

# **Weatherization Assistance Program for Low-Income Persons (“WAP”)**

## **Regular Formula**

### **State Plan**

**Revised 25 April 2012**

The subgrantee and the building owner/landlord work together to determine which measures will be completed based on the recommended measures. The building owner's contribution to the project is negotiated. When the landlord agreement is finalized, signed, and all supporting documentation is assembled, it is submitted to Commerce for review. Commerce approves the package or requires changes as needed. After the state has approved the project, it is sent to USDOE for its review and approval. No work on the building is allowed until all approvals are received.

### **III.3.3 Final Inspection**

Each subgrantee, or its authorized representative, is required to conduct a final inspection of the dwelling unit to certify that all weatherization and mechanical work has been completed in a quality manner, in compliance with applicable rules and codes, and in accordance with the priorities determined by the audit. The Minnesota Weatherization Policy Manual and supplements specify the activities/tests that must be completed in a final inspection. Dwelling units may not be reported as complete until all work passes a final inspection and all required signatures are obtained on the required forms.

### **III.3.4 Assessment of Effectiveness**

The grantee conducts annual visits and periodic reviews of each subgrantee. This assessment of effectiveness is completed using: 1) an electronic administrative monitoring tool sent to all grantees and carefully reviewed by Commerce staff; on-site visits and interviews with coordinators, fiscal staff, and energy auditors; on-site visits to job completions with interviews of crews and contractors; and extensive use and analysis of over 10 different reports incorporated into the Minnesota version of Weatherization Assistant (WA). These reports extract SIR information on all conservation measures as well as Health and Safety data, demographic analysis, and safety checks, and test results on mechanical systems. Details from these reports may be downloaded monthly. More detailed information may be obtained from quarterly reports. Minnesota allows the use of buy-downs as permitted by WPN 10-17.

Monthly WA reviews assess individual subgrantee strengths and weaknesses and job completion performance. Training and Technical Assistance (T&TA) needs are assessed through on-site visits, email requests, detailed evaluations from regional training sessions, quarterly auditor round-table forums, and the annual State-wide Energy Conference.

Any subgrantee consistently failing to meet WAP program standards may be subject to sanctions depending on the nature and seriousness of the compliance failure.

Grantee staff and the WX Supervisor meet weekly. Staff share schedules, monitoring visits, and technical issues from the previous week. Minnesota has developed an Issues Log to document issues noted during local subgrantee visits. The Issues Log generates a report that includes required corrections for each household monitored. The Issues Log, along with a cover letter, is sent to subgrantees within thirty days of the monitoring visit. Subgrantees make corrections, record the correction and the date of completion, and return the completed Issues Log to Commerce within a time specified by Commerce.

### **III.4 Health and Safety Plan**

Minnesota has followed the House As A System approach to weatherization since 1990. Both Grantee and Subgrantee staff understand that health and safety concerns are important and that health and safety issues are a required part of every dwelling audit. Minnesota conducts an on-site audit for each dwelling using the Weatherization Assistant software to document the audit. The WA software includes a detailed assessment of potential hazards. The assessment sets a framework for individual weatherization work plans. In some instances, the hazard must be remedied prior to the start of weatherization. In other instances, the hazard is addressed as part of weatherizing the dwelling. In a few instances, subgrantees make the choice to walk away from a dwelling when the health and safety problems are beyond the scope of weatherization activities. Subgrantees evaluate each dwelling individually and make decisions

accordingly. Grantee staff regularly provide assistance to subgrantees in problem-solving specific situations. All health and safety problems and their resolutions are recorded in the electronic and paper household file.

Assessments of indoor air quality problems are conducted at the time of the energy audit. As the conditions in each dwelling vary greatly, potential remedies are developed on a case-by-case basis. Possibilities might include minor repairs that are part of weatherization, client education, and/or referrals to other potential fund sources for major problems.

Health and Safety issues are addressed at a number of levels throughout Minnesota's Weatherization Assistance Program (WAP). Minnesota's WAP Policy Manual is incorporated by reference into all grant contracts with subgrantees. The policy manual is updated regularly in order to be compliant with current USDOE rules and guidance and the Minnesota State Plan. Minnesota has chosen to provide regulatory/policy updates and test standards via the policy manual. Subgrantees are notified by email of all revisions and the changes are posted on the Minnesota Department of Commerce website.

Two Minnesota-specific field guides supplement the policy manual. These field guides are distributed to all subgrantees. The first is a general field guide that includes both client and worker health/safety information. The second guide is devoted to mechanical systems and includes testing procedures. Minnesota uses these field guides as references and instructional guides. Both guides detail how to deal with hazards and installer/client safety and are available on the Minnesota Department of Commerce website.

In addition to the policy manual and field guides, Minnesota distributes other relevant information to its subgrantees such as furnace or water heater recalls from the Consumer Product Safety Commission.

Minnesota allows subgrantees to budget Health and Safety costs outside the overall per unit average. Minnesota strives to keep health/safety costs reasonable in keeping with weatherization's primary goal of energy conservation. The Minnesota WAP Policy Manual expresses the percent as an average Health/Safety cost per unit in order to provide some flexibility to subgrantees in dealing with the variety of problems they may encounter in client dwellings. This percent/average is reviewed annually and updated as needed with each new subgrantee grant contract. The DOE-approved percent/ average currently is \$1000 per dwelling unit. With a program average of \$6500 per dwelling unit, the health and safety cost of weatherization is 15.4%. This percentage is primarily due to the costs of adding ventilation fans and the high number of water heater replacements due to harmful emissions from malfunctioning water heaters.

**Grantee Health and Safety.** Grantee staff are required to have a thorough understanding of weatherization-related health and safety issues. Grantee staff attend numerous training sessions addressing health and safety. Grantee staff are required to follow safe work practices on subgrantee job sites.

**Crew/Contractor Health and Safety.** The Minnesota Weatherization Field Guide and its companion Minnesota Mechanical Systems Field Guide are both incorporated by reference into all subgrantee weatherization contracts with Commerce. Both field guides describe subgrantee responsibilities for staff and contractors. The guides address common worker safety issues including vehicle safety, falls, back injuries (proper lifting procedures), exposure to hazardous materials, electrical hazards, repetitive stress injuries, and the use of personal protective gear. The field guide language requires that local subgrantees and their installers comply with OSHA rules pertaining to worker safety. Subgrantees develop local health and safety plans pertinent to their local situations. Subgrantees are also required to provide annual

training for their crews and auditors in all worker and weatherization-related health/safety topics. Administrative monitors review subgrantee compliance with OSHA requirements.

**Pollution Occurrence Insurance.** Minnesota strongly recommends subgrantees carry appropriate Pollution Occurrence Insurance.

**Client/building owner notification.** Minnesota requires that clients and rental property owners/landlords be notified in writing in all instances where a health and safety issue is found. This includes, but is not limited to the issues listed in the remainder of this document. Minnesota developed a standard Notice of a Safety Problem form which must be signed by the subgrantee, the client and/or landlord and must be included in the client file.

**Referrals.** In cases where the scope or cost of needed repairs is beyond the range of the weatherization program, subgrantees refer clients to housing rehabilitation programs and other funding sources wherever possible.

In conformance with USDOE rules and guidance, Minnesota includes the following in its Health and Safety Plan:

**Air Conditioning and Heating Systems.** Minnesota does not repair or replace air conditioners for energy conservation purposes. On rare occasions, Minnesota allows the use of Health and Safety funds for repair of medically necessary air conditioning. In order to qualify for a medically necessary air conditioning repair or replacement, the client must provide a signed letter from his or her doctor that justifies the medical need for air conditioning. Medical conditions requiring air conditioning could include but are not limited to asthma, emphysema or heart disease. In the absence of a medical condition, repairs to air conditioning components are allowed only when needed to protect a heat exchanger or other furnace components from water damage.

Minnesota allows the use of Health and Safety funds for the repair and replacement of heating systems. All combustion equipment must be operating safely prior to beginning weatherization work and at the time of the final inspection. Subgrantees first consider if the repair/replacement or clean and tune can be accomplished as an energy saving measure with an SIR of one or greater. Health and Safety funds are used only if the measure does not reach an SIR of one or more and if there is a documented health and safety need.

**Asbestos in Siding, Walls and Ceilings.** Asbestos-containing siding is common and is sometimes referred to as slate siding. This type of siding is presumed to contain asbestos, which remains non-friable as long as it is not crumbled, pulverized or otherwise disturbed and the asbestos remains bound with its matrix. In order to insulate walls in dwellings where asbestos-containing siding is present, the siding must be removed in a manner that allows the siding to remain as intact as possible. Drilling asbestos-containing siding is not allowed. WAP installers are allowed to remove asbestos-containing siding as long as asbestos-safe work practices are performed when doing so. After the walls have been insulated, the siding must be reinstalled in a manner that allows the siding to remain as intact as possible. Keeping asbestos-containing siding intact greatly reduces a health risk to workers or clients. Chipped, cracked or brittle asbestos-containing siding may require that walls be insulated from the interior of the dwelling.

Asbestos-containing siding may be removed from dwellings of five units or less. Dwellings with five or more units fall under EPA asbestos regulations, which have more stringent requirements governing removal. EPA asbestos regulations apply to structures or dwellings used for, or once used for, commercial purposes. Removal of siding from these structures may be allowed once the applicable standards are

determined and applied. If removal of asbestos-containing siding is not necessary, other weatherization measures may be applied to these structures.

Vermiculite insulation in attics is assumed to contain asbestos. The EPA website states that “Currently, there are specific technical issues involving vermiculite sampling that can complicate testing for the presence of asbestos fibers and interpreting the risk from exposure. EPA and ATSDR are not recommending at this time that homeowners have vermiculite attic insulation tested for asbestos.” The Minnesota Department of Health states that “Homeowners should leave vermiculite alone and use a licensed abatement contractor to remove or work in an attic with vermiculite insulation.” The Minnesota Department of Health also requires air monitoring of the home and the attic during work. A study on 37 homes with asbestos present was published by Montana State University on June 30, 2010. The results of this study determined that weatherization work can be completed on homes with asbestos present, but that the cost of the work was beyond the \$1000 average for the Health and Safety Budget. Twenty-two of the 37 houses required asbestos cleaning at an average cost of \$3400. As a result, the clients were required to move out of their house for up to a week.

Additional results of the study revealed that performing weatherization measures has the potential to disturb asbestos-containing materials and disperse asbestos fibers into the living space, presenting a risk to weatherization workers and occupants. Airborne asbestos was detected while weatherization measures were being completed, suggesting that weatherization practices as a whole may contribute to the disturbance and dispersal of asbestos fibers into the air.

Due to conflicting information on asbestos and the practice of treating the dwelling as a system, Commerce has determined that homes with vermiculite insulation in attics may be deferred. Vermiculite may be removed by a licensed abatement contractor. The cost of removal is not allowed using DOE funds.

**Asbestos on Pipes, Furnaces and Other Small Covered Surfaces.** Residential and multi-family heating plants may have asbestos-covered components. Where heating plants are to be replaced as a part of the weatherization process, the replacement (including necessary asbestos abatement) must be the first activity completed. Abatement must be completed by an AHERA-certified asbestos control professional and is an allowed health and safety activity. Clients are provided with asbestos safety information and are instructed not to disturb suspected asbestos-containing material.

**Biologicals.** Subgrantees are continually alert to potential and actual problems with biological contaminants such as mold, moisture, odors, viruses/bacterial and rotting wood. Each energy audit contains a sensory assessment of these issues with photos and other documentation as needed. Auditors and Inspectors are trained how to identify mold and moisture problems. No testing for mold, mildew or other biological contaminants is allowed. In addition, weatherization installers and contractors are also alert to the possibility that biological contaminant issues, not evident at the time of the energy audit, could arise in the course of installing weatherization materials. If post-audit problems are discovered, installers and contractors are required to notify subgrantee staff to determine if weatherization work can continue. Major remediation of such problems is beyond the scope of weatherization and is not allowed with USDOE funding. If a known agent in a dwelling may create a serious risk to occupants or weatherization workers deferral may be necessary.

However, subgrantees are allowed to assess moisture sources and address them using health/safety or general (incidental) repair dollars within Commerce-prescribed cost averages or limits.

**Building Structure and Roofing.** Energy audits include a visual assessment of the existence of any roofing and/or structural problems with photos and other documentation as needed. Minor repairs are

allowed in order to protect the safety of clients and installers both during and after the weatherization process. Dwellings in need of major rehabilitation beyond the scope and cost limits of weatherization are referred to other programs and funding sources. Weatherization activities are either deferred until rehabilitation activities are complete or, in some instances, are completed along with rehabilitation activities.

**Code Compliance.** All weatherization work in Minnesota is required to be completed to the standard contained in the applicable code. This applies in places where codes are actively enforced and as a work standard where code enforcement is lacking. Subgrantee staff is expected to be knowledgeable of code issues and standards in their service area.

Correction of pre-existing code compliance issues is not an allowable expense other than where weatherization measures are being conducted.

**Combustion Appliances/Gases.** Testing of combustion appliances, including heating plants, water heaters, kitchen ranges and space heaters, is required during the energy audit. Acceptable test procedures are included in the Mechanical Field Guide, the Minnesota Weatherization Assistance Program Policy Manual, and supplement documents that can be found on the Department of Commerce website. The policy manual, field guides and supplements provide standards that must be met before weatherization can proceed.

The Minnesota Weatherization Policy Manual requires that all combustion appliances be working safely and dependably prior to the start of weatherization work and at the time of the final inspection. In extreme cases, a family may be asked to leave the dwelling until a problem is remedied. Minnesota does not cover costs for temporary relocation in these instances.

After repairs and/or replacements of heating plants and/or water heaters and repairs of other appliances have been completed, other weatherization activities may continue. Once all weatherization activities are completed, testing is repeated at final inspection. Tests performed at the audit and the final inspection include carbon monoxide in the flue, draft, spillage, and fuel leaks. Every dwelling must pass a worst-case draft/spillage test during the energy audit, before the installers begin work, after installers complete work, and again at final inspection. Required tests are detailed in the following Policy Manual sections: Combustion Appliance Safety, Combustion Appliance Performance Indicators, and Required Weatherization Tests. In compliance with Minnesota law and in accordance with the Minnesota Building Code, carbon monoxide monitors and smoke detectors are installed as needed in all dwellings. Clients are presented with information on combustion safety and hazards, including the importance of using exhaust ventilation when cooking as a part of client education on combustion appliances.

**Drainage.** Major drainage issues are beyond the scope of the Weatherization Assistance Program. Homes with conditions that may create a serious health problem will be deferred or referred to other programs, if appropriate. Gutters, down spouts, extensions, flashings, sump pumps and landscaping, which may address such problems, are not allowed with USDOE Weatherization funds. Clients are notified of such problems in writing. Work must be deferred until these issues are addressed by the client or by other funding sources.

**Electrical – Other Than Knob and Tube.** Weatherization audits in Minnesota assess and document electrical hazards, especially as they pertain to weatherization activities. Both the policy manual and the field guide contain information on how to identify and address electrical issues. Wires are inspected to ensure that they are not bare or frayed. Service boxes are inspected to ensure that they have secure covers. Fuses and breakers are inspected to ensure that they are properly sized for the electrical load of the dwelling. Correcting general electrical wiring problems is generally not an allowable weatherization

measure. However, in instances where electrical issues are directly related to the weatherization process, health and safety funds may be used for repairs. If it is determined that a hazardous situation exists, the problem is corrected before weatherization work commences. If repairs are beyond the scope of the weatherization program to address, subgrantees refer clients to rehabilitation programs and other fund sources where possible. A licensed electrical contractor must perform any electrical work needed to correct a problem.

**Electrical – Knob and Tube.** Minnesota uses health and safety dollars to address knob-and-tube wiring when it has a direct impact on weatherization activities. Any insulation activities completed where knob-and-tube wiring is present must conform to applicable codes. Knob-and-tube wiring repairs/replacements in attics and walls are completed before insulation activities begin. In consultation with Minnesota Board of Electricity, the following are followed:

- Subgrantees must verify if the knob-and-tube system is in service before proceeding with any additional measures.
- Subgrantees must inspect the wiring that will be covered to determine the type(s) of wiring present, the circuit protection, wiring condition, and to identify any other hazards.
- Subgrantees must obtain permission from the homeowner or authorized agent to install proper over-current protection. If permission is not given, insulation cannot be installed.
- Install insulation only as follows:
  - In those areas where knob-and-tube wiring is active, circuits must be protected by properly sized over-current protection;
  - Insulation is to be placed up to a depth of two inches from the underside of the knob-and-tube wiring, provided that an open air space is permanently maintained above such wires; OR
  - Barriers must be installed in such a manner around knob-and-tube wiring to ensure that the insulation shall not directly cover the wiring, and that an adequate air space of at least one inch on all sides is maintained.
  - Document whether sidewall cavities are insulated. Sidewalls containing live knob-and-tube wiring are not allowed to be insulated.
- When knob-and-tube wiring is replaced it must be done in accordance with all state building codes and statutes.

The presence of knob-and-tube wiring may dictate that some insulation activities may not be completed. Clients receive education on the dangers and implications of knob-and-tube wiring in their homes. If knob-and-tube repairs or replacements are beyond the scope of the weatherization program to address, subgrantees refer clients to rehabilitation programs and other funding sources as feasible.

**Fire Hazards.** All energy audits include an assessment of fire hazards within the dwelling. This assessment may include, but is not limited to, clearances to combustibles, creosote build-up, and storage of flammable materials in proximity to combustion appliances. Resolution of these types of hazards may include health and safety measures before or during weatherization activities, depending on the nature and severity of the problem. Clients are educated and informed in writing by all Weatherization staff and workers about potential hazards. Inspectors and Auditors are trained on fire hazards.

**VOCs.** Volatile Organic Compounds (VOCs) are widely used as ingredients in many household products; such as paints, varnishes, fuels; and many cleaning, disinfecting, cosmetic, and hobby products. These products can release organic compounds as vapor when they are used and, to some extent, when they are stored. Formaldehyde is a volatile organic compound found in many building materials and household products, such as new carpets and plywood. These products release the organic compounds over time.

Organic compounds sometimes have adverse health effects on people. At this time, Minnesota does not allow the removal of materials deemed to contain excessive amounts of VOCs.

Because of the potential adverse health effects, local subgrantees must take this into consideration when air-sealing and when deciding on the need for ventilation. Clients must be informed and educated about this potential health issue. If it is not possible to control the VOCs, weatherization work must be deferred. Testing for VOCs is not allowed using DOE funds.

**Prevention of Injury to Occupants.** Subgrantee staff is instructed to be alert to any possible client health issues relevant to a broad range of potential weatherization activities. Energy auditors are the primary staff responsible for identifying such issues, either as a part of the actual energy audit and/or by required interviews with household members. Because these issues may also arise when installers are in the dwelling, they are also trained to identify health and safety issues. Once an issue is identified, subgrantee staff work with the client to address the hazard either directly, through referrals, or deferral of work. All issues, and efforts to resolve them, must be documented in the household electronic file and the paper file and must include a client signature.

In some instances uncorrected hazards could result in injury to weatherization workers or preclude the completion of weatherization measures. In these instances subgrantees are allowed to make minor repairs to enable weatherization activities to be completed, provided they are within the cost limits/averages established by Commerce. Photos and other documentation of the hazard are required.

**Lead-based Paint.** Minnesota requires that all subgrantees use only contractors and installers trained in Lead Safe Work (LSW) in accordance with EPA-certified curriculums by EPA-certified trainers. It is the responsibility of subgrantees to maintain documentation that the requirements for LSW Practices have been met. Minnesota monitors subgrantee compliance with these requirements through training reports and as a part of regular administrative and field monitoring.

Minnesota also requires that subgrantees contract lead renovators who have been trained in accordance with EPA-certified curriculums taught by EPA-certified trainers. It is the responsibility of subgrantees to maintain documentation that lead renovators have met criteria enabling them to oversee the lead-safe setup, work, and clean-up. Minnesota monitors subgrantees compliance with these requirements through training reports and as a part of regular administrative monitoring.

Appropriate containment and clean up procedures must be used to protect occupants from lead-based paint hazards while weatherization work is in-progress, using appropriate containment strategies. Proper notification of the existence of these hazards must be provided to the occupants.

When weatherization work is in progress the following must be followed, as referenced in Weatherization Program Notices WPN 11-6, WPN 09-6, WPN 08-6, and WPN 02-6.

- Crews and contractors must use containment procedures to ensure protection of the occupants.
- Occupants, especially young children or pregnant women, may not enter the work site.
- Occupants are allowed to return only after the work is completed and the dwelling has passed a visual inspection.
- Occupants' belongings must be protected from lead contamination.
- The work site must be set up to prevent the spread of lead dust and debris.
- Warning signs must be posted at entrances to the worksite when occupants are present; at the main and secondary entrances to the building; and at exterior work sites. The signs must be

readable from 20 feet from the edge of the worksite. Signs should be in the occupants' primary language, when practical.

- The work area must be contained.
- If containment cannot be achieved with occupants in the unit, occupants must move out of the unit or the work must be deferred until containment can be achieved. Minnesota does not use USDOE funds for temporary relocation of clients.
- Measures to ensure that containment procedures do not interfere with occupant and worker egress in the case of an emergency must be established.
- Photos and other documentation are required in all dwellings where LSW is used.

Containment procedures must ensure that any dust or debris will not be spread beyond the work area to non-work areas. The level of containment must be determined by the auditor/inspector or supervisor before work is assigned to a crew or contractor.

The level of containment is based on the hazards present, the age of the home, the scope of work activities, and any customer health issues. LSW work generally falls into two levels of containment. Level 1 and Level 2 containment and their related standards are outlined in Weatherization Program Notice WPN 08-6.

**Level 1 containment** is required in pre-1978 homes when *less than* 6 ft<sup>2</sup> of interior painted surface per room, or 20 ft<sup>2</sup> of exterior painted surface will be disturbed. Level 1 containment consists of methods that prevent dust generation and contains all debris generated during the work process. The containment establishes that the work area which must be kept secure. Measures that *may* fall within this guideline include:

- Installing or replacing a thermostat
- Drilling and patching test holes
- Replacing HEPA filters and cleaning HEPA vacuums
- Changing a furnace filter
- Removing caulk or window putty (interior)
- Removing caulk or window putty (exterior)
- Removing weather-stripping

**Level 2 containment** is required when Weatherization activities will disturb *more than* 6 ft<sup>2</sup> of interior surface per room, or 20 ft<sup>2</sup> of exterior surfaces in homes built prior to 1978. Level 2 containment consists of methods that define a work area that will not allow any dust or debris from that work area to spread. Level 2 containment requires the covering of all horizontal surfaces, constructing barrier walls, sealing doorways, covering HVAC registers with approved materials, and closing windows to prevent the spread of dust and debris. Measures requiring Level 2 containment *may* include:

- Drilling holes in interior walls
- Drilling holes in exterior walls
- Removing siding
- Cutting attic access into ceiling or knee walls
- Planing a door in place
- Replacing door jambs and thresholds
- Replacing windows or doors
- Furnace replacements

Level 2 containment must always be used where any of the following is conducted even if the activities will disturb less than the minimum hazard levels within the Level 1 category:

- Window replacement

- Demolition of painted surfaces
- Using open-flame burning or torching
- Using machines to remove paint through high-speed operation without HEPA exhaust control
- Operating a heat gun at temperatures at or above 1100 degrees Fahrenheit

Proper LSW clean-up and disposal of debris is required to adequately clean up the job site. All dust, dirt, material scraps, containers, wrappers, and work-related debris must be removed from the client's home. A HEPA vacuum must be used to clean up the work areas. Further cleaning may be necessary, based on the hazard. Disposal of debris must meet federal, state and local regulations.

A visual inspection by the crew or contractor must be completed to ensure that the cleaning process is complete. Verification is conducted by the Final Inspector at the time of final inspection of the weatherization work. If debris, paint chips, or dust is observed, the weatherization crew or contractor must repeat the cleaning process.

Notification of a lead hazard must be given to all clients in dwellings that come under the LSW guidance. All agencies must give each client the lead notification publication, "Renovate Right – Important Lead Hazard Information for Families, Child Care Providers and Schools". A signed certification of receipt of this notice must be present in the client file.

Monitoring of LSW practices to verify compliance with minimum standards will be completed by review of client files for proper documentation, current certification of workers and client interviews during on-site monitoring visits. Agencies found not to be in compliance with the minimum LSW standards will be provided with the requirements and the appropriate training opportunities to bring them into compliance.

Minnesota will use EPA-certified curriculum and trainers for implementation of the LSW standards stated.

Minnesota follows the EPA requirements under Lead: Renovation, Repair and Painting Program (RRP). Training is required and a certificate is presented upon successful completion. Subgrantees may use T&TA funds to attend a qualified training program of their choice.

**Mold and Moisture.** A major indoor air quality problem is excess moisture or humidity in a home. Too much moisture may result in moisture penetration, condensation, and build-up in walls and ceilings. Moisture accumulation may also cause wood rot. Too much indoor moisture or humidity can also lead to the growth of mold and mildew which can cause adverse health effects for the occupants.

Energy auditors use the following to identify potential moisture problems when assessing a client's home:

- Damp atmosphere or a musty smell in the dwelling, basement, or crawlspace
- Client complaints of allergy-like symptoms
- Mold growth on walls and ceilings, especially in bathrooms and kitchens
- Mold growth on attic roof sheathing
- Signs of condensation on walls or windows
- Water damage or mold on the underside of roof decking
- Evidence of crawlspace moisture
- Rusted metal in basements, crawlspaces, bathrooms and/or kitchens
- Efflorescence (white, powdery deposits) on concrete or masonry surfaces
- Water stains on foundation walls

All homes are visually inspected for existing mold. Although the entire dwelling is inspected for mold, particular attention is paid to the following areas: bathrooms, kitchens, laundry areas, basement walls, ceilings next to exterior walls, attics, and crawlspaces. The mold assessment, completed in tandem with the moisture assessment, is performed by the auditor. Auditors document the presence of mold. Details are filed in the client file and the WA software. The existence of mold is documented to confirm that mold was pre-existing and that weatherization activities were not the cause of mold growth.

When a moisture problem is identified, energy auditors determine the source of the problem and outline solutions or generate specific work order measures to mitigate the problem. Energy auditors inform clients of any mold that is found and of its location. Auditors explain to clients that the auditor is not a mold expert and that the mold assessment was a visual assessment only and that no testing for mold was completed.

Auditors use forms provided by the grantee and the Minnesota Weatherization Assistance (WA) software to document and generate specific health and safety measures that address or alleviate moisture problems. Whole Dwelling, Equipment, and Building Shell tabs within the software detail 41 individual remedies, all addressing health and safety concerns. Many of these are related to moisture issues. The Minnesota Mechanical Systems Field Guide, The Minnesota Weatherization Field Guide and “Do Your Part, A Guide to Help You Understand and Improve Your Home’s Energy Use” give specific suggestions on how to address moisture issues and how to educate a client.

Identifying and solving the source of moisture problems is the first priority when a problem is discovered. The following are possible solutions to moisture problems:

- **Mechanical Ventilation.** One of the main strategies for solving moisture problems in a home is mechanical ventilation. Installing intermittent or continuous ventilation is allowed and may be paid for with Health and Safety funds. Moisture problems may be reduced or eliminated by ventilating areas that routinely generate large moisture loads such as bathrooms, kitchens and laundry areas. Minnesota WAP is poised to meet ASHRAE 62.2 to its fullest extent by September 1, 2012 in homes where acceptable indoor air quality does not exist prior to weatherization, as defined by ASHRAE 62.2. Training for workers will begin in the second calendar quarter of 2012. Commerce has chosen September 1, 2012 as the implementation date due to the significant amount of time lost during the Minnesota state government shutdown in July 2011. Clients are reminded of the importance of using kitchen exhaust fans while cooking and using bathroom exhaust fans after showers or baths. Clients are instructed how to operate the fans properly.
- **Plumbing/Sewer Repairs.** Leaking water pipes and sewer lines cause moisture and pose serious health problems for affected dwellings. Auditors carefully note any problems. Minor repairs may be completed as a part of the weatherization process, provided the repairs are directly related to the completion of weatherization activities and are within the cost limits/averages established by Commerce. Referrals are made to non-weatherization resources that may assist the household in making more substantial repairs to pipes or sewer lines. Cleanup of any unsanitary conditions due to plumbing leaks is the responsibility of the client.
- **Attic Bypass Sealing.** Attic bypass-sealing must be completed on all homes, with the exception of homes that have vermiculite insulation present in the attic. One of the most important benefits of attic bypass-sealing is that it prevents the migration of moisture into the attic where it could cause ice dams, wood rot, and mold growth. Pressure diagnostic measurements are taken on both a ‘pre’ and ‘post’ basis to ensure and measure bypass-sealing effectiveness. Bypass-sealing is completed as an air-sealing measure when it achieves an SIR

of one or more. Health and Safety funds are used only in dwellings where necessary bypass sealing has an SIR of less than one.

- **Crawlspace Ground Moisture Barriers.** Crawlspace moisture can lead to condensation, mold, and rot. Air passing through the soil can contain radon and pesticides. It is important to prevent moisture, radon and other soil gasses from entering the dwelling. This is accomplished by covering the crawlspace ground with an airtight moisture barrier that establishes an air barrier and seals out water vapor and soil gasses.
- **Bulk Water Control.** Health and Safety dollars may be used to make repairs to deteriorated windows, doors, roofs and other framing members where such repairs are needed to eliminate or prevent moisture or water from entering the dwelling. These repairs are allowed, when necessary to address moisture sources that create health/safety hazards in the dwelling. Doors, window sash or total window replacements are not considered health and safety activities. Replacement of doors for any reason must be approved by the State.
- **Client Education.** Auditors provide general education to all clients regarding high indoor moisture levels or actual moisture penetration, including the cause of moisture problems and how to avoid moisture problems. Subgrantees provide the booklet, Do Your Part, A Guide to Help You Understand and Improve Your Home's Energy Use to clients. This booklet explains WAP and provides guidance on health and safety topics including moisture issues. Do Your Part is presented at the audit during the one-on-one client education interaction between the auditor and the client. Clients are taught how to maintain acceptable relative humidity levels in the dwelling and how to operate any newly-installed bath and/or kitchen fans.

Energy auditors educate clients on moisture if they identify practices that might result in high moisture levels in the home. The following are client practices which may have an effect on the moisture levels:

- Cooking and use of kitchen exhaust fans
- Bathing, showering and use of bathroom exhaust fans Proper use and placement of humidifiers and dehumidifiers
- Indoor plants
- Aquariums
- Storage of firewood inside the dwelling or attached garage
- Plastic window covers
- Keeping gutters clean
- Leaky plumbing or fixtures
- Site drainage
- Sump Pumps

If moisture problems in a dwelling are severe and cannot be resolved under existing allowable Health and Safety measures or repair allowances, subgrantee auditors must explain to clients that weatherization measures could make the situation worse (e.g. attic and wall insulation and high-efficient furnace installation) and may not be completed until moisture problems are remedied by the client or landlord. Weatherization measures that do not disturb mold or exacerbate existing moisture problems may be completed with prior approval from Commerce in certain circumstances.

**Mold Remediation.** Controlling moisture is critical to controlling mold. If mold is found in a home, it is likely the result of moisture, excessive humidity or water intrusion. Moisture problems must be solved before any mold problem is addressed.

If the auditor determines that moisture problems can be solved satisfactorily, the subgrantee may determine that the mold will not be disturbed by weatherization activities and work may proceed without the need for remediating the mold.

The subgrantee may defer any work on the home until the mold is remediated by the client or landlord. This policy is recommended if there are large areas of mold growth. If the auditor determines the moisture problem cannot be satisfactorily eliminated, weatherization work must be deferred.

**Mold Clean-up Information and Referrals.** If the weatherization work can be completed without disturbing mold/mildew, or if cleanup is not required, work may be completed at the discretion of the auditor or program manager. If cleanup is required, information and cleanup procedures will be provided to the client.

Information sources for mold clean up include but are not limited to the University of Minnesota Extension Service, FEMA, Minnesota Department of Health, and Canada Mortgage and Housing Corporation. Procedures are designed to protect the health of the occupants and cleanup personnel during remediation.

**Existing Occupant Health Problems.** Subgrantee staff is instructed to be alert to any possible client health issues relevant to a broad range of potential weatherization activities. Every energy audit includes a client interview aimed at identifying existing or known client health problems. Energy auditors are the primary staff responsible for identifying health issues either as a part of the actual energy audit and/or by required interviews with household members. Because these issues may also arise when installers are in the dwelling, installers are trained to identify health and safety issues. Once an issue is identified, subgrantee staff works with the client to deal with the hazard through referrals or deferrals of work. All issues and efforts to resolve health hazards are documented in the household electronic and/or paper file.

**OSHA.** The Minnesota Weatherization Policy Manual addresses not only compliance with OSHA (29 CFR 1910 and 1926) regulations, but also local health and safety plans and use of Material Safety Data Sheets. Subgrantees are required to provide or arrange for worker safety training for their staff at least once during each program year. Such training must meet the 10 and 30 hour training requirement specified by OSHA. State administrative monitoring activities confirm that subgrantees have met the OSHA requirements.

**Pests.** A Subgrantee may choose not to weatherize a dwelling unit if there are vermin, or if unsanitary or other health and safety problems on the property that present a hazard to the weatherization workers. Pest removal and clean-up of pest deposits are not allowed activities. Subgrantees are encouraged to defer weatherization until the problem can be resolved. Example: Stinging insects are not active in colder weather so weatherization may be deferred until after temperatures are consistently at or below freezing if stinging insects are found.

If there is a menacing domestic animal in a dwelling or if the worker is uncomfortable around the animal, weatherization workers may require the client to restrain the animal before proceeding with weatherization. If the client refuses, weatherization workers may document the situation and defer the work until the situation is resolved.

Animal bites should be immediately responded to and reported. If necessary, workers seek medical care. If a worker is bitten by a bat, an attempt should be made to kill the bat without destroying the head. The bat should be placed in plastic and shipped to a local lab to test for rabies.

**Radon.** Radon assessments are not part of weatherization in Minnesota. Dwellings with previously identified radon problems should not be left with an increased negative pressure in the contaminated area after weatherization work. Radon education is included in client education. Vapor barriers are installed in dwellings with accessible crawlspaces where there is exposed soil.

**Refrigerant Issues:** Refrigerator replacements may be completed using USDOE funds. The cost of disposal of the appliance (including refrigerant) may be included in the replacement measure providing it does not drop the measure SIR below one. If the replacement measure SIR drops below one, the cost of reclaiming the refrigerant may be covered as a health and safety cost. Refrigeration appliances that are replaced must be disposed of according to the environmental standards in the Clean Air Act (1990), Section 608, as amended by the Final Rule, 40 CFR 82, May 14, 1993. The party recovering the refrigerant must possess an EPA-approved Section 608 Type II license or an approved universal certification. Clients should be cautioned not to disturb refrigerant.

**Smoke, Carbon Monoxide (CO) Detectors.** Installation of both smoke and CO detectors and/or alarms is required when absent, inoperable or expired. Replacement of operable non-expired units is not allowed. Service Providers are required to meet State and local fire codes for the number and placement of installed units. Energy Auditors are required to educate the client on operating procedures, care and replacement of units.

**Solid Fuel Heating.** Minnesota allows the replacement or repair of indoor primary solid fuel heating plants only with prior approval from Commerce and only if occupant Health and Safety is at risk. Only repairs are allowed for secondary units and must be justified for documented health and safety reasons.

**Space Heaters - Electric Stand Alone.** Minnesota does not allow repairs or replacements of electric standalone units. Energy Auditors are strongly encouraged to educate clients about their high cost and safety issues related to their use.

**Space Heaters - Vented.** Repair and replacement of vented primary heat space heaters are allowed only with prior approval from Commerce.

**Space Heaters - Unvented.** Repair, replacement, or removal of unvented space heaters is not allowed using DOE funds. However, removal of units not meeting ANSI Z 21.11.2 is required prior to beginning weatherization activities. Weatherization activities are deferred until the removal is complete.

**Spray Polyurethane.** Minnesota allows the use of spray polyurethane, particularly in rim joists, as long as it is installed in compliance with the applicable building codes and statutes. Subgrantees are required to use the EPA-recommended installation process in all instances. Prior approval from Commerce must be obtained for the use of spray polyurethane on foundation walls and crawl spaces.

**Ventilation.** One of the main strategies for solving moisture problems in a home is mechanical ventilation. Installing intermittent or continuous ventilation is allowed and may be paid for with Health and Safety funds. Moisture problems may be reduced or eliminated by ventilating areas that routinely generate large moisture loads such as bathrooms, kitchens and laundry areas. Minnesota WAP is poised to meet ASHRAE 62.2 to its fullest extent by September 1, 2012 in homes where acceptable indoor air quality does not exist prior to weatherization, as defined by ASHRAE 62.2. Training for workers will begin in the second quarter of 2012. Commerce has chosen September 1, 2012 as the implementation date due to the significant amount of time lost during the state government shutdown in July 2011.

**Window and door replacement.** Window and door replacement, repair, or installation is not an allowable health and safety cost.

**Deferral/Walk-away.** All weatherization staff is trained to identify actual and potential hazards in client dwellings. Subgrantee staff is allowed to walk away from any dwelling that is unsafe, or to make reasonable efforts to correct the hazard (either directly or via referral) so that weatherization of the dwelling may proceed. The Minnesota Weatherization Policy Manual (also incorporated by reference into all subgrantee contracts) contains a walk-away policy that delineates the circumstances in which a subgrantee may choose to walk away when necessary. The policy requires that a subgrantee make a documented determination that circumstances exist which prevent weatherization activities from proceeding. The policy also requires that the subgrantee inform the client and landlord (if rental property) of the problem in writing. The notice must specify what corrective actions will be required in order for weatherization to proceed. A time frame for all corrective actions must be stated in the written notice. The written notice must inform the client of their right to appeal the local decision. A copy of the written notice and any other notes or communication related to the circumstances of the case must be placed in the household file.

**III.5 Rental Procedures:** The following rental procedures apply in Minnesota:

- The Minnesota Weatherization Policy Manual requires subgrantees to have in place procedures that ensure eligible households are served according to their priority, whether or not the eligible household rents or owns the dwelling. Subgrantees' procedures are reviewed by the State WAP office. Minnesota's tenant eviction policy is specified in the Landlord Agreement. The agreement states that the landlord agrees not to evict the tenant(s) during the period of the agreement except for documented cause or raise the rent due to weatherization measures. The landlord agreement also protects the tenant's rights if the property is sold during the term of the agreement. Minnesota does not have other restrictions or lien requirements.
- Subgrantee managers work on a case-by-case basis with rental property owners to ensure and document that any WAP benefit to a rental building or dwelling will be directed to the eligible low income occupants receiving conservation measures through USDOE, EAP/WX, or CIP funds. Updated policies covering rental properties are included in the new Weatherization Policy Manual. Requirements and forms for written permission from the owner/landlord prior to the start of any weatherization activities, including the dwelling's energy audit, must be included in the work file. Additionally, wherever possible, documentation regarding any owner/landlord contribution to the WAP project and assurance that rent will not increase due to weatherization work should be included in the landlord agreement.
- Renters have the right to appeal any rent increases they think do not meet the requirement stated above. The appeal follows the Minnesota Policy Manual. Renters must contact the subgrantee in writing. The subgrantee must respond within thirty days. If the renter is not satisfied with the response, they may appeal to the state Weatherization office. The state office must respond to the renter within thirty days. If the renter is not satisfied with that response, he or she may appeal to the Office of Administrative Hearings. An Administrative Law Judge will preside over that hearing and render a ruling.
- Minnesota encourages, but does not require financial participation of a landlord as a requirement for weatherization of a rental property.
- Minnesota does not offer alternative dispute resolution or arbitration procedures in addition to the tenant rights under the building owner agreement.
- Minnesota allows subgrantees to weatherize shelters following 10 CFR 440.22(f) requirements.