exempt from further review or consultation with the SHPO under this Agreement.

- a. Undertakings on Properties Less than 45 Years Old. All properties estimated to be less than forty-five (45) years of age and that do not meet the criteria established in National Register Bulletin 22, *Guidelines for Evaluating and Nominating Properties that Have Achieved Significance Within the Past Fifty Years*, do not require further review or consultation.
- b. Undertakings on Properties Recently Reviewed. If the property has been reviewed by the SHPO within the last five (5) years from the date the Subgrantee makes application to MDNR/EC for DOE assistance and provided the property is documented through written consultation with the SHPO to be ineligible for inclusion

in the National Register, the Undertaking may proceed without further review or consultation.

2. Specific Activities Exempt from Further Review

Undertakings on properties more than (or equal to) forty-five (45) years old do not require further review or consultation with the SHPO provided the Undertaking complies with the National Park Service's *Secretary of the Interior's Standards for the Treatment of Historic Properties* and related technical guidelines. Undertakings meeting this requirement are limited solely to the activities described below.

For the purpose of this Agreement, "in-kind" replacement/repair is defined as a replacement action or repair that uses materials that match the original material in terms of composition, appearance, dimension, detailing and durability. In addition, to the extent practicable, original materials will be preserved and reused for in-kind replacement/repair.

For all projects where no window or door alterations are involved, all materials included in Appendix A of 10 CFR 440, *Standards For Weatherization Materials*, excluding all windows and doors, are considered appropriate for use on historic properties, and do not require further review or consultation from the SHPO, provided that the activity meets one of the following exemptions and follows the Secretary of the Interior's *Standards for Rehabilitation*.

a. Exterior Rehabilitation

- i. Installation of scaffolding and other temporary construction-related structures including barriers, screening, fences, protective walkways, signage, office trailers and restrooms.
- ii. Application of exterior paint on previously painted surfaces, including masonry.
- iii. All lead paint abatement which does not involve removal or alteration of exterior features and/or a window's surrounding casings sash components, trim and sills.
- iv. In-kind replacement/repair of:
 - 1) masonry foundations, floor joists, and ceiling joists
 - 2) basement bulkhead doors
 - 3) wood siding and trim
 - 4) porch elements such as columns, flooring, floor joists, ceilings, railing, balusters and balustrades, and lattice
 - 5) roof cladding, flashing, gutters, soffits, and downspouts and with no change in roof pitch or configuration
 - 6) doors and door frames

- 7) window sash, frames, glazing and weather stripping. Replacement of existing clear glass with new clear glass is allowed.
- 8) exterior vents

v. Replacement/repair of:

- 1) concrete foundations
- 2) exterior heating, ventilation, and air conditioning (HVAC) mechanical units that do not require any new venting or a new location, or venting is on the rear of the structure, not viewable from any public right of way.

vi. Installation of:

- 1) dryer vents, air intakes, and outlets on secondary facades
- 2) caulk and expandable foam to prevent air infiltration so long as it is clear, painted or colored to match the existing exterior materials.
- 3) Insulation on the underbelly of Mobile Homes.
- 4) Removable film on windows if the film is transparent.
- 5) Blown in insulation where no holes are drilled through exterior siding.

b. Interior Rehabilitation

- i. Interior improvements and rehabilitation where no structural alterations are made, where no demolition of walls, ceilings and/or floors occurs, and where no drop ceilings are added or walls are furred out or moved, and consisting of:
 - 1) plumbing work, including installation of water heaters
 - 2) electrical work, including improving lamp efficiency
 - 3) heating, ventilation, and air conditioning (HVAC) systems and their components
 - 4) insulation installation in attics and crawl spaces
 - 5) blown in insulation where no decorative plaster is damaged.
- ii. In-kind replacement/repair of:
 - 1) plaster walls and ceilings
 - 2) floors, including refinishing
- iii. Installation of drywall where original plaster wall surfaces are missing, and which will not appreciably change the trim profile. No decorative plaster or other decorative features shall be covered.
- iv. All painting and carpeting, provided that carpeting installation damages no underlying wood or masonry floor surfaces.
- v. All kitchen and bathroom remodeling, provided no walls, windows, or doors are altered.
- vi. All lead paint abatement which does not involve removal or alteration of interior features.

vii. All asbestos abatement which does not involve removal or alteration of interior features.

c. Equipment

- i. Standard energy efficiency measures that do not require ground disturbance or relocation or removal of walls, ceilings or floors, such as, but not limited to: installation or replacement of motors, lighting, blowers, pumps, heating, ventilation, and air conditioning (HVAC) systems that do not require any new venting or a new location, or venting is on the rear of the structure, not viewable from any public right of way, conservation tillage equipment, Global Positioning System (GPS) Guidance Systems, solar powered electric fencing, irrigation improvements such as flow meters, pulse irrigators and drip irrigation systems, and occupancy sensors on lights.

Should the SHPO and/or MDNR/EC determine through the review process outlined above that any actions undertaken through the Federal Energy Programs result in an adverse effect on historic properties, 36 CFR Part 800.6 shall implemented.

E. Public Participation

1. When an Undertaking is determined to have an adverse effect on a historic property, and resolution of the adverse effect is not readily achievable, MDNR/EC will assist Subgrantees to take into account the public interest by ensuring information about historic properties is included, as appropriate, in applications for assistance, public hearings, or public notifications.
2. MDNR/EC will help ensure, to the extent practicable, that Subgrantees seek and consider the views of the public on their projects in a manner that reflects the nature, magnitude and complexity of the Undertaking and its effects on historic properties, the likely interest of the public in the effects on historic properties and the potential for controversy, confidentiality concerns of private individuals, Tribes and businesses, and other Federal agency involvement in the Undertaking. A list of local historic preservation commissions is available on the SHPO webpage: <http://dnr.mo.gov/shpo/clg-list.htm>. A directory of local historical societies is available on the State Historical Society of Missouri's webpage: <http://shs.umsystem.edu/directory/index.shtml>. Should these two resources not aid in identification of organizations interested in historic preservation in the local community, the SHPO shall assist the Subgrantee and / or MDNR/EC in contacting local preservationists to seek input from the public on the proposed project to the extent possible.
3. MDNR/EC will help ensure, to the extent practicable, that Subgrantees contact local historic preservation commissions and other groups or individuals known to be interested in historic resources in the area affected by the Undertaking. Subgrantees will notify

MDNR/EC and the SHPO of members of the public or Tribes who have expressed interest in an Undertaking covered under the terms of this Agreement.

F. Technical Assistance

Nothing in this agreement shall be construed as meaning that MDNR/EC or Subgrantees cannot request advice, counsel, or assistance of the SHPO at any time.

G. Monitoring

The SHPO may monitor activities carried out pursuant to this Agreement. MDNR/EC and Subgrantees will cooperate with the SHPO in carrying out their monitoring and review responsibilities. MDNR/EC and Subgrantees shall make available project information under this Agreement, as necessary.

H. Public Objection

At any time during implementation of an Undertaking covered by this Agreement, should an objection be raised by a member of the public, the Subgrantee shall take the objection into account and consult as needed with the objecting party, MDNR/EC or the SHPO to resolve the objection.

I. Dispute Resolution

1. MDNR/EC shall represent itself and Subgrantees petitioning singly or as a group in all matters of dispute resolution.
2. Should any signatory to this agreement or Subgrantee (represented by MDNR/EC) object at any time to any actions proposed or the manner in which the terms of this agreement are implemented, MDNR/EC shall consult with such party to resolve the objection. If MDNR/EC determines that such objection cannot be resolved, then MDNR/EC will forward all documentation relevant to the dispute, including MDNR/EC's proposed resolution and SHPO comments, to DOE. DOE will:
 - a. Forward all documentation relevant to the dispute, including MDNR/EC's proposed resolution and SHPO comments, to the Advisory Council on Historic Preservation (ACHP). The ACHP shall provide MDNR/EC comment on resolving the objection within fifteen (15) days of receiving adequate documentation. If the ACHP does not provide comment with this period, DOE may make a final decision on the dispute and proceed accordingly.
 - b. Prior to making a final decision on the dispute, DOE shall prepare a written response to the ACHP, SHPO and/or Subgrantees that takes into account any timely advice or comments regarding the dispute from the ACHP, SHPO and/or Subgrantees and provide them with a

copy of this written response. DOE will then notify MDNR/EC to proceed according to DOE's final decision.

3. The responsibilities of the signatories to carry out all other actions subject to the terms of this Agreement that are not the subject of the dispute remain unchanged.

J. Recordkeeping

Compliance with the terms of this Agreement will be documented by MDNR/EC or the Subgrantee through environmental recordkeeping as follows. Records will be made available to the SHPO for monitoring compliance, as necessary.

Each subgrantee shall himself/herself enter, or require that each client served by the Energy Programs enter, on a written application, the estimated year in which the building or other structure to be affected by Energy Programs was constructed. Based upon the age of the building or structure, the subgrantee shall retain the following information in the file:

For all buildings or structures, the subgrantee shall obtain the following information and retain it in the client or project file: A clear photograph showing the front of the building or structure taken from the street, sidewalk or front yard; a location map showing the location of each Undertaking; and the application upon which the client has entered the age of the building or structure. Electronic storage of photographs and maps is acceptable.

K. Term of Agreement

This Agreement will continue in full force and effect for five (5) years from the date all signatories have signed the Agreement. At any time in the six-month period prior to the Agreement's expiration, MDNR/EC may request ACHP and SHPO to extend the Agreement for five (5) more years, provided the request is made in writing, that all signatories agree, and there are no substantive modifications.

L. Amendment

Any signatory to this Agreement may request that it be amended, whereupon the parties will consult in accordance with 36 CFR Part 800.14 to consider such amendment. MDNR/EC will represent itself and Subgrantees petitioning singly or as a group in all requests to amend this Agreement. The amendment will be effective on the date it is signed by all signatories. Should DOE and the ACHP develop a nationwide agreement regarding Section 106 responsibilities that supersedes this Agreement, all parties agree to amend or terminate this Agreement as necessary.

M. Termination

Any signatory to this Agreement may terminate it by providing thirty (30) days notice to the other signatories, provided that the signatories will consult during the period prior to termination to seek amendment or other action that would avoid termination. MDNR/EC will represent itself and Subgrantees when the latter petition as a unanimous body to terminate this Agreement. In

the event of termination, Subgrantees will comply with 36 CFR Parts 800.3 through 800.6 with regard to all individual undertakings heretofore covered by this Agreement.

N. Unanticipated Discoveries

1. Archaeological sites or historic properties:

1. If previously unidentified archaeological sites or historic properties are discovered unexpectedly as a result of construction activities, the construction contractor will immediately halt all construction activity within a one-hundred (100) foot radius of the discovery, notify the Subgrantee of the discovery and implement interim measures to protect the discovery from looting and vandalism. Within forty-eight (48) hours of receipt of this notification of the discovery, the Subgrantee shall:
 - a) inspect the work site to determine the extent of the discovery and ensure that construction activities have halted;
 - b) clearly mark the area of the discovery;
 - c) implement additional measures, as appropriate, to protect the discovery from looting and vandalism; and
 - d) notify the SHPO, MDNR/EC and interested Indian Tribes or other parties of the discovery.
2. The Subgrantee will have seven (7) calendar days following notification to determine the National Register eligibility of the discovery after considering the timely filed views of the SHPO and interested Indian Tribes or other parties. The Subgrantee may assume the newly discovered property to be eligible for the National Register for the purposes of Section 106 pursuant to 36 CFR § 800.13(c).
3. For properties determined eligible, the Subgrantee will notify the SHPO, MDNR/EC and interested Indian Tribes or other parties of those actions that it proposes to resolve adverse effects in a mitigation plan.
 - a) Consulting parties will have seven (7) calendar days to provide their views on the proposed mitigation plan.
 - b) The Subgrantee will ensure that the recommendations of consulting parties are taken into account to resolve adverse effects.
 - c) The Subgrantee will carry out the approved mitigation plan.
 - d) The construction contractor will resume construction activities in the area of the discovery upon receipt of written authorization from the SHPO.
4. Dispute Resolution: The Subgrantee will seek and take into account the recommendations of the ACHP in resolving any disagreements that may arise regarding resolution of adverse effects. Within seven (7) days of receipt of such a written request, the ACHP will provide the Subgrantee with recommendations on resolving the dispute. The Subgrantee will take into account the recommendations provided by the ACHP in making a final decision about how to proceed.

2. Human remains:

1. When an unmarked human burial or skeletal remains are encountered during construction activities, the Subgrantee will comply with Missouri Rev. Stat. § 194.400, et seq. (Unmarked Human Burial Law).
2. Upon encountering unmarked human burials or skeletal remains during ground disturbing construction activities, the construction contractor will immediately stop work within a one-hundred (100) foot radius from the point of discovery and notify the Subgrantee. The construction contractor will implement interim measures to protect the discovery from vandalism and looting, but must not remove or otherwise disturb any human remains or other items in the immediate vicinity of the discovery.
3. Immediately following receipt of such notification, the Subgrantee will:
 - a) ensure that construction activities have halted within a one-hundred (100) foot radius from the point of discovery;
 - b) implement additional measures, as appropriate, to protect the discovery from looting and vandalism until the requirements of state law have been completed; and
 - c) notify the local law enforcement officer, the SHPO, MDNR/EC and interested Indian Tribes or other parties, of the discovery.
4. The investigation by the local law enforcement officer will establish jurisdiction over the remains. The Subgrantee will notify the SHPO when local law enforcement determines that the SHPO has jurisdiction. Within seven (7) days of receipt of such notification, the SHPO will determine the treatment to be implemented. If the human remains are Native American, the SHPO in consultation with interested Indian Tribes will determine the treatment to be implemented.
5. The construction contractor will resume construction activities in the area of the discovery upon receipt of written authorization from either local law enforcement or the SHPO, whomever has jurisdiction under state law.

O. Coordination with Other Federal Funding

Another Federal agency that provides permitting or financial assistance to an Undertaking covered by this Agreement may satisfy its own Section 106 compliance responsibilities by accepting and complying with the terms of this Agreement. The Federal agency shall notify MDNR/EC, the Subgrantee and the SHPO in writing of its intent to adhere to this Agreement in lieu of completing a separate Section 106 review.

P. Notification

Notification or other communication between signatories to this Agreement shall be made in accordance with the following addresses or to such other place as a signatory may designate in writing all signatories.

MDNR/EC: Energy Center
Missouri Department of Natural Resources
1101 Riverside Dr, PO Box 176
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SHPO: Review and Compliance Section
State Historic Preservation Office
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102-0176
Judith.Deel@dnr.mo.gov
Rebecca.Prater@dnr.mo.gov

Execution and implementation of this Agreement evidences that the Missouri Department of Natural Resources – Energy Center and its Subgrantees have taken into account the effects of the DOE Programs on historic properties.

Missouri Department of Natural Resources- Energy Center

By: *Arto Randolph*

Date: 12/7/09

Missouri Deputy State Historic Preservation Officer

By: *Mark A. Miles*

Date: 12/08/09

**FIRST AMENDMENT TO
PROGRAMMATIC AGREEMENT
AMONG
THE UNITED STATES DEPARTMENT OF ENERGY, THE MISSOURI
DEPARTMENT OF NATURAL RESOURCES' DIVISION OF ENERGY AND THE
MISSOURI DEPARTMENT OF NATURAL RESOURCES' STATE HISTORIC
PRESERVATION OFFICE**

WHEREAS, on June 7, 2010, the United States Department of Energy (hereinafter DOE), the Missouri Department of Natural Resources' Division of Energy (hereinafter DE), and the Missouri State Historic Preservation Office (hereinafter SHPO), entered into a Programmatic Agreement (hereinafter PA) to allow the Interagency Agreement signed in December 2009 by the SHPO and DE (labeled as "Appendix A" to the PA), to fulfill the requirements of Section 106 of the National Historic Preservation Act for certain DOE-funded Undertakings in Missouri; and

WHEREAS, it is desirable that the PA be amended so that it includes additional stipulations that will further streamline compliance with Section 106 for the Undertakings; and

WHEREAS, DOE recipients in Missouri other than DE (hereinafter "Direct Recipients") also receive funding from DOE under the Programs to conduct Undertakings; and

WHEREAS, it is desirable that the PA be amended and updated to clarify that all of the Direct Recipients listed on Attachment A may also utilize the PA to achieve compliance with Section 106; and

WHEREAS, it is desirable to have any Direct Recipients not listed on Attachment A provide a written notification to the SHPO when they intend to utilize the PA to comply with Section 106; and

WHEREAS, Stipulation L of the PA allows for amendment of the PA in the same manner as the original PA was executed; and

WHEREAS, this First Amendment shall take effect on the date of the last signature and remain in force until the expiration of the PA.

NOW THEREFORE, the signatories to the PA agree to amend the PA in the following manner:

- A) To add the following list of undertakings to the Specific Activities Exempt from Further Review (Appendix A, Section D, Part 2):
 - (d) Additional Exempt Activities:
 - (i) Replacement or installation of new storm windows where the finish on the new storm windows matches the finish of the existing windows in color.
 - (ii) Replacement of interior doors where the size of the openings is not altered.
 - (iii) Replacement or repair of door knobs and other door hardware.

- B) To add the following section to Appendix A, Section C. Process of Section 106 Review:

(5) Emergency Undertakings: All projects that require non-exempt activities and involve health or safety emergencies (defined as situations that pose an acute and immediate threat to health or safety) can be completed in two phases as follows: the Recipient or Subgrantee may elect to perform emergency individual health and safety measures that are listed in the *Missouri Low Income Weatherization Assistance Program Operations Manual* (LIWAP), Emergency Situations Section 3, Subsection 1, Part B: 4-6 in the initial phase of the project prior to approval from the SHPO; and, prior to performing the second phase of the project, the Recipient must submit a Project Information Form and all applicable documents for the entire project, and await approval from the SHPO before commencing work on the second phase. The Missouri LIWAP Operational Manual is located at <http://www.dnr.mo.gov/energy/weatherization/wx.htm>. Notwithstanding this provision and anything contained in the Missouri LIWAP, immediate rescue and salvage operations conducted to preserve life or property remain exempt from the provisions of Section 106 and this Programmatic Agreement pursuant to 36 C.F.R. 800.12.

- C) To add the following provisions to those listed under Appendix A, Section A. Roles of MDNR/EC and Subgrantees:

4. The terms of this PA may be utilized by Direct Recipients in order to achieve compliance with Section 106 to the same extent as DE (MDNR/EC), and any Subgrantees of Direct Recipients may utilize this PA to the same extent as the Subgrantees of DE (MDNR/EC). When utilized by the Direct Recipient, any references to Recipient, DE, or MDNR/EC, shall be construed to include the Direct Recipient, with the exception of references to the signatory responsibilities of the Recipient, DE or MDNR/EC contained in Sections K. Term of Agreement, L. Amendment, and M. Termination. When utilized by a Subgrantee of a Direct Recipient, any references to Subgrantees of DE (MDNR/EC) shall be construed to include the Subgrantees of Direct Recipients, if any. Recipients and Direct Recipients will remain responsible for ensuring that their Subgrantees, if any, comply with Section 106 and Recipients, Direct Recipients and Subgrantees cannot delegate Section 106 responsibilities to homeowners.

- D) To add the following section to Appendix A, Section B. Qualifications of Personnel:

6. DOE's liaison to the Advisory Council on Historic Preservation (ICHHP), in coordination with DOE, DE and the SHPO, to the extent practicable, will provide at least one training session or workshop required for all Direct Recipients intending to use the PA, in order to ensure their understanding of the terms of the PA and such training is deemed to meet the training requirements found in Stipulation B(1) of Appendix A. The scope of training should include a basic outline of the following topics: the Section 106 process; the research and identification of historic properties; obtaining qualified professional services; and limitations imposed by the PA (e.g., examples of Undertakings not exempted by the Agreement). The training should include additional topics relevant to the

terms of this PA, particularly the stipulations in Appendix A on recordkeeping requirements, (Appendix A, Section J).

E) To add the following section to Appendix A, Section P. Notification:

DOE: Office of Energy Efficiency and Renewable Energy
United States Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, CO 80401-3393
gohistoricpreservation@go.doe.gov

and,

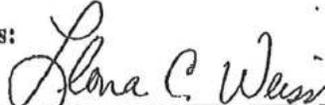
If concerning a particular project receiving DOE funding under EECBG, WAP or SEP, then written notice shall also be given to the DOE project officer assigned to the respective award.

F) To delete Section K. Term of Agreement from Appendix A in its entirety.

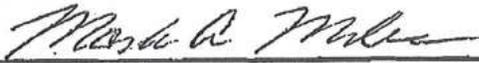
G) To add the following Section to Appendix A following Section P:

Q. Anti-Deficiency Act Assurance. This Amendment to the PA is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds among or between parties to this Amendment to the PA will be handled in accordance with applicable laws, regulations and procedures, and will be subject to separate agreements that shall be effected in writing.

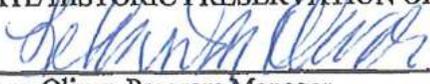
Signatories:

 7-12-11

Llona C. Weiss, Director Date
MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENERGY

 7/12/11

Mark A. Miles, Director and Deputy State Historic Preservation Officer Date
MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE

 7/13/11

LeAnn Oliver, Program Manager Date
UNITED STATES DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
OFFICE OF WEATHERIZATION AND INTERGOVERNMENTAL PROGRAMS

Attachment A to Amendment

Grantee	Recipient Type
Chesterfield	City
University City	City
Cape Girardeau	City
Kansas City	City
St. Louis	City
St. Louis	County
Missouri	SEO
Joplin	City
Jefferson City	City
Springfield	City
St. Peters	City
Jefferson	County
St. Charles	City
St. Charles	County
Cass	County
Independence	City
Jackson	County
St. Joseph	City
Franklin	County
Christian	County
Blue Springs	City
Jasper	County
Greene	County
Lee's Summit	City
O'Fallon	City
Columbia	City
Florissant	City
Clay	County
Missouri Department of Agriculture	State

The **Do's** & **Don'ts** of Photos for Section 106 Submissions

- ✓ **Do:** Submit clear black and white or color photographs that are at least 3" X 5". We do accept high quality digital photographs, however a paper copy must be provided and the print must be at least 600 *dpi*.
- ✓ **Do:** submit photos of more than one side of the building.
- ✓ **Do:** Include streetscapes of neighboring buildings or any other improvements like rock retaining walls.
- ✓ **Do:** label the photograph on the back with the address and key it into the map.
- ✓ **Do:** submit photographs where the building and the defining architectural features are clearly visible.

- **Don't:** submit Polaroid's, faxed, photocopied, or emailed photos.
- **Don't:** submit photos that are too small to see any defining architectural features or too close to see the entire building.
- **Don't:** submit a streetscape that only shows the street.
- **Don't:** submit a group of photos with no labels and no key to the map.
- **Don't:** submit photos where the building and its defining architectural details are blocked by trees, cars, shadows, etc.
- **Don't:** take photos from your car.

Measures Exempt from Further Review

The measures listed below do not have adverse effects on historic properties, and do not require a Section 106 review by the Missouri State Historic Preservation Office

All materials included in Appendix A of 10 CFR 440, *Standards For Weatherization Materials*, excluding all windows and doors, are considered appropriate for use on historic properties, and do not require further review or consultation from the State Historic Preservation Office.

“Like-kind” replacement/repair is defined as a replacement action or repair that uses materials that match the original material in terms of composition, appearance, dimension, detailing and durability. To the extent practicable, original materials will be preserved and reused for like-kind replacement/repair.

Exterior Rehabilitation

- A. Installation of scaffolding and other temporary construction-related structures including barriers, screening, fences, protective walkways, signage, office trailers and restrooms.
- B. Application of exterior paint on previously painted surfaces, including masonry.
- C. All lead paint abatement which does not involve removal or alteration of exterior features and/or a window’s surrounding casings sash components, trim and sills.
- D. Like-kind replacement/repair of:
 - i. masonry foundations, floor joists, and ceiling joists
 - ii. basement bulkhead doors
 - iii. wood siding and trim
 - iv. porch elements such as columns, flooring, floor joists, ceilings, railing, balusters and balustrades, and lattice
 - v. roof cladding, flashing, gutters, soffits, and downspouts and with no change in roof pitch or configuration
 - vi. doors and door frames
 - vii. window sash, frames, glazing and weather stripping. Replacement of existing clear glass with new clear glass is allowed.
 - viii. exterior vents
- E. Replacement/repair of:
 - i. concrete foundations
 - ii. exterior heating, ventilation, and air conditioning (HVAC) mechanical units that do not require any new venting or a new location, or venting is on the rear of the structure, not viewable from any public right of way.
- F. Installation of:
 - i. dryer vents, air intakes, and outlets on secondary facades
 - ii. caulk and expandable foam to prevent air infiltration so long as it is clear, painted or colored to match the existing exterior materials.
 - iii. Insulation on the underbelly of Mobile Homes.
 - iv. Removable film on windows if the film is transparent.
 - v. Blown in insulation where no holes are drilled through exterior siding.

1. Interior Rehabilitation

- A. Interior improvements and rehabilitation where no structural alterations are made, where no demolition of walls, ceilings and/or floors occurs, and where no drop ceilings are added or walls are furred out or moved, and consisting of:
 - i. plumbing work, including installation of water heaters
 - ii. electrical work, including improving lamp efficiency
 - iii. heating, ventilation, and air conditioning (HVAC) systems and their components
 - iv. insulation installation in attics and crawl spaces
 - v. blown in insulation where no decorative plaster is damaged.
- B. Like-kind replacement/repair of:
 - i. plaster walls and ceilings
 - ii. floors, including refinishing
- C. Installation of drywall where original plaster wall surfaces are missing, and which will not appreciably change the trim profile. No decorative plaster or other decorative features shall be covered.
- D. All painting and carpeting, provided that carpeting installation damages no underlying wood or masonry floor surfaces.
- E. All kitchen and bathroom remodeling, provided no walls, windows, or doors are altered.
- F. All lead paint abatement which does not involve removal or alteration of interior features.
- G. All asbestos abatement which does not involve removal or alteration of interior features.

2. Equipment

Standard energy efficiency measures that do not require ground disturbance or relocation or removal of walls, ceilings or floors, such as, but not limited to: installation or replacement of motors, lighting, blowers, pumps, heating, ventilation, and air conditioning (HVAC) systems that do not require any new venting or a new location, or venting is on the rear of the structure, not viewable from any public right of way.



MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE
SECTION 106 PROJECT INFORMATION FORM

Submission of a completed Project Information Form with adequate information and attachments constitutes a request for review pursuant to Section 106 of the National Historic Preservation Act of 1966 (as amended). We reserve the right to request more information. **Please refer to the CHECKLIST on Page 2 to ensure that all basic information relevant to the project has been included.** For further information, refer to our Web site at: <http://www.dnr.state.mo.us/shpo> and follow the links to Section 106 Review.

NOTE: Section 106 regulations provide for a 30-day response time by the Missouri State Historic Preservation Office from the date of receipt.

PROJECT NAME

FEDERAL AGENCY PROVIDING FUNDS, LICENSE, OR PERMIT

APPLICANT

TELEPHONE

CONTACT PERSON

TELEPHONE

ADDRESS FOR RESPONSE

LOCATION OF PROJECT

COUNTY: _____

STREET ADDRESS: _____ CITY: _____

GIVE LEGAL DESCRIPTION OF PROJECT AREA (TOWNSHIP, RANGE, SECTION, 1/4 SECTION, ETC.)

*USGS TOPOGRAPHIC MAP QUADRANGLE NAME _____

YEAR: _____ TOWNSHIP: _____ RANGE: _____ SECTION: _____

*SEE MAP REQUIREMENTS ON PAGE 2

PROJECT DESCRIPTION

- Describe the overall project in detail. If it involves excavation, indicate how wide, how deep, etc. If the project involves demolition of existing buildings, make that clear. If the project involves rehabilitation, describe the proposed work in detail. Use additional pages if necessary.

ARCHAEOLOGY (Earthmoving Activities)	
<p>Has the ground involved been graded, built on, borrowed, or otherwise disturbed?</p> <ul style="list-style-type: none"> Please describe in detail: (Use additional pages, if necessary.) Photographs are helpful. 	
<p>Will the project require fill material? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <ul style="list-style-type: none"> Indicate proposed borrow areas (source of fill material) on topographic map. 	
<p>Are you aware of archaeological sites on or adjacent to project area? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <ul style="list-style-type: none"> If yes, identify them on the topographic map. 	
STRUCTURES (Rehabilitation, Demolition, Additions to, or Construction near existing structures)	
<p>To the best of your knowledge, is the structure located in any of the following?</p> <p><input type="checkbox"/> An Area Previously Surveyed for Historic Properties <input type="checkbox"/> A National Register District <input type="checkbox"/> A Local Historic District</p> <p>If yes, please provide the name of the survey or district:</p>	
<ul style="list-style-type: none"> Please provide photographs of all structures, see photography requirements. NOTE: All photographs should be labeled and keyed to one map of the project area. Please provide a brief history of the building(s), including construction dates and building uses. (Use additional pages, if necessary.) 	
ADDITIONAL REQUIREMENTS	
<p>Map Requirements: Attach a copy of the relevant portion (8½ x 11) of the current USGS 7.5 min. topographic map <u>and</u>, if necessary, a large scale project map. Please do not send an individual map with each structure or site. While an original map is preferable, a good copy is acceptable. USGS 7.5 min. topographic maps may be ordered from Geological Survey and Resource Assessment Division, Department of Natural Resources, 111 Fairground, Rolla, MO 65402, Telephone: (573) 368-2125, or printed from the website http://www.topozone.com.</p> <p>Photography Requirements: Clear black & white or color photographs on photographic paper (minimum 3" x 5") are acceptable. Polaroids, photocopies, emailed, or faxed photographs are not acceptable. Good quality photographs are important for expeditious project review. Photographs of neighboring or nearby buildings are also helpful. All photographs should be labeled and keyed to one map of the project area.</p>	
CHECKLIST: Did you provide the following information?	
<input type="checkbox"/> Topographic map 7.5 min. (per project, not structure)	<input type="checkbox"/> Other supporting documents (If necessary to explain the project)
<input type="checkbox"/> Thorough description (all projects)	<input type="checkbox"/> For new construction, rehabilitations, etc., attach work write-ups, plans, drawings, etc.
<input type="checkbox"/> Photographs (all structures)	<input type="checkbox"/> Is topographic map identified by quadrangle and year?
<p>Return this Form and Attachments to:</p> <p>MISSOURI DEPARTMENT OF NATURAL RESOURCES STATE HISTORIC PRESERVATION OFFICE Attn: Section 106 Review P.O. BOX 176 JEFFERSON CITY, MISSOURI 65102-0176</p>	

Site Built Home

**Missouri DNR/EC Weatherization
Housing Quality Inspection Form**

Attachment A

Inspection Date: _____

Client Name: _____ Agency: _____ Blower Door Pre Test: _____
 Address: _____ Job No: _____ Blower Door Post Test: _____
 City/Zip: _____ Funding: _____ Target Reduction: _____
 Initial Audit on: _____ Final Inspection on: _____ Percent Reduction: _____

	SAT	N/A	DEF	NOTES
<u>Infiltration</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Air Leakage Areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Door Treatments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Window Treatments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Wall Insulation</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Kneewalls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Accesses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Attic Insulation</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Damming and Shielding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Venting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Accesses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Foundation/Floor Insulation</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sillbox	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Venting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Accesses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Vapor Retarder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Mechanical Systems</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Clean and Tune	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Heating System Repairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ductwork	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Duct Insulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Water Heater	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Incidental Repairs</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Door Replacements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Window Replacements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Miscellaneous</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>General Heat Waste</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Health and Safety</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Weatherization Labels</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Weatherization Labels Present</u>
<u>Section 106</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____ <input type="checkbox"/> Exempt
<u>NEAT Audit</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Fuels:

Furnace Natural Gas/LPG Electric Other: _____
 Water Heater Natural Gas/LPG Electric Other: _____
 Oven Natural Gas/LPG Electric Other: _____
 Dryer Natural Gas/LPG Electric Other: _____

Housing Quality No Re-Work Required Re-Work Required

Inspected for Quality by: _____

Mobile Home

**Missouri DNR/EC Weatherization
Housing Quality Inspection Form**

Attachment B

Inspection Date: _____

Client Name: _____ Agency: _____ Blower Door Pre Test: _____

Address: _____ Job No: _____ Blower Door Post Test: _____

City/Zip: _____ Funding: _____ Target Reduction: _____

Initial Audit on: _____ Final Inspection on: _____ Percent Reduction: _____

	SAT	N/A	DEF	NOTES
<u>General Air Sealing</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Air Leakage Areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Door Treatments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Window Treatments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<u>Wall Insulation</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<u>Belly Insulation</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Belly Repairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Vapor Barrier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<u>Roofing Insulation</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<u>Interior Storms</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<u>Mechanical Systems</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Clean & Tune	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Heating System Repairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Heating Sys. Replacement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Ductwork	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Water Heater	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<u>Incidental Repairs</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Door Replacement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Window Replacements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<u>Miscellaneous</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<u>General Heat Waste</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<u>Health & Safety</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<u>Weatherization Labels</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Weatherization Labels Present</u>
<u>Section 106</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____ <input type="checkbox"/> Exempt
<u>MHEA Audit</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Fuels:

Furnace	<input type="checkbox"/> Natural Gas/LPG	<input type="checkbox"/> Electric	<input type="checkbox"/> Other: _____
Water Heater	<input type="checkbox"/> Natural Gas/LPG	<input type="checkbox"/> Electric	<input type="checkbox"/> Other: _____
Oven	<input type="checkbox"/> Natural Gas/LPG	<input type="checkbox"/> Electric	<input type="checkbox"/> Other: _____
Dryer	<input type="checkbox"/> Natural Gas/LPG	<input type="checkbox"/> Electric	<input type="checkbox"/> Other: _____

Housing Quality No Re-Work Required Re-Work Required

Inspected for Quality by: _____