Department of Commerce
Innovation is in our nature.

Weatherization Manual
For Managing the
Low-Income Weatherization Program

Policies and Procedures
Specifications and Standards
Supporting Documents

for
United States Department of Energy
United States Department of Health and Human Services
Bonneville Power Administration
and
Matchmakers

Prepared By:
Washington State Department of Commerce
Community Services and Housing Division

April 2009 Edition

(with 2010 revisions)

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WEATHERIZATION WORKS

Policies and Procedures For Managing the Low-Income Weatherization Program

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CHAPTER I ELIGIBLE CLIENTS AND DWELLINGS

SECTION 1.1 OUTREACH TO ELIGIBLE CLIENTS

A. Policy

Local agencies will provide weatherization program information to eligible households in their service area and ensure that those who want to apply have an opportunity to do so.

1. Special efforts will be made to inform households with members who are either:

   a. Elderly (60 years of age or older).

   b. Persons with disabilities.

   c. Children under six years of age.

   d. Household with incomes at or below 125% of federal poverty guidelines.

   e. Hindered by communication barriers, such as those who do not understand English or do not have easy access to common public news media.

   f. Native American, with particular emphasis on households residing on reservations.

2. Two priority categories have been added to provide flexibility to maximize program effectiveness.

   a. High residential energy users.

   b. Households with high-energy burden.

   These are in no way mandatory and may be used in lieu of, or in any combination with, the existing priority categories. With these additional categories, local agencies may be better able to partner with utilities and other programs to leverage additional resources into their programs.

B. Procedure

Local agencies may use a variety of outreach methods, including:

1. Informing organizations or advocacy groups that have a special interest in, or regular contact with, persons characterized above.

2. Arranging for applications to be taken by, or at the site of, those organizations or advocacy groups.

3. Placing multi-lingual posters and materials describing the program in public areas and buildings.

4. Placing TV and radio ads to reach people who cannot read and those with limited English skills.

5. Providing interpreters for non-English speaking applicants or applicants with communications handicaps.

6. Working with energy vendors on providing customers with program information.

SECTION 1.1.1 REQUIREMENTS FOR SERVICES TO LOW-INCOME NATIVE AMERICANS

A. Policy

1. Local agencies must serve low-income Native Americans in the local agency's service area, with particular emphasis on households residing on reservations.

2. Funds will be used to weatherize dwelling units of eligible low-income tribal members in proportion at least equal to the eligible non-Native American, low-income population in the local agency's area.

   a. Commerce will refer to current census data on low-income Native Americans in relationship to the general low-income population per service area when monitoring agency performance. See **Exhibit 1.1.1A, *Percent of Native American Low-Income Households***.

   b. Commerce will refer to this data when counting weatherization units reported as complete to determine whether the above requirement is being met by local agencies.

   c. Local agencies with BPA funds may apply for additional weatherization funds through the Tribal Set-Aside Program to serve specific tribal members.

B. Procedure

1. Local agencies may use a variety of outreach methods, such as those listed in **Section 1.1, *Outreach to Eligible Clients***. In some areas, special outreach efforts may be required to achieve desired service levels, such as speaking at tribal community meetings.

2. See **Exhibit 1.1.1A, *Percent of Native American Low-Income Households.***

SECTION 1.2 DETERMINING CLIENT INCOME ELIGIBILITY

A. Policy

Local agencies must follow the income eligibility guidelines for the Washington State Energy Assistance Program/Low Income Home Energy Assistance Program (LIHEAP) to determine types of eligible income, how to document income, and other eligibility rules. For length of Weatherization eligibility see **Section 1.3, *Period of Eligibility***.

1. Households must be determined income eligible prior to receiving weatherization services.

2. Commerce uses federal poverty guidelines issued by the United States Department of Health and Human Services (HHS) to establish client eligibility for the Low-Income Weatherization Assistance Program. HHS guidelines allow local agencies flexibility to consider the cost of living and higher cost of housing in some parts of the state.

   a. Highest priority will be given to households with incomes not exceeding 125 percent of federal poverty guidelines.

   b. Income received by all household members must not exceed 200 percent of federal poverty guidelines or 60 percent of state median income, whichever is greater.

   c. Local agencies must plan and document community outreach efforts to serve lowest income households, defined by 2.a., prior to serving others.

~~3.~~ HHS guidelines are issued annually. Commerce provides annual updates of the federal poverty guidelines to local agencies. See ***Weatherization Eligibility Guidelines*** on Commerce's Weatherization page.

   The period of time used to document the household's income may be three or 12 months prior to the date of application.

   a. When three months of income are used, it will be converted to an estimated annual wage by multiplying the most recent three months of income by four.

   b. If the household is determined to be ineligible based on the average income for three months, the applicant must be notified that 12 months of documentation may be provided to redetermine eligibility.

4. All qualified aliens, regardless of when they entered the United States, continue to be eligible to receive assistance and services under the Weatherization Assistance Program if they meet other program requirements.

   When the Department of Justice (DOJ) publishes proposed rule 63 FR 41662 ("Proposed Rule on Verification of Eligibility for Public Benefits), issued in 1998, those agencies which are designated as local government agencies operating the Weatherization Program must conduct citizen "status verification". Under the DOJ ruling, local agencies subject to this ruling have two years to fully implement this procedure after the publication date of the final rule. As of this date the final rule has not yet been issued.

B. Procedure

1. Client files must include documentation of all income considered for determining eligibility.

2. See ***Weatherization Eligibility Guidelines*** on Commerce's Weatherization page.

3. See **Section 1.2.1, *Policies for Income Eligibility Guidelines Other than 125 Percent of Federal Poverty Guidelines***, as applicable.

4. See **Exhibit 1.2A, *Sample Income Guidelines Comparison***. Contact Commerce for current comparison information.

5. See **Exhibit 1.2B, *Explanation of Different Federal Low-Income Guidelines***.

6. See **Chapter 2, *Income Eligibility Standards and Documentation*.**

SECTION 1.2.1 POLICIES FOR INCOME ELIGIBILITY GUIDELINES OTHER THAN 125 PERCENT OF FEDERAL POVERTY GUIDELINES

A. Policy

1. Preference is given to households with income at or below 125 percent of federal poverty guidelines. Additional clients can be served at a lower priority when household income is between 125 percent federal poverty guidelines and 200 percent federal poverty guidelines or 60 percent of state median income, whichever is greater. Commerce provides income eligibility guidelines to local agencies annually.

   a. **Exhibit 1.2A, *Sample Income Guidelines Comparison***, incorporates both the 125 percent federal poverty guidelines and 125 percent annual income for wage earners with the 60 percent of state median and 50 percent of area median income guidelines.

   b. **Exhibit 1.2B, *Explanation of Different Federal Low-Income Guidelines***, provides detailed income guideline information and links to corresponding Web sites.

   c. Commerce provides income eligibility guidelines, including current 200 percent federal poverty guidelines, to local agencies annually.

2. Local agencies serving households above 125 percent of poverty must:

   a. Define and document income eligibility criteria and procedures. This plan must ensure that households at 125 percent of poverty are served first.

   b. Retain a current waiting list of households whose income is at or below 125 percent of poverty.

   c. Show Commerce, when it monitors your agency, efforts made to market and identify households at or below 125 percent of poverty.

   d. Maintain a way to track clients above 125 percent of poverty guidelines.

3. Using 125 percent of poverty guidelines is always acceptable. If you exceed 125 percent of poverty guidelines, you may use 200 percent federal poverty guidelines or 60 percent of state median income as the limit, whichever is greater.

4. Income exclusions:

   a. For 125 percent poverty guidelines, all current income exclusions apply.

      These income exclusions can be found in **Chapter 2, *Income Eligibility Standards and Documentation*** and in **LIHEAP Policy 205, *Defining Types of Income, Exclusions and Deductions*** of the ***Energy Assistance Polices and Procedures***.

   b. For 200 percent federal poverty guidelines and 60 percent of state median income, all income exclusions apply **except:**

      (1) 20 percent allowance for wage earner.

      (2) 10 percent retirement deduction.

      (3) 10 percent deduction for unemployment benefits.

5. Eligible client income must not exceed 200 percent of federal poverty guidelines or 60 percent of state median income, whichever is greater.

B. Procedure

6. Retain a current waiting list of households whose income is at or below 125 percent of poverty.

1. Document efforts made to market and identify households at or below 125 percent of poverty.

2. Track clients served above 125 percent of poverty guidelines.

3. See **Exhibit 1.2A, *Sample Income Guidelines Comparison***. Contact Commerce for current comparison information.

4. See **Exhibit 1.2B, *Explanation of Different Federal Low-Income Guidelines***.

5. See ***Weatherization Eligibility Guidelines*** on Commerce's Weatherization page.

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SECTION 1.3 PERIOD OF ELIGIBILITY

A. Policy

1. An applicant will remain eligible for weatherization services for 12 months from the date of verified eligibility.

2. If weatherization work is expected to begin between 12 and 15 months from the date of verified eligibility, the household must show continued eligibility.

   A signed declaration of income statement for the previous three months may be used to update application if necessary.

3. If weatherization work has not begun after 15 months from the date of application, the household must reapply in full.

   Weatherization work begins on the date of initial energy audit.

B. Procedure

Client files must include a signed declaration of income statement for the previous three months as applicable.

SECTION 1.4 APPLICANT ELIGIBILITY: OWNERS OR TENANTS

A. Policy

1. Eligible applicants must be owners or tenants of single or multi-family homes, apartments, mobile homes, shelters, or other group facilities that are qualified by Commerce and its funding agencies.

2. If the household is renting, a property owner/agency agreement must be signed by the owner or authorized agent of the building and included in the applicant household file before weatherization work begins. This includes residences designated as existing Section 8 housing. See **Section 1.4.1, *Use and Monitoring of Property Owner/Agency Agreements***, for agreement forms for single and multi-family residences.

3. Additional policies for qualifying clients and dwellings, income standards, verification and documentation are described in **Chapter 2, *Income Eligibility Standards and Documentation*** and **Chapter 3, *Verification of Residence and Household***.

B. Procedure

1. Client files must include signed copies of appropriate property owner/agency agreement forms. See **exhibits 1.4.1A, *Weatherization Program Property Owner/Agency Agreement*** and **1.4.1B, *Weatherization Program Property Owner/Agency Agreement For Multi-Family Buildings***.

2. See **Chapter 2, *Income Eligibility Standards and Documentation***.

3. See **Chapter 3, *Verification of Residence and Household***.

SECTION 1.4.1 USE AND MONITORING OF PROPERTY OWNER/AGENCY AGREEMENTS

A. Policy

1. Local agencies will use the property owner/agency agreements provided by Commerce for all rental units. See exhibits **1.4.1A, *Weatherization Program Property Owner/Agency Agreement*** and **1.4.1B, *Weatherization Program Property Owner/Agency Agreement For Multi-Family Buildings***.

   a. Local agencies will not amend these agreements without Commerce's written approval.

   b. Local agencies will make every effort to contact property owners directly to discuss the Agreement, its conditions, and the benefits of weatherization to them and their rental tenants.

   c. Owner contributions are expected. Keep total investment in mind, including refrigerator replacement, when securing leveraging dollars.

2. Local agencies may implement covenant restrictions at their local discretion.

3. Local agencies must provide the following brochures before weatherization work is begun:

   a. **Exhibit 1.4.1C, *Owner-Agency Agreement & the Weatherization Assistance Program***. Local agencies must provide a copy of this brochure to property owners to help market the agreements.

   b. **Exhibit 1.4.1D, *Tenant Rights & the Weatherization Assistance Program***. Local agencies must provide this brochure to tenants to inform them of their rights following weatherization of their dwelling units.

B. Procedure

1. Client files must include the following documentation:

   a. Signed copies of appropriate property owner/agency agreement forms.

   b. Reasons for not securing owner contributions, as applicable.

2. Provisions of the property owner and tenant brochures must be included in the local agency pre-weatherization process.

3. See exhibits **1.4.1A, *Weatherization Program Property Owner/Agency Agreement*** and **1.4.1B, *Weatherization Program Property Owner/Agency Agreement for Multi-Family Buildings***.

SECTION 1.5 QUALIFYING MULTI-UNIT RESIDENCES

A. Policy

1. Local agencies may weatherize a multi-unit building containing rental dwelling units using funds provided for eligible households when:

   a. The owner has signed a property owner/agency agreement (see **Section 1.4.1, *Use and Monitoring of Property Owner/Agency Agreements***) authorizing the weatherization work, accepting conditions protecting the interests of tenants, and other provisions required by Commerce and the local agency.

   b. Not less than 66 percent (50 percent for duplexes and four-plexes, and certain eligible types of multi-family buildings) of the resident households of the building are either of the following:

      (1) Currently eligible.

      (2) Will become eligible within 180 days.

   c. Low-income occupancy falls between 50 and 66 percent and additional funds are leveraged from property owners, utilities, or other sources.

2. DOE Fund Restrictions

   The maximum amount of DOE funds that can be used will be the lesser of either one of the following:

   a. The percentage of low-income eligible units times the total allowable weatherization costs (estimated in the initial audit).

   b. The number of eligible units multiplied by the maximum average allowable cost per unit.

3. Multi-family dwellings with less than 50 percent low-income eligibility that also have leveraged funds must obtain prior written approval from Commerce.

4. Subsidized housing within the Housing Trust Fund portfolio is given a high priority for weatherization. **Section 1.8, *Subsidized Housing Weatherization***, provides information specifically referring to these structures.

B. Procedure

1. Project files must include the following documentation:

   a. A signed copy of the appropriate property owner/agency agreement.

   b. For projects with less than 50 percent low-income eligibility and leveraged funds, a copy of Commerce approval.

2. See **Section 1.8, *Subsidized Housing Weatherization***, as applicable.

SECTION 1.6 INELIGIBLE RESIDENCES AND EXCEPTIONS

A. Policy

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

2. No renter-occupied residence shall be weatherized if it is being offered for sale, unless both of the following apply:

   a. It can be demonstrated that the residence will continue to be occupied by eligible tenants.

   b. Weatherization work performed is not incorporated into the sale price.

3. No institutional buildings (university, nursing home, hospital, motel, etc.) are to be weatherized, except as noted in **Section 1.7, *Shelters, Group Homes, and Transitional Facilities***.

   If a local agency wishes to weatherize an institutional building due to unusual circumstances (excluding exceptions described in **Section 1.7**), the local agency must have prior written approval from Commerce.

4. Fund Restrictions and Exceptions

   a. DOE Restrictions

      (1) No funds shall be used to install or provide materials for a dwelling unit previously weatherized (re-weatherization) unless:

         (a) The dwelling unit has been damaged by fire, flood, or act of nature and repair of the damage to the weatherization materials is not paid for by insurance.

         (b) The dwelling unit was weatherized prior to September 30, 1993. Each dwelling unit weatherized prior to September 30, 1993 must receive a new energy audit, which takes into account any previous energy conservation improvements to the dwelling.

         (c) The service is to provide eligible low-cost/no-cost weatherization materials.

      (2) No funds will be used to improve the value of units designated for acquisition or clearance by a federal, state, or local program within 12 months from the date weatherization of the dwelling unit would be scheduled for completion.

b. Other Fund Sources

Taking into account any previous energy conservation improvements, regardless of when a home was weatherized or other fund sources used:

(1) BPA funds may be used to provide additional cost effective weatherization *on electrically heated homes*.

(2) LIHEAP and Matchmakers may be used to provide additional cost effective weatherization.

B. Procedure

1. Client files must include the following documentation:

   a. For renter-occupied residences offered for sale, verification of the following:

      (1) Residence will continue to be occupied by eligible tenants.

      (2) Weatherization work performed is not incorporated into the sale price.

   b. For institutional buildings, a copy of Commerce approved waiver request.

   c. For re-weatherization provided with DOE funds, verification of the following:

      (1) Repair of damage to weatherization materials by fire, flood, or act of nature is not covered by insurance.

      (2) Weatherization occurred prior to September 30, 1993.

      (3) Service provided eligible low-cost/no-cost weatherization materials.

2. See **Section 1.7, *Shelters, Group Homes, and Transitional Facilities*,** as applicable.

SECTION 1.7 SHELTERS, GROUP HOMES, AND TRANSITIONAL FACILITIES

A. Policy

1. A local agency may weatherize an emergency shelter, group home, or similar facility for long- or short-term residents, provided the owner or organization and residents of the dwelling units meet prescribed building and income eligibility requirements.

    a. Local agencies will document individual resident income verification unless there is such a high rate of turnover among residents that documentation of individual resident eligibility is impractical (see below, policy 1.b.).

    b. When documentation of individual resident income eligibility is impractical, operators of eligible facilities must complete **Exhibit 1.7A, *Weatherization Assistance Program Application for Shelters, Group Homes, and Transitional Facilities***, with the following supporting documentation:

        (1) A signed statement from the facility operator attesting that the individuals/households residing in the facility are income eligible.

        (2) A copy of the organization's income guidelines or a copy of the organization's mission statement in lieu of individual resident income verification.

2. DOE Fund Restrictions. For the purpose of determining how many dwelling units exist in a shelter, local agencies may count one of the following as a dwelling unit:

    a. Each 800 square feet

    b. Each floor

B. Procedure

1. Project files must include the following documentation, if applicable:

    a. Verification of individual resident's income eligibility.

    b. A copy of **Exhibit 1.7A, *Weatherization Assistance Program Application for Shelters, Group Homes, and Transitional Facilities*** , with the following supporting documentation:

        (1) A signed statement from the facility operator attesting that individuals/households residing in the facility are income eligible.

        (2) A copy of the organization's income guidelines or a copy of the organization's mission statement in lieu of individual resident income verification.

2. See **Exhibit 1.7A, *Weatherization Assistance Program Application for Shelters, Group Homes, and Transitional Facilities***.

3. See **Chapter 8, *Program Management, Administration, and Reporting***, for reporting requirements.

SECTION 1.8 SUBSIDIZED HOUSING WEATHERIZATION

A. Policy

Subsidized housing shall be weatherized only if it directly benefits tenants. Direct benefits must be documented in the client file and in prior notification to Commerce. Direct benefits to the tenant include but are not limited to, economic, preserved low-income housing, added comfort, and improved indoor air quality.

1. Non-subsidized housing and nonprofit subsidized housing have equal priority for weatherization.

   This policy applies to the following types of Subsidized Housing:

   a. All conventional public housing.

   b. Federally subsidized housing:

      (1) **Housing and Urban Development (HUD)**.

      (2) **United States Department of Agriculture (USDA) Rural Development.**

      (3) **Section 8 Housing Choice Vouchers (HUD)**

2. Commerce recognizes the extensive variations in public and private subsidies that exist for rental houses and tenants, and relies on the discretion of local agencies to judge local situations.

   a. Non-subsidized housing and nonprofit subsidized housing with Housing Trust Fund investment will be given preference over public and privately owned subsidized housing for weatherization.

   b. Local agencies will apply the following guidelines for subsidized housing, in order of priority:

      (1) Nonprofit housing when the organization can document its commitment to:

         (a) Retain the unit as low-income housing for at least ten years.

         (b) Perform necessary maintenance to maximize the health, safety, and energy efficiency of the unit.

         (c) Distribute consumer conservation education information on how to sustain a healthy, safe and energy efficient home.

(2) Public housing is defined as units owned by a public housing authority where tenants pay a percentage of income for rent and utilities.

(3) Private federally subsidized housing is defined as units owned by a private developer who received financial benefits from the government to develop and/or maintain the project.

(4) Other funding options for weatherization of subsidized housing:

(a) Owners/managers of public or private subsidized homes that have access to other funding sources for weatherization such as personal resources, flexible subsidy funds, or **USDA Rural Development** must make every effort to use those funds before local agencies can consider weatherizing their units with funds from Commerce. Applicants must document the lack of funds, which will be included in the client files.

(5) Subsidized tenants receiving rental or utility subsidies under **Section 8 HUD programs** may qualify when local agencies can be assured all of the following conditions are met:

(a) The property owner does not have access to **HUD** or **USDA Rural Development** funds. Local agencies may give preference to clients without subsidy on the waiting list.

B. Procedure

Client files must include the following documentation:

1. Direct benefit for tenants.
2. Lack of alternative funds for owners/managers of public or private subsidized homes, such as personal resources, flexible subsidy funds, or **USDA Rural Development.**
3. For subsidized tenants receiving rental or utility subsidies under **Section 8 HUD programs,** no access for the property owner to **HUD** or **USDA Rural Development** funds.

SECTION 1.9 HISTORIC PRESERVATION REVIEW

A. Policy

1. Local agencies that undertake weatherization work with funding from Commerce must ensure that properties listed on or eligible for the National Register of Historic Places abide by the Secretary of the Interior's **Standards for Historic Preservation as required under 36 CFR 800** and the **National Historic Preservation Act (NHPA) of 1966**.

   Washington State's **Department of Archaeology and Historical Preservation (DAHP)** provides guidance for these standards.

2. DAHP's policy applies to all weatherization programs, including DOE, HHS, BPA, and the MM program.

3. Failure to comply with this policy will result in disallowed costs.

B. Procedure

1. Client files must include a copy of **Exhibit 1.9A, *Historic Preservation Checklist*** and the following forms, if applicable.

   a. **DAHP's Determination of Eligibility Form – *EZ2***.

   b. **DAHP's Building Rehabilitation Worksheet – *EZ3***.

2. See **National Park Service (NPS) *Preservation Brief 3, Conserving Energy in Historic Buildings***. The brief contains information on energy conservation for historic buildings, with specific recommendations for positive results in the weatherization of structures. Please share this material with staff, crew, and subcontractors. *To access the brief, open the above link and do the following: type "Preservation Brief 3" in the Search box, click on "Search nps.gov", and click on "Go".*

3. See **NPS Preservation *Brief 9, The Repair of Historic Wooden Windows***. The brief contains information on weatherization and window replacement. Please share this material with staff, crew, and subcontractors. *To access the brief, open the above link and do the following: type "Preservation Brief 9" in the Search box, click on "Search nps.gov", and click on "Go".*

4. See the **Secretary of the Interior's *Standards for Rehabilitation***. These are the guidelines DAHP will follow for window treatments. Please share this material with staff, crew, and subcontractors. *To access the standards, open the above link and do the following: type "Secretary of the Interior's Standards for Rehabilitation" in the Search box, click on "Search nps.gov", and click on "Go".*

SECTION 1.10 NOTIFICATION OF LEAD-BASED PAINT HAZARDS

A. Policy

All weatherization agencies must comply with the requirements of Environmental Protection Agency (EPA) *Final Rule, 40 CFR Part 745, Subpart E, Residential Property Renovation, Pre-Renovation Lead Information Rule* or applicable state Washington Administrative Code (WAC).

1. A lead hazard information pamphlet and written notification of the scope, location, and expected starting and completion dates of proposed work will be provided to owners and tenants of homes and multi-family housing built prior to 1978. If a determination is made in accordance with applicable EPA rules that lead-based paint is not present in the areas affected by the proposed work, a copy of the determination must be included with the notice.

    a. Local agencies will provide the EPA pamphlet, *Renovate Right* or reproductions of it when copied and presented in full before renovation activities begin.

    b. Notification will be provided in the native language of the client if EPA has made non-English versions of the pamphlet available. If a pamphlet in the client's native language is not available, the English version shall be presented.

    c. Notification by certified mail must be provided no more than 60 days and no fewer than seven days before renovation activities begin. The notification requirement applies even if only common areas, and not individual dwelling units, will have worked performed.

2. Local agencies must secure written acknowledgement that the owner has received notification. If the property is a rental, local agencies must obtain written acknowledgment from the tenant head of household. See the *EPA Small Entity Guide to Renovate Right*.

    If local agencies are unable to secure written acknowledgement from an adult occupant, the local agencies must comply with one of the following:

    a. Certify in writing that notification has been delivered to the dwelling and that the local agency has been unsuccessful in obtaining a written acknowledgment. See the Future Sample Pre-Renovation Form as found in the EPA pamphlet, *Renovate Right*.

    b. Obtain a certificate of mailing at least seven days prior to the renovation.

3. All homes must receive a comprehensive, on-site, home energy audit prior to receiving weatherization services. Include the cost of this audit in the average cost per home.

B. Procedure

1. Client files must include the following documentation, as applicable:

   a. Determination that lead-based paint is not present in the area affected by the renovation.

   b. Signed and dated acknowledgments of receipt of notification.

   c. Certifications of attempted delivery.

   d. Certificates of mailing.

   e. Records of notification activities performed regarding common area renovations for multi-family housing.

2. Continue to comply with the EPA (**www.epa.gov**) Pre-Renovation Education Rule by reference to 40 CFR Subpart E, § 745.84; Information distribution requirements. Check with state, county and local municipalities for applicable local regulations. .

CHAPTER 2 INCOME ELIGIBILITY STANDARDS AND DOCUMENTATION

A. Policy

1. The Weatherization Program follows the Washington State Energy Assistance Program/Low Income Home Energy Assistance Program (LIHEAP) income eligibility guidelines. These guidelines allow the Weatherization Program to recognize differences in the cost of living and higher cost of housing in some parts of the state. See **LIHEAP Policy 205, *Defining Types of Income, Exclusions and Deductions*** and **LIHEAP Policy 504, *Determining Income Eligibility of Household Members***.

2. When considering earned income, all pay periods must be accounted for in the period used to establish eligibility.

3. Average income reported by current members of the household will be considered. See **LIHEAP Policy 504B, *Average Gross Income Will Be Calculated***.

4. DSHS and SSA income documentation received by an applicant for the month prior to application will be considered the average monthly income from the income source - unless the client indicates the income varied in amount over the period considered.

5. Client file must contain income eligibility documentation.

   a. Types of documentation allowed:

      (1) Clear copies of income documents.

      (2) Signed and dated statement by local agencies that the document was seen. See **Exhibit 2A, *Income and Residence Verification Checklist***. Local agencies may use this exhibit or equivalent documentation to record the "I saw" verification of client status, income, and residence.

      (3) Self-declaration.

         (a) Signed declaration of income statement must be used when documentation is unavailable.

         (b) Clients claiming zero income must sign a declaration of no income. See **LIHEAP Exhibit 504D, *Declaration of No Income***. Local agencies may use this exhibit or equivalent documentation.

   b. For households applying to both the Energy Assistance and Weatherization programs, local agencies must follow applicant file and verification procedures defined by the Washington State Energy Assistance Program/LIHEAP. See **LIHEAP Policies 501, *Compiling An Applicant File***; and **505, *Documenting Public Assistance Income***.

See **LIHEAP Exhibit 501, *Household Information Form (HIF)***. Local agencies may use this exhibit or equivalent documentation.

c. For households applying only for Weatherization, local agencies must collect the information included in **Exhibit 2B, *Household Member & Income Information Form***. Local agencies may use this exhibit, the **LIHEAP Exhibit 501, *Household Information Form (HIF)*** or equivalent documentation.

6. Local agencies will maintain the privacy of client personal information.

   a. Personal information collected, used, or acquired in connection with the Weatherization Program shall be used solely for the purpose of providing weatherization services. Local agencies agree not to release, reveal, publish, transfer, sell, or otherwise make known to unauthorized persons a client's personal information without his or her express written consent or as provided by law. Written consent must include what client information may be shared and to whom or which agencies/businesses.

   b. Local agencies agree to implement physical, electronic, and managerial safeguards to prevent unauthorized access to personal information. Personal information includes information that would identify an individual's health, education, business, use or receipt of governmental services, name, address, age, telephone number, social security number, driver's license number, and finances including financial profiles, credit card numbers, or other identifying numbers.

   c. Commerce reserves the right to monitor, audit, and investigate the use of personal information collected, used, or acquired by local agencies. Not properly maintaining clients' private information could result in termination of a contract or subcontract.

   d. Local agencies agree to indemnify and hold harmless Commerce, the State and its officers, employees, and authorized agents for any damages related to local agencies' unauthorized use of personal information.

   e. Local agencies shall include this client privacy policy in all subcontracts. In addition, local agencies shall include in subcontracts a clause stating that subcontractors agree to indemnify and hold harmless local agencies, the State and its officers, employees and authorized agents for any damages related to subcontractors' unauthorized use of personal information. Local agencies are responsible for monitoring the use of personal information collected by subcontractors.

7. Local agencies must acquire signed client waivers enabling Weatherization Program access to utility and other energy vendor billing records and that account information, including account number, the name to which the account is billed and the billing address is accurately recorded for all clients. Account information must be gathered for all energy vendors, both electric and the primary heating source, and must include both

consumption and expenditure data. See **Exhibit 2C, *Sample Weatherization Program Utility Information Release Waiver***.

B. Procedure

1. Client files must include the following income eligibility documentation as applicable:

   a. **LIHEAP Exhibit 501, *Household Information Form (HIF)***, or equivalent documentation.

   b. **Exhibit 2A, *Income and Residence Verification Checklist***, or equivalent documentation.

   c. **Exhibit 2B, *Household Member and Income Information Form***, or equivalent documentation.

   d. For clients submitting a signed declaration of income statement, documentation must include both of the following:

      (1) Signed declaration of income statement for the 3 or 12 months prior to date of application.

      (2) A note indicating efforts made to obtain documentation and the reason it could not be obtained.

   e. **LIHEAP Exhibit 504D, *Declaration of No Income***, or equivalent documentation.

   f. Additional LIHEAP Energy Assistance program documentation when applicable.

2. Client files must include the following additional documentation:

   a. Records showing work completed and cost of measure with total for all measures.

   b. Appropriate property owner/agency agreement form. See **Exhibit 1.4.1A, *Weatherization Program Property Owner/Agency Agreement*** or **Exhibit 1.4.1B, *Weatherization Program Property Owner/Agency Agreement for Multi-Family Buildings.***

   c. Commerce approved home energy audit form. A print out of the Targeted Residential Energy Analysis Tools (TREAT) audit is acceptable.

   d. Privacy policy signed by the local agency and client.

   e. **Exhibit 2C, *Sample Weatherization Program Utility Information Release Waiver***, or equivalent documentation.

3. See **LIHEAP Policy 205, *Defining Types of Income, Exclusions, and Deductions***.

4. See **LIHEAP Policy 501, *Compiling An Applicant File***.

5. See **LIHEAP Policy 504, *Determining Income Eligibility of Household Members*** and **LIHEAP Policy 504B, *Average Gross Income Will Be Calculated***.

6. See **LIHEAP Policy 504G, *Verifying Sources of Income*.**

7. See **LIHEAP Policy 505, *Documenting Public Assistance Income***.

CHAPTER 3 VERIFICATION OF RESIDENCE AND HOUSEHOLD

SECTION 3.1 DOCUMENTATION OF RESIDENCE

A. Policy

The Weatherization Program follows Washington State's Energy Assistance Program/Low Income Home Energy Assistance Program (LIHEAP) guidelines for verification of residence and household. See LIHEAP Policies 501A, *Household Information Form* and 501A.1.e, *Residence Documentation*. Both policies can be found at **http://stagected.bisc.com/Page.aspx?hid=33.**

Applicant must show evidence that the reported address is correct.

B. Procedure

1. Client file must include a copy of **Exhibit 2A, *Income and Residence Verification Checklist***, or an equivalent form that collects required residence documentation.

2. Client residence is verified based on seeing any of the following documents:

   a. Deed/title

   b. Lease/rental agreement or statement from landlord

   c. Subsidized housing lease

   d. Tax statement

   e. Other, such as the following:

      (1) Driver's license

      (2) Fuel or other utility bill in the applicant's name

      (3) Mortgage payment receipt

      (4) Home repair bill

      (5) Room and board receipts

      (6) Letters addressed to the applicant with canceled postage

      (7) Bank statement

SECTION 3.2 DOCUMENTATION OF HOUSEHOLD SIZE/SELF-DECLARATION

A. Policy

The applicant's self-declaration will be sufficient to verify household size.

B. Procedure

Client files must include one of the following sources of documentation:

1. LIHEAP Exhibit 501, *Household Information Form,* **http://stagected.bisc.com/Page.aspx?hid=33**.

2. A written and signed declaration of household size.

SECTION 3.3 DOCUMENTATION OF PUBLIC/SUBSIDIZED MULTI-FAMILY BUILDINGS

A. Policy

Local agencies may use their own certification form to verify income eligibility of residents in public/subsidized multi-family buildings. When centralized records are available, they may substitute for individual Household Information Forms.

B. Procedure

Project files must include verification of resident income eligibility.

CHAPTER 4 COMPLAINTS AND DISPUTE RESOLUTION

A. Policy

1. Local agencies have the responsibility to resolve all client complaints, including applicant denials, project deferrals, and work quality issues.

2. Local agencies shall establish a clear, objective, and prompt dispute resolution process. It must include mediation and arbitration should internal procedures fail to remedy a complaint. See **Exhibit 4A, *Sample Dispute Resolution Flow Chart***. This model is an example of a process that meets Commerce's requirements. The model can be modified to meet an agency's structure and approach. Remember to carefully consider on a case-by-case basis client grievances that cannot be easily or quickly resolved.

   a. A grievance must be filed in writing for a local agency to take action, except when a client complaint can be resolved quickly. See exhibits **4B, *Client Complaint Form*** and **4C, *Service Review Request***. These documents are examples of a process that meets Commerce's requirements.

   b. Local agencies' process must include the following client rights:

      (1) Have a representative speak on behalf of the client – including an interpreter if needed.

      (2) Review and obtain copies of the client's file.

      (3) Present oral and written statements.

      (4) Call witnesses and to question or cross-examine witnesses.

   c. The client will be informed of a decision to the resolution process within 10 working days of complaint receipt.

3. Local agencies will inform all clients at time of application of their right to file a grievance. Local agencies will also be responsive to requests for information regarding the dispute resolution process.

4. Clients may withdraw a grievance at any time with the understanding that they may re-enter the process at the point they withdrew if a complaint is not resolved.

5. Local agencies must:

   a. Document each step of a grievance proceeding, including communication with the client.

   b. Inform Commerce if a grievance is slated for mediation or arbitration.

   c. Inform Commerce of final resolution due to mediation or arbitration.

d. Make all compliant and grievance documentation, including all resolutions, formal and informal, available to Commerce for review upon request.

6. Commerce role and responsibilities:

   a. Approve local agency's dispute resolution process.

   b. Monitor local agency's use of approved process.

   c. Be available for technical assistance and consultation.

   d. Redirect local agency to approved dispute resolution process if necessary.

   e. Subject to need, assist the Building Performance Center (BPC), as the State's designated Peer Circuit Rider, in assigning a local agency representative with appropriate technical expertise to aid local agencies with outside review.

   f. Review complaints that Commerce receives and determine if client has gone through all steps of approved dispute resolution process. In not, refer client back to-local agency to complete approved process.

B. Procedure

1. Local agencies must submit their complaint resolution process for Commerce approval within 90 days of policy adoption and as part of the annual General Weatherization and Repair Work plans.

   Commerce recommends coordinating with the local dispute resolution center and professional arbitration services when crafting a dispute resolution process. See exhibits **4D, *Dispute Resolution Fact Sheet*** and **4E, *Dispute Resolution Resources***.

2. See **Exhibit 4A, *Sample Dispute Resolution Flow Chart*.**

3. See **Exhibit 4B, *Client Complaint Form***.

4. See **Exhibit 4C, *Service Review Request***.

5. See **Section 8.2, *General Weatherization Work Plan***.

CHAPTER 5 PROVIDING WEATHERIZATION SERVICES

Commerce provides weatherization services based upon the house-as-a-system approach integrating advanced weatherization technologies into service delivery. This approach includes data collection, testing, assessments, and education for all eligible clients. Services include an energy audit, a complete visual assessment, assessment of electric base load measures (water heaters, refrigerators, compact fluorescent light bulbs, lighting fixtures, and space heaters), diagnostic tests, energy-related health and safety assessment, consumer conservation education, appropriate low-cost measures, applicable weatherization-related repairs, and a thorough consideration of the client and residence.

Weatherization services may be delivered in Tiers. Tiers are intended to increase career opportunities and provide quicker services to a larger audience. See **Section 5.8 *Tier Service Delivery.***

- Tier 1 is quick, focused, and limited cost-effective weatherization services. It can include pre-audit duties and some contracted services.
- Tier 2 is all cost-effective full weatherization services. This is the house-as-a-system approach.
- Tier 3 is cost-effective weatherization services considering long-term investment and modern renewable technologies. This tier expands our program services and will initially be on a case-by-case basis and pilot programs.

SECTION 5.1 HOME ENERGY AUDITS

A. Policy

1. All homes must receive a comprehensive, on-site, home energy audit prior to receiving weatherization services**.** The cost of this audit may be included in the average cost per home.

   a. A trained and qualified auditor shall conduct energy audits.

      (1) Must be certified as a building analyst by the Building Performance Institute (BPI).

(2) Training and testing will be provided by the Peer Circuit Rider/Building Performance Center.

(3) Newly hired auditors must have work reviewed by a certified Building Analyst 1 (BA1) until such time that they become certified.

b. A Priority List has been adopted for use on low-rise multifamily (4 stories and less), single family, and mobile home conservation measures. See **Exhibit 5.1A, *Priority List of Weatherization Measures*.**

c. TREAT (Targeted Residential Energy Analysis Tools) has been adopted as the authorized energy audit tool to be used in the weatherization program. It is required for analysis of high-rise multi-family homes (5 stories and more) and may also be used for low-rise multifamily buildings, single-family houses, and mobile homes.

(1) Commerce expects local agencies to calculate and maintain current costs for materials, labor, and fuels to be used in the TREAT auditing process.

(2) Local agencies are responsible for insuring that all staff performing computerized energy audits acquire and maintain proficiency using TREAT.

2. The most cost-effective measures as determined by the Priority List of Weatherization Measures or TREAT will ordinarily be installed subject to funding availability. See **Exhibit 5.1A, *Priority List of Weatherization Measures***.

a. Measures not included in the Priority List of Weatherization Measures, or specifically permitted by policy, will require use of TREAT to justify investment by the weatherization program. Failure to use TREAT on measures not included in the Priority List of Weatherization Measures, or by other policy, will result in disallowed costs.

b. When using TREAT, individual measures and the total package (with the exception of health and safety measures) must have an SIR of 1.0 or greater.

Leveraged funds may be used to reduce weatherization fund source investments in order to bring the SIR to 1.0 or greater.

3. Local agencies will review audit findings and a weatherization-specific scope of work with all clients receiving weatherization services.

4. Local agencies will obtain client and property owner signatures authorizing the installation of weatherization measures prior to work commencing.

Allowable Costs

Home energy audits are an allowable cost under DOE, HHS, BPA, and MM funds. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

Specific fund source limitations or allowances are as follows:

BPA: Units must be electrically heated in BPA service territory.

B. Procedure

1. Programmatic

   a. Client files must include the following documentation:

      (1) List of repairs needed to protect weatherization materials or their function.

      (2) List of health and safety hazards identified prior to the installation of weatherization materials.

      (3) Results of pre- and post-weatherization blower door tests.

      (4) Results of applicable combustion safety tests.

      (5) Results of applicable diagnostic tests.

      (6) Square footage of the residence, type of residence, existing levels of insulation, type and condition of space heating system and water heating system, and other necessary information determined by use of TREAT.

      (7) Ownership status, owner/agency agreement, and owner cash contribution.

      (8) Historic preservation status.

      (9) Previous weatherization, including date(s) work performed and installed weatherization measures.

      (10) A comprehensive and weatherization-specific scope of work.

      (11) Optional information collected at agency discretion, for example pre-weatherization billing data, energy intensity, and client lifestyle assessment.

(12) Audit findings.

(13) Signed client and property owner authorization, as applicable.

(14) Verification installed measures have an SIR of 1.0 or greater as determined by TREAT or the Priority List of Weatherization Measures.

(15) Delivery of consumer conservation education.

(16) All necessary measure-specific justification.

b. Results of all electronic audits must be retained in the local agency's central electronic file.

c. See **Exhibit 5.1A, *Priority List of Weatherization Measures***.

d. See **Chapter 6, *Allowable Costs***.

e. See **Chapter 9, *Health & Safety***.

2. Required Installation Standards and Materials Specifications

See ***Specifications for the Low-Income Weatherization Program*** on Commerce's Weatherization Documents Web page.

3. Best Practices

See *EOW Field Guide*.

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SECTION 5.1.1 RESTRICTIONS ON WINDOW AND DOOR REPAIR AND REPLACEMENT FOR ONE & TWO-STORY BUILDINGS

A. Policy

1. Local agencies may repair or replace exterior windows and doors when the cost can be justified for any of the following reasons:

   a. Energy efficiency if the investment of Commerce administered weatherization funds (DOE, HHS, BPA, and MM) is justified using an evaluation of cost-effectiveness where the Savings to Investment Ratio (SIR) is 1.0 or greater.

   b. Health and safety

      If the cost to replace windows and doors is less than the cost to repair, then they shall be replaced

   c. Security

      If the cost to replace windows and doors is less than the cost to repair or replace components that will reasonably ensure security, then they shall be replaced.

   d. Durability

      If the cost to replace windows and doors is less than the cost to repair, then they shall be replaced.

   e. Leveraged funds (sources other than DOE, HHS, BPA, and MM) are available that will cover at least 75 percent of the cost of the windows and doors and their installation.

      Examples of leveraged funds are property owner contributions, approved utility contributions, or HRRP funded measures.

   f. Client comfort (window replacement only)

      Specific windows that effect client comfort may be replaced.

   g. Jalousie windows in mobile or site-built homes may be replaced to bring air leakage down to the air-sealing target after all other blower-door directed air sealing has been done. Do not automatically replace windows in bedrooms where the leakage around the window may be needed to provide proper ventilation.

      Local agencies may split the cost for jalousie window replacement between air leakage reduction and an increase in thermal efficiency when running the calculations through TREAT.

2. Local agencies shall make an attempt to secure owner contributions if window and door repair and replacement are for rental units.

Allowable Measures

Window and door repair and replacement are allowable costs under DOE, HHS, BPA, and MM funds. All fund sources require that 75 percent of labor and materials costs be paid from a non-Commerce fund source (can be PSE). Unless health and safety related, repair and replacement must be included in the SIR calculation for all fund sources and in the DOE per home expenditure average. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

Specific fund source limitations or allowances are as follows:

BPA: Units must be electrically heated in BPA service territory.

B. Procedure

1. Programmatic

   A log will be maintained and provided to Commerce upon request that identifies every project that received window replacement.

   a. Client files must include the following documentation:

      (1) Verification installed measure has an SIR of 1.0 or greater if repair or replacement is based on energy efficiency.

      (2) Photos of existing windows and doors and written justification if repair or replacement is for health and safety, security, and/or durability.

      (3) Leveraging of at least 75 percent of purchase and labor costs from other funds.

      (4) A statement from the client if window is replaced for client comfort.

      (5) If a jalousie window replacement, blower door test results documenting the effect of replacement after air sealing.

      (6) All necessary measure-specific justification.

   b. See **Chapter 6, *Allowable Costs***.

2. Required Installation Standards and Materials Specifications

   See ***Specifications for the Low-Income Weatherization Program*** on Commerce's Weatherization Documents Web page.

3. Best Practices

   See ***EOW Field Guide***.

SECTION 5.1.2 HEATING SYSTEM REPLACEMENT

A. Policy

1. Local agencies may replace home heating systems if at least one of the following conditions is met:

   a. Existing heating system is beyond repair.

   b. Existing heating system can be repaired but only at greater cost than replacement.

   c. Absence of a permanent, central heating system.

   d. When an evaluation of cost-effectiveness determines the Savings to Investment Ratio (SIR) is 1.0 or greater.

   e. Health and safety.

2. Local agencies shall inspect and test the heating system(s) in each dwelling unit for safe operation prior to delivering weatherization services.

   Test all combustion heating systems for safety before and after weatherization work.

3. Secondary heating systems must be checked for safety, and any hazards corrected.

   Maintenance, modification, or replacement of secondary heating systems is ordinarily the responsibility of the building owner.

4. Replacement furnaces will be 80 percent efficient unless:

   a. A 90 percent efficient unit (sealed combustion) is justified based on documented health and safety concerns.

   b. A 90 percent efficient unit is cost justified by an SIR of 1.0 or greater

   c. A 90 percent efficient unit is cost comparable to an 80 percent unit.

   d. Funds other than Commerce's will cover the additional cost.

5. Replacement of heating systems in rental units, other than low-income owned, also requires the following:

   a. Local agency must inform the owner of their legal responsibilities and liabilities under RCW 59.18.060.

b. Local agency must work with the owner to make a contribution of at least 50 percent, since a new heating system is a capital improvement to the property.

(1) Owner may make either a cash or in-kind contribution. Contributions other than cash must benefit the client directly or the weatherization program.

(2) If owners refuse to participate, local agency options include the following:

(a) Walk away from the project.

(b) Alternative financing.

(c) Negotiate extended rent freeze beyond normal property owner/agency agreement.

(d) File a covenant in lieu of the normal property owner/agency agreement assuring continued occupancy by low-income tenants for at least five years.

(e) Negotiate a combination of the above to allow weatherization funds to cover more than 50 percent of the cost of the heating system replacement.

6. The general practice of fuel switching when replacing heating systems is not permitted. See **Section 5.1.7, *Fuel Switching***, for acceptable conditions.

7. Local agencies will educate clients about the importance of regular maintenance.

   Clients with forced-air heating systems will be educated on the importance of replacing or cleaning air filters monthly during the heating season.

Allowable Costs

Heating system replacement is an allowable cost under DOE, HHS, BPA, and MM funds. Unless health and safety related, heating system replacement must be included in the SIR calculation for all fund sources and in the DOE per home expenditure average. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

Specific fund source limitations or allowances are as follows:

BPA: Repair or replacement of electrical heaters or furnaces, if they are no longer working, or fail to heat the dwelling properly are an authorized expenditure. The repair or replacement of electric heaters or furnaces in eligible dwelling units must be accompanied by additional cost-effective weatherization measures to assure maximum energy efficiency of the electricity used by the repaired or replaced heaters or furnaces. Local agencies must use all available matching funds for these repairs when such funds are available. Installation of heat

pumps must be matched with at least a 50 percent payment from sources other than BPA funds. Units must be electrically heated in BPA service territory.

B. Procedure

1. Programmatic

   a. Client files must include the following documentation:

      (1) Verification the installed measure has an SIR of 1.0 or greater if it is based on energy efficiency.

      (2) Justification if replacement is health and safety-related.

      (3) Condition of the heating system prior to weatherization.

      (4) A clear record of who analyzed or worked on the heating system, when, and what was done.

      (5) A clear record of duct assessment, sealing, and insulating for forced-air systems.

      (6) Estimated repair costs used to justify replacement.

      (7) Paid invoices for all work contracted out or done by an outside heating technician.

      (8) All necessary measure-specific justification.

   b. See **Section 5.1.7, *Fuel Switching***.

   c. See **Chapter 6, *Allowable Costs***.

2. Required Installation Standards and Materials Specifications

   See ***Specifications for the Low-Income Weatherization Program*** on Commerce's Weatherization Documents Web page.

3. Best Practices

   See ***EOW Field Guide***.

SECTION 5.1.3 REPAIR AND REPLACEMENT OF SOLID FUEL BURNING APPLIANCE SYSTEMS

A. Policy

1. Local agencies may repair and replace solid fuel burning appliance systems.

   a. A supplemental audit for solid fuel burning appliance systems must be completed prior to repair or replacement. See **Exhibit 5.1.3A, *Solid Fuel Burning Appliance Systems Supplemental Audit Form***.

   b. Replacement is allowed if an evaluation (supplemental audit) performed by either the local agency or a heating system subcontractor determines either of the following, even when another heating system is in the home:

      (1) The life expectancy of a unit or system is less than one year.

      (2) It is more cost-effective to replace the unit or system than it is to perform necessary repairs.

2. If a local agency chooses to include repair and replacement of solid fuel burning appliance systems in its weatherization program, the following must be in place:

   a. Necessary permits must be obtained prior to heating system replacement.

   b. All applicable restrictions and code regulations must be met.

   c. Local agencies must have appropriate liability insurance.

   d. Qualified personnel must perform all installations, maintenance, and inspection. All work must receive approval from subsequent inspections.

3. Local agencies must provide consumer conservation education on safe operation, proper maintenance, and clean & efficient burning techniques.

4. Required Standards

   a. Solid Fuel Burning Devices Standards (Chapter 173-433 WAC) **(http://apps.leg.wa.gov/wac/)**.

   b. Certification and labeling by the National Fire Protection Association under NFPA 211, Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances. The local fire marshal or building inspector will have the most current information on the standard.

c. Certification by the Underwriters Laboratory for systems with electrical parts **(www.ul.com)**.

d. Environmental Protection Agency emission standards or local standards if they are stricter **(www.epa.gov/)**.

e. The following apply for mobile homes:

(1) Systems that are certified and labeled for mobile homes.

(2) Installation in accordance with manufacturer's recommendations and local codes.

(3) Permits from the state Department of Labor and Industries **(www.lni.wa.gov/)**.

5. Additional Requirements for Solid Fuel Burning Appliance Systems

Solid fuel burning appliance systems shall be provided with combustion air ducted directly to the appliance. Combustion air shall be provided as recommended by the manufacturer's specifications. See WAC 51-13-402, Solid Fuel Burning Appliances and Fireplaces **(http://apps.leg.wa.gov/WAC/)**.

Exceptions

Combustion air may be supplied to the room in which the solid fuel appliance system is located in lieu of direct ducting, in an existing home, provided that:

a. The appliance system is not designed for directly connected outside air or;

b. The existing construction prohibits the introduction of outside combustion air directly to the appliance system.

c. The combustion air source shall be located as close to the solid fuel burning appliance system as possible, shall be provided with a back draft damper, and shall be no less than six inches in diameter.

Allowable Costs

Repair and replacement of solid fuel burning appliance systems are allowable costs under DOE, HHS, and MM funds. These measures fall within the total health and safety measures and repairs limits (See **Section 5.3, *Health and Safety Measures and Repairs***.). These measures do not need to be included in the SIR calculation for all fund sources or in the DOE per home expenditure average. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

B. Procedure

1. Programmatic

   a. Client files must include the following documentation:

      (1) Supplemental audit (**Exhibit 5.1.3A, *Solid Fuel Burning Appliance Systems Supplemental Audit Form***.)

      (2) Clear record of who analyzed or worked on the heating system, when, and work performed.

      (3) Inspection approval.

      (4) Paid invoices for all work contracted out or performed by an outside heating technician.

      (5) All necessary measure-specific justification.

      (6) Delivery of consumer conservation education.

   b. Local agency files must include the following documentation:

      (1) Necessary permits.

      (2) Liability insurance.

   c. See **Chapter 6, *Allowable Costs***.

   d. See **Chapter 9, *Health & Safety***.

2. Required Installation Standards and Materials Specifications

   See ***Specifications for the Low-Income Weatherization Program*** on Commerce's Weatherization Documents Web page.

3. Best Practices

   See ***EOW Field Guide***.

SECTION 5.1.4 REPAIR AND REPLACEMENT OF SPACE HEATERS

A. Policy

1. Local agencies may repair and replace space heaters under one of the following conditions:

   a. Energy efficiency if the total cost is justified using an evaluation of cost-effectiveness where the Savings to Investment Ratio (SIR) is 1.0 or greater.

   b. Client health and safety.

2. Local agencies must follow these general requirements for repair and replacement:

   a. Incidental repairs

      Make incidental repairs to space heaters as necessary to address health and safety issues.

   b. Provisions for working smoke detectors

      Inspect to ensure that a working smoke detector is installed on the same floor as the space heater. The cost of smoke detectors may be charged to Health and Safety Costs.

   c. Other safety hazards

      Check to ensure that no obvious building code violations or other safety hazards related to the space heater are evident, for example electric wiring and heater vent pipe.

   d. Permits and inspections

      Secure building permits where required and have qualified inspections made before any heater is put into operation. The cost of permits may be charged to Program Costs.

   e. Consumer conservation education

      Provide consumer conservation education on safety hazards and the proper operation of equipment, including the operation, testing, and battery replacement of smoke detectors.

3. Local agencies must follow the specific requirements listed below for space heater and fuel types.

   a. Space heater type

(1) Electric

(a) Only incidental repairs are allowed on space heaters. No replacements are allowed.

(b) Electric space heaters are generally portable and do not include the following:

1) Baseboard units

2) Zoned heating system components

3) Other permanently installed electric heating units

(2) Unvented combustion space heaters

In homes with unvented space heaters, local agencies will determine if a vented space heater can be installed to carry the major heating load. If not, the local agency must either replace all the unvented space heaters or not weatherize the house. See specific fuel types below for further direction.

(a) When local agencies replace unvented space heaters with vented ones, they must advise the owner and tenant of the inherent dangers of the old heaters and they should strongly advise the party that owns the unvented heater(s) to permanently remove them from possible future use.

(b) When a local agency cannot weatherize a house because of unvented space heaters, they should verify that such use is in accordance with the manufacturer's instructions and Underwriter's Lab listing (**www.ul.com**). If in doubt, the local fire Marshall must be contacted for assistance. The client must be advised of the proper operation of the heater and the safety hazards inherent in using unvented heaters.

(3) Vented combustion space heaters

(a) Oil-fired space heaters (always vented), vented kerosene space heaters, and vented gas space heaters should be treated as if they are furnaces.

Local agencies may perform tune-ups and clean heater units, vents, and ducts.

(b) See the following information on fuel types for the repair and replacement of vented gas and kerosene space heaters.

b. Fuel type

(1) Gas

(a) Unvented gas space heaters are prohibited.

(b) Repair of vented gas heaters is allowed, provided that the following concerns are addressed and documented in the client file:

1) Cost benefits of repair vs. replacement.

2) Methods to deal with health and safety concerns for the occupants.

3) Identification of, and compliance with, applicable codes.

4) Consumer conservation education on the proper use and maintenance of the equipment.

(c) Replacement of a gas space heater is only allowed when the existing unit is in poor mechanical condition or poses health and safety risks for other reasons.

1) Gas space heaters may not be installed in bedrooms or bathrooms or comparable areas of shelters and group homes.

2) Replacement should be with another gas heater.

(2) Kerosene

(a) Unvented kerosene space heaters are prohibited.

(b) Repair of vented kerosene space heaters is allowed, provided that the following concerns are addressed and documented in the client file:

1) Cost benefits of repair vs. replacement.

2) Methods to deal with health and safety concerns for the occupants.

3) Identification of, and compliance with, applicable codes.

4) Consumer conservation education on the proper use and maintenance of the equipment.

(c) Repairs to existing vented kerosene heaters may be considered when they are the only source of heat and no reasonable alternative exists.

Allowable Costs

Repair and replacement of space heaters are allowable costs under DOE, HHS, BPA, and MM funds. Unless health and safety related, repair and replacement must be included in the SIR calculation for all fund sources and in the DOE per home expenditure average. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

Specific fund source limitations or allowances are as follows:

BPA: Units must be electrically heated in BPA service territory.

B. Procedure

1. Programmatic

   a. Client files must include the following documentation:

      (1) Verification the measure has an SIR of 1.0 or greater if it is based on energy efficiency.

      (2) Justification if health and safety-related.

      (3) All necessary measure-specific justification.

      (4) Smoke detector installation as applicable.

      (5) Copies of mechanical permits where required and results of inspections.

      (6) Delivery of consumer conservation education.

   b. See **Chapter 6, *Allowable Costs***.

   c. See **Chapter 9, *Health and Safety***.

2. Required Installation Standards & Materials Specifications

   Not applicable.

3. Best Practices

   Not applicable.

SECTION 5.1.5 WATER HEATER REPAIR AND REPLACEMENT

A. Policy

1. Local agencies are obliged to consider repairing water heaters, including replacement of elements, wiring, and thermostats.

    a. Local agencies may replace a water heater if the cost of repair exceeds the cost of replacement or if the broken water heater is more than 10 years old.

    b. When a hot water heater is not repairable, local agencies may replace it with an energy efficient model with the lowest installed cost.

2. Local agencies may replace water heaters in owner occupied units under one of the following conditions:

    a. Energy efficiency if the total cost is justified using an evaluation of cost-effectiveness where the Savings to Investment Ratio (SIR) is 1.0 or greater.

    b. Client health and safety.

3. If a gas water heater is installed, a worst-case depressurization test must be performed after installation of the unit.

4. If the residence is a rental, the owner is responsible for replacement unless the owner is low-income eligible.

Allowable Costs

Water heater repair and replacement are allowable costs under DOE, HHS, BPA, and MM funds. Unless health and safety related, repair and replacement must be included in the SIR calculation for all fund sources and in the DOE per home expenditure average. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

Specific fund source limitations or allowances are as follows:

BPA: Units must be electrically heated in BPA service territory.

B. Procedure

1. Programmatic

   a. Client files must include the following documentation:

      (1) Verification the installed measure has an SIR of 1.0 or greater if it is based on energy efficiency.

      (2) Justification if health and safety-related.

      (3) Worst-case depressurization test results as applicable.

      (4) Cost comparison documentation.

      (5) All necessary measure-specific justification.

   b. See **Chapter 6, *Allowable Costs***.

2. Required Installation Standards and Materials Specifications

   Not applicable.

3. Best Practices

   See ***EOW Field Guide***.

SECTION 5.1.6 REFRIGERATOR REPLACEMENT

A. Policy

1. Local agencies may replace refrigerators with weatherization funding when the demonstrated savings to investment ratio (SIR) is 1.0 or greater.

   a. Local agencies must use Commerce approved methods to determine the SIR. These methods include:

      (1) TREAT (Targeted Residential Energy Analysis Tool)

      (2) Weatherization program on-line tool. See **Exhibit 5.1.6A, *Economic Analysis of Refrigerator Replacement*** (***Refrigerator Replacement Audit Tool*** on the Commerce Weatherization page).

      (3) Data logging of existing refrigerator

   b. Leveraged funds can be used to bring the SIR of a marginally cost-effective measure to 1.0 or greater.

   c. All units in an eligible multi-unit project may receive a replacement refrigerator if the SIR is 1.0 or greater.

2. Replacement refrigerators must meet the following criteria:

   a. EnergyStar or better energy efficiency. A non-EnergyStar refrigerator may be installed provided the SIR for the non-EnergyStar model is demonstrated to be higher than the SIR for the EnergyStar model.

   b. Top-mount freezer (two door models).

   c. Models with no extra features such as door ice, through door water dispensing, or automatic icemakers. A like-for like replacement refrigerator may be installed if it still meets the SIR of 1 or greater. This is to include the cost of disconnect and reconnection of existing water supply only.

   d. Based on the size and needs of the family.

3. Residents must agree to the removal of the old refrigerator and all non-functioning, unused, or underused refrigerators by the local agency.

4. The old refrigerator must be removed from the property and disposed of properly per Section 608 of the 1990 Clean Air Act, as amended by 40 CFR 82, Subpart F, 1995. See ***Specifications for the Low-Income Weatherization Program*** for proper disposal methods.

5. Ownership of the replacement refrigerator falls to whomever owned the refrigerator that was replaced, either the owner/occupant, property owner, or renter.

Allowable Costs

Refrigerator replacement, including costs associated with CFC disposal, is an allowable cost under DOE, HHS, BPA, and MM funds. Refrigerator replacement must be included in the SIR calculation for all fund sources and in the DOE per home expenditure average. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

Specific fund source limitations or allowances are as follows:

BPA: Funds will cover 50 percent of the refrigerator cost. The remaining costs may be covered by other means including matching funds from other sources. Funds may be used for non-electrically heated homes in BPA service territory.

B. Procedure

1. Programmatic

   a. Client files must include the following documentation:

      (1) Verification installed measure has an SIR of 1.0 or greater using proven methods.

      (2) All necessary measure-specific justification.

      (3) Client approval.

      (4) Ownership status of the replaced refrigerator.

      (5) Copies of the manufacturer's warranty and client's signature indicating receipt of original warranty.

      (6) Refrigerator disposal method.

      (7) Reclaimed refrigerant disposal method.

b. See **Exhibit 5.1.6A, *Economic Analysis of Refrigerator Replacement*** *(**Refrigerator Replacement Audit Tool** on Commerce's Weatherization page).*

c. See **Chapter 6, *Allowable Costs***.

d. See **Chapter 9, *Health & Safety***.

2. Required Installation Standards and Materials Specifications

   See ***Specifications for the Low-Income Weatherization Program*** on Commerce's Weatherization Documents Web page.

3. Best Practices

   See ***EOW Field Guide***.

SECTION 5.1.7 FUEL SWITCHING

A. Policy

1. Commerce does not permit the general practice of non-renewable fuel switching when replacing heating systems and hot water tanks.

   a. Local agencies must notify Commerce in writing (email acceptable) if they intend to switch fuels as part of their weatherization services.

   b. Local agencies may switch fuels under the following conditions:

      (1) Energy efficiency if the total cost is justified using an evaluation of cost-effectiveness where the Savings to Investment Ratio (SIR) is 1.0 or greater.

      (2) Client health and safety.

2. The switched-fuel unit cannot exceed the cost of replacement using the existing fuel unless the difference comes from sources other than Commerce.

3. When switching from electric to oil or gas, all costs associated with the installation of a gas heating system or water heater, and all required elements of the new heating system (providing a new supply line, flue, chimney, ducts), must be considered as part of the total cost.

Allowable Costs

Fuel switching is an allowable cost under DOE, HHS, and MM funds with prior Commerce written notification. Unless health and safety related, fuel switching must be included in the SIR calculation of each fund source and in the DOE per home expenditure average. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

B. Procedure

1. Programmatic

   a. Submit written notification (email acceptable) to assigned Commerce field representative. Include supporting documentation if health and safety related.

   b. Client files must include the following documentation:

      (1) Copy of written notification submitted to Commerce.

      (2) A complete cost analysis justifying the work, including verification the installed measure has an SIR of 1.0 or greater if it is based on energy efficiency.

(3) Justification if health and safety-related.

(4) All necessary measure-specific justification.

c. See **Chapter 6, *Allowable Costs***.

2. Required Installation Standards & Materials Specifications

Not applicable.

3. Best Practices

See ***EOW Field Guide***.

SECTION 5.1.8 CERTIFICATION OF INSULATION

A. Policy

1. Local agencies must complete a certificate of insulation form for each dwelling unit that receives ceiling, wall, floor, perimeter, or duct insulation.

   The certificate will include all of the information shown in **Exhibit 5.1.8A,*Certificate of Insulation***. This form is an example of an acceptable format for this certification requirement.

2. The certificate must be signed by one of the following as applicable:

   a. Subcontractor if subcontractor performs the work.

   b. Crew chief if the local agency's crew performs the work.

B. Procedure

1. Programmatic

   a. Local agencies must give the homeowner the original certificate, place a copy in the agency file, and post a copy in the attic or crawl space of the dwelling unit as appropriate.

   b. See **Exhibit 5.1.8A, *Certificate of Insulation***.

   c. Local agencies can contact the Office Administrative III within the Housing Improvements and Preservation unit for copies of the certificate shown in **Exhibit 5.1.8A**.

2. Required Installation Standards and Materials Specifications

   See ***Specifications for the Low-Income Weatherization Program*** on Commerce's Weatherization Documents Web page.

3. Best Practices

   Not applicable.

SECTION 5.1.9 CLOSED WALL CAVITY INSULATION

A. Policy

1. All closed wall cavities that can be insulated shall be insulated by means of dense-pack insulation methods at a density of 3.5 to 4 pounds per cubic foot.

   Exceptions

   a. High building tightness limit is present.

      Pre-insulation cfm50 is less than 100 percent of the calculated Building Airflow Standard (BAS).

   b. Other situations exist that are documented and approved in advance by Commerce.

2. Installed measure must have an SIR of 1.0 or greater.

Allowable Costs

Closed wall cavity insulation is an allowable cost under DOE, HHS, BPA and MM funds. The measure must be included in the SIR calculation for all fund sources and in the DOE per home expenditure average. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

Specific fund source limitations or allowances are as follows:

BPA: Funds may be used for non-electrically heated homes in BPA service territory.

B. Procedure

1. Programmatic

   a. Client files must include the following documentation:

      (1) Copy of the certificate of insulation.

      (2) Verification the installed measure has an SIR of 1.0 or greater.

      (3) All necessary measure-specific documentation.

   b. Local agencies must give the homeowner the original certificate of insulation and post a copy in the attic or crawl space of the dwelling unit as appropriate.

   c. See **Exhibit 5.1A, *Priority List of Weatherization Measures***.

d. See **Section 5.1.8, *Certification of Insulation***.

e. See **Exhibit 5.1.8A, *Certificate of Insulation***.

f. See **Chapter 6, *Allowable Costs***.

2. Required Installation Standards and Materials Specifications

   See ***Specifications for the Low-Income Weatherization Program*** on Commerce's Weatherization Documents Web page.

3. Best Practices

   See ***EOW Field Guide***.

SECTION 5.2 ENERGY-EFFICIENT LIGHTING

A. Policy

1. Retrofit of lighting fixtures, replacement of incandescent screw-in bulbs with compact fluorescent screw-in bulbs (CFLs), and replacement of halogen or incandescent torchiere lamps with CFL torchieres are allowable weatherization measures under the following provisions:

    a. Eligible Units

        (1) Owner-occupied dwellings.

        (2) Rental units where tenants pay electric bills.

            Do not install lights in locations where the building owner pays the electric bills, such as common areas or master-metered buildings except when building owner is a nonprofit organization.

    b. Retrofit of lighting fixtures and replacement of halogen or incandescent torchiere lamps with CFL torchieres are allowable if costs are justified with an SIR calculation of 1.0 or greater.

    c. All measures must directly benefit low-income tenants.

2. All incandescent screw-in bulbs can be replaced with compact fluorescent screw-in bulbs (CFLs).

3. Every effort should be made to arrange cost sharing with utilities and use utility funds first.

4. Local agencies must provide residents with information on the following:

    a. CFL features

    b. Potential savings

    c. Proper use and care

    d. Use and replacement limitations

    e. Where to purchase replacement bulbs

Allowable Costs

Retrofit of lighting fixtures, replacement of incandescent screw-in bulbs with compact fluorescent screw-in bulbs (CFLs), and replacement of halogen or incandescent torchiere lamps with CFL torchieres are allowable costs under DOE, HHS, BPA, and MM funds.

Retrofit of fixtures and replacement of halogen or incandescent torchiere lamps with CFL torchieres must be included in the SIR calculation for all fund sources and in the DOE per home expenditure average. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

Specific fund source limitations or allowances are as follows:

BPA: Funds may be used for non-electrically heated homes in BPA service territory.

B. Procedure

1. Programmatic

   a. Client files must include the following documentation:

      (1) Receipts or inventory reduction paperwork.

      (2) For lighting fixture retrofits and replacement of halogen or incandescent torchiere lamps with CFL torchieres, verification installed measures have an SIR of 1.0 or greater.

      (3) All necessary measure-specific justification.

      (4) Delivery of consumer conservation education.

   b. See **Chapter 6, *Allowable Costs***.

2. Required Installation Standards and Materials Specifications

   See ***Specifications for the Low-Income Weatherization Program*** on Commerce's Weatherization Documents Web page.

3. Best Practices

   See ***EOW Field Guide***.

SECTION 5.3 HEALTH AND SAFETY MEASURES AND REPAIRS

A. Policy

1. Energy-related health and safety hazards identified prior to, or as a result of, the installation of weatherization materials must be eliminated. Energy-related health and safety measures and repairs are intended to protect building occupants. See **Section 5.1, *Home Energy Audits*** and **Chapter 9, *Health and Safety***, for additional information. Agencies must inform clients of any health and safety hazards that may be beyond the scope of the weatherization program.

   The following categories must be addressed:

   a. Knob-and-tube inspection and minor electrical repair.

   b. Indoor Air Quality (IAQ) assessment and diagnostic testing. See **Section 5.3.3, *Diagnostic Tests and Air Sealing***.

   c. Combustion safety testing. See sections **5.3.1, *Testing for Excessive Carbon Monoxide (CO)*** and **5.3.2, *Installation of Carbon Monoxide (CO) Detectors***.

2. Local agencies may apply for an exception to MM fund limits with both MM sponsor and Commerce consent. See **Exhibit 5.3A, *Matchmakers Policy Exception Form***.

3. Insofar as it exceeds the cost of allowable energy conservation measures the cost of LSWx (labor, material, and related costs) is a health and safety cost.

4. Equipment purchases used specifically for testing for lead or other health risks are a health and safety cost.

Allowable Costs

Energy-related health and safety measures and repairs are allowable costs under DOE, HHS, BPA, and MM funds. These measures do not need to be included in the SIR calculation for all fund sources or in the DOE per home expenditure average. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

Specific fund source limitations or allowances are as follows:

DOE: Costs may not exceed 15 percent of the total DOE program budget. Lead-based paint clearance testing is not an allowable expense for any type of DOE Weatherization Assistance Program funding.

HHS: Up to 15 percent of the program budget.

BPA: Costs may not exceed 15 percent per unit on average. Units must be electrically heated in BPA service territory.

EM: The combined charges for energy-related health and safety measures and repairs and weatherization-related repairs are limited to $200 average/$550 maximum per dwelling unit. An exception to this policy can be obtained with the written approval of the applicable match sponsor (match provider). Exceptions are limited to $2,600 average for the combined costs of energy-related health and safety measures and repairs and weatherization-related repairs.

B. Procedure

1. Programmatic

   a. Client files must include the following documentation:

      (1) Knob and tube inspection and minor electrical repair.

         (a) Certification of safety for all knob-and-tube wiring by a licensed electrical contractor.

         (b) Paid invoices for all work done by a licensed electrician.

      (2) IAQ assessment and diagnostic testing (tests must include the name(s) of the tester(s) and test dates).

         (a) Pre and post weatherization blower door test results, including the location of the doorway where tests were taken.

         (b) Pre and post measurements for the following:

1) Zonal pressure

2) Duct pressure pan

3) Dominant duct leakage

4) Pressure differential

(c) Reason(s) air sealing target not attained.

(d) Paid invoices for materials, measures, repairs, or modifications.

(3) Combustion safety testing.

(a) Results of pre and post weatherization combustion safety report for every appliance tested. See exhibits **5.3.1A, *Combustion Safety Test Report*** and **5.3.1B, *Technical Support Document***.

(b) Receipts or invoices for any corrective work.

(c) Documentation of installation, location, and model type.

(4) All necessary measure-specific justification.

b. Energy-related health and safety costs must be budgeted, tracked, and reported separately from energy saving measure and weatherization-related repair costs in local agency accounts and assessment/audit forms.

c. To request an exception to Matchmakers policy, the sponsor must complete a Health and Safety Weatherization-Related Repair Policy Exception Form and forward it to Commerce. See **Exhibit 5.3A, *Matchmakers Policy Exception Form***.

d. See sections **5.3.1, *Testing for Excessive Carbon Monoxide (CO)*** and **5.3.2, *Installation of Carbon Monoxide (CO) Detectors***.

e. See **Section 5.3.3, *Diagnostic Tests and Air Sealing***.

f. See **Chapter 6, *Allowable Costs***.

g. See **Chapter 9, *Health & Safety***.

2. Required Installation Standards & Materials Specifications

   Not applicable.

3. Best Practices

   See ***EOW Field Guide***.

SECTION 5.3.1 TESTING FOR EXCESSIVE CARBON MONOXIDE (CO)

A. Policy

1. All homes with combustion appliances must be tested for combustion safety both before and after weatherization work. See exhibits **5.3.1A, *Combustion Safety Test Report*** and **5.3.1B, *Technical Support Document***, for required form and supporting material.

2. No weatherization work can be done unless the CO levels are acceptable.

3. If CO is above acceptable levels, weatherization funds may be used to clean and repair appliances owned by low-income occupants.

   In rentals, if the tenant does not own the appliance, weatherization funds can be used for cleaning, but not for repair.

Allowable Costs

Combustion safety testing and appliance cleaning & repair are allowable costs under DOE, HHS, BPA and MM funds. These measures fall within the total health and safety measures and repairs limits (See **Section 5.3, *Health and Safety Measures and Repairs***.). These measures do not need to be included in the SIR calculation for all fund sources or in the DOE per home expenditure average. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

Specific fund source limitations or allowances are as follows:

BPA: Units must be electrically heated in BPA service territory.

B. Procedure

1. Programmatic

   a. Client files must include the following documentation:

      (1) Results of pre- and post-weatherization combustion safety report for every appliance tested. See **Exhibit 5.3.1A, *Combustion Safety Test Report***.

      (2) Receipts or invoices for any corrective work.

   b. See **Exhibit 5.3.1B, *Technical Support Document***.

   c. See **Chapter 6, *Allowable Costs***.

   d. See **Chapter 9, *Health & Safety***.

2. Required Installation Standards and Materials Specifications

   See ***Specifications for the Low-Income Weatherization Program*** on Commerce's Weatherization Documents Web page.

3. Best Practices

   See ***EOW Field Guide***.

SECTION 5.3.2 INSTALLATION OF CARBON MONOXIDE (CO) DETECTORS

A. Policy

1. Local agencies must install carbon monoxide (CO) detectors in dwelling units with combustion appliances or attached garages.

2. Installed detectors must have the capability to accurately detect and display low levels of carbon monoxide to 10 ppm.

3. Local agencies must provide the occupant(s) of the dwelling unit with verbal and written information regarding the following:

    a. Dangers of CO.

    b. How to operate and reset the CO detector.

    c. How to read the CO detector.

    d. How to respond to CO levels above 10 ppm.

    e. How to change the batteries.

Allowable Costs

Carbon monoxide detector installation is an allowable health and safety cost under DOE, HHS, BPA, and MM funds. This measure falls within the total health and safety measures and repairs limits (See **Section 5.3, *Health and Safety Measures and Repairs***.). These measures do not need to be included in the SIR calculation for all fund sources or in the DOE per home expenditure average. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

Specific fund source limitations or allowances are as follows:

BPA: Units must be electrically heated in BPA service territory.

B. Procedure

1. Programmatic

    a. Client files must include documentation of the following:

        (1) Carbon monoxide detector installation.

        (2) Detector location(s).

(3) Detector model type.

(4) Delivery of consumer conservation education.

b. Local agencies must keep a copy of carbon monoxide detector model specifications for all models installed in agency files.

c. See **Section 5.3, *Health and Safety Measures and Repairs***.

d. See **Chapter 6, *Allowable Costs***.

e. See **Chapter 9, *Health & Safety***.

2. Required Installation Standards and Materials Specifications

See ***Specifications for the Low-Income Weatherization Program*** on Commerce's Weatherization Documents Web page.

3. Best Practices

See ***EOW Field Guide***.

SECTION 5.3.3 DIAGNOSTIC TESTS AND AIR SEALING

A. Policy

1. Local agencies must perform diagnostic tests prior to installment of weatherization measures and upon completion of each project based on the following:

   a. Type of residence

   b. Site conditions

2. Local agencies must perform air sealing where it is determined by a weatherization audit to be effective based on one of the following considerations:

   a. Health

   b. Safety

   c. Building durability

   d. Energy efficiency if the total cost is justified using an evaluation of cost-effectiveness where the Savings to Investment Ratio (SIR) is 1.0 or greater.

Allowable Costs

Diagnostic tests and air sealing are allowable costs under DOE, HHS, BPA, and MM funds. Both must be included in the SIR calculation for all fund sources and in the DOE per home expenditure average. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

Specific fund source limitations or allowances are as follows:

BPA: Units must be electrically heated in BPA service territory.

B. Procedure

1. Programmatic

   a. Client files must include the following documentation (tests must include the name(s) of the tester(s) and test dates):

      (1) Pre and post weatherization blower door test results, including the location of the doorway where tests were taken.

(2) Pre and post measurements for the following:

(a) Zonal pressure

(b) Duct pressure pan

(c) Dominant duct leakage

(d) Pressure differential

(3) Reason(s) air sealing target not attained.

(4) Paid invoices for materials, measures, repairs, or modifications.

(5) Verification the installed measure has an SIR of 1.0 or greater if it is based on energy efficiency.

(6) All necessary measure-specific justification.

b. See **Chapter 6, *Allowable Costs***.

2. Required Installation Standards and Materials Specifications

See ***Specifications for the Low-Income Weatherization Program*** on Commerce's Weatherization Documents Web page.

3. Best Practices

See ***EOW Field Guide***.

SECTION 5.4 WEATHERIZATION-RELATED REPAIR

A. Policy

1. Local agencies may perform repairs needed to protect weatherization measures or their function. See **Exhibit 5.4A, *Weatherization-Related Repairs***, for examples of allowable repairs.

2. Local agencies may apply for an exception to MM fund limits with both MM sponsor andCommerce consent. See **Exhibit 5.3A, *Matchmakers Policy Exception Form***.

Allowable Costs

Weatherization-related repairs are an allowable cost under DOE, HHS, BPA, and MM funds. Weatherization-related repairs (both individual measures and the total package) must be included in the SIR calculation regardless of fund source and in the DOE per home expenditure average. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

Specific fund source limitations or allowances are as follows:

DOE: $200 average/$550 maximum per dwelling unit.

HHS: $2,600 per unit maximum average. All cost-effective measures must be installed.

BPA: $1,000 maximum for a single eligible dwelling unit on average. Electrically heated homes in BPA service territory only.

MM: The combined charges for weatherization-related repairs and health and safety measures and repairs are limited to $200 average/$550 maximum per dwelling unit. An exception to this policy can be obtained with the written approval of the applicable match sponsor (match provider). Exceptions are limited to $2,600 average for the combined costs of weatherization-related repairs and health and safety measures.

B. Procedure

1. Programmatic

   a. Client files must include the following documentation:

      (1) Description of repairs and related measures.

      (2) Justification for repairs made, including file photographs.

(3) Justification for measures skipped associated with weatherization-related repair.

(4) Verification installed measures have an SIR of 1.0 or greater.

(5) All necessary measure-specific justification.

(6) Paid invoices for materials, measures, repairs, or modifications.

b. Weatherization-related repair costs must be budgeted, tracked, and reported separately from energy saving measure and health and safety costs in local agency accounts and assessment/audit forms.

c. To request an exception to Matchmakers policy, the sponsor must complete a Health and Safety Weatherization-Related Repair Policy Exception Form and forward it to Commerce. See **Exhibit 5.3A, *Matchmakers Policy Exception Form***.

d. See **Exhibit 5.1A, *Priority List of Weatherization Measures***.

e. See **Exhibit 5.4A, *Weatherization-Related Repairs***.

f. See **Chapter 6, *Allowable Costs***.

g. See **Chapter 9, *Health & Safety***.

2. Required Installation Standards and Materials Specifications

Not applicable.

3. Best Practices

Not applicable.

SECTION 5.5 DEFERRAL STANDARDS

A. Policy

1. Local agencies may defer weatherization work if they encounter problems that are beyond the scope of the Weatherization Assistance Program.

   Deferring weatherization work does not mean assistance will never be available, but that any work must be postponed until problems can be resolved and alternative sources of help are found as necessary.

2. Local agencies must develop guidelines and a standardized form. See **Exhibit 5.5A, *Weatherization Deferral Form***, for an example of a standardized form.

   Deferral guidelines may include the following:

   a. The client has known health conditions that prohibit the installation of insulation and other weatherization materials.

   b. The building structure or its mechanical systems, including electrical and plumbing, are in such a state of disrepair that failure is imminent and the conditions cannot be resolved in a cost-effective manner.

   c. The house has sewage or other sanitary problems that would further endanger the client and the weatherization installers if weatherization work were performed.

   d. The house has been condemned or electrical, heating, plumbing, or other equipment has been "red tagged" by a local or state building official or utilities.

   e. Moisture problems are so severe they cannot be resolved under existing health and safety measures and minor repairs.

   f. Dangerous conditions exist due to high carbon monoxide levels in combustion appliances, and cannot be resolved under existing health and safety measures.

   g. The client is uncooperative, abusive, or threatening to crew, auditors, inspectors, contractors, or others who must work on or visit the house.

   h. The extent and condition of lead-based paint in the house would potentially create further health and safety hazards. See *Deferral Policy Related to Lead-Based Paint* in the *WAP Health & Safety Plan.*

   i. In the judgment of the energy auditor, conditions exist which may endanger the health and/or safety of the work crew or contractor. Work should not proceed until the condition is corrected.

3. Local agencies must actively pursue all alternative options on behalf of the client, including referrals, and use good judgment in dealing with difficult situations.

B. Procedure

1. Programmatic

   a. Local agency must provide clients with deferral documentation. If the property is a rental, property owners must receive a copy.

   b. Client files must include a copy of deferral documentation.

   c. Deferral documentation must include the information in **Exhibit 5.5A, *Weatherization Deferral Form***. Local agencies may use this form or equivalent documentation.

   d. See **Chapter 9, *Health and Safety***.

2. Required Installation Standards & Materials Specifications

   See ***Specifications for the Low-Income Weatherization Program*** on Commerce's Weatherization Documents Web page.

3. Best Practices

   Not applicable.

SECTION 5.6 COORDINATION WITH UTILITIES AND RELATED PROGRAMS

A. Policy

1. Local agencies must identify and coordinate with related energy conservation projects within their service area. Such projects include those offered through other federal programs, state agencies, energy vendors, and local or privately funded programs.

   All coordinated efforts must meet or exceed Commerce standards.

2. Local agencies are expected to participate in local efforts to enhance coordination and cooperation.

B. Procedure

1. Programmatic

   a. Local agencies may share the responsibility of providing weatherization services using a variety of coordination methods, including:

      (1) Energy audits

      (2) Specific weatherization measures (such as water heater blankets, heating source repair or modification, replacement of lighting fixtures and bulbs)

      (3) Outreach

      (4) Program publicity

      (5) Other

   b. Local agencies must submit their coordination plan as part of the annual General Weatherization Work plan.

   c. See **Section 8.2, *General Weatherization Work Plan***.

2. Required Installation Standards & Materials Specifications

   Not applicable.

3. Best Practices

   Not applicable.

SECTION 5.7 RENEWABLE ENERGY SYSTEMS

A. Policy

1. Section 206 of the Energy Policy Act of 2005 (EPACT 2005) amended the Energy Conservation and Production Act (42 U.S.C. 6861 et seq.) to clarify that assistance under Department of Energy's (DOE) Weatherization Assistance Program for low-income persons may be provided for renewable energy systems and to provide definitions and criteria to be used in assessing eligibility. DOE amended their Final Rule, 10 CFR 440, to codify the EPACT provisions.

2. EPACT 2005 sets a ceiling of $3,149 per dwelling for such assistance, subject to annual adjustments as provided in the statute.

   a. These funds are not in addition to the current average cost per unit. The maximum represents the cumulative total average expenditures allowable for labor, materials, and related matters per unit.

   b. See Section 5.6, Use of Weatherization Funds for Renewable Energy Systems, in Weatherization Program Notice (WPN) 07-1, 2006 (**http://www.waptac.org/sp.asp?id=6878**) for guidance on how to apply the average ceilings on funds for units using renewable energy systems.

3. EPACT 2005 requires DOE to establish a procedure under which a manufacturer of a technology or system may request the Secretary of Energy to certify the technology or system as an eligible renewable energy system. Approved renewable energy systems will be listed in Appendix A, Standards for Weatherization Materials, of the DOE Final Rule, 10 CFR 440 **(http://www.waptac.org/si.asp?id=496**). Solar Water Heating Devices which conform to SRCC (Solar Rating and Certification Corporation) OG 300 are an example of an approved renewable energy system.

Allowable Costs

Approved renewable energy systems are an allowable cost under DOE funds. Policies for HHS, BPA, and MM funds will be determined. See **Chapter 6, *Allowable Costs***, for allowable expenditures.

Specific fund source limitations or allowances are as follows:

BPA: Units must be electrically heated in BPA service territory.

B. Procedure

1. Programmatic

   a. Client files must include the following documentation:

      (1) Verification installed measures have an SIR of 1.0 or greater as determined by TREAT or the ***Prioity List of Insulation Measures*** **(Exhibit 5.1A)**.

      (2) All necessary measure-specific justification.

   b. See Department of Energy Weatherization Program Notice 08-1, 2007 **(http://www.waptac.org/sp.asp?id=6878).**

2. Required Installation Standards & Materials Specifications

   Not applicable.

3. Best Practices

   Not applicable.

SECTION 5.8 TIER SERVICE DELIVERY

A. Policy

1. Weatherization services may be delivered in Tiers. Tiers are intended to increase career opportunities, provide quicker services to a larger audience. See **Exhibit 5.8, *Tier Model*.**

   a. Tier 1: A completed Tier 1 project is a "Unit Served." Weatherization services for Tier 1 are intended to be quick, focused, and limited. It can include pre-audit duties and some contracted services. Tier 1 services do not require Building Performance Institute (BPI) Building Analyst Certification.

   b. Tier 2: A completed Tier 2 project is a "Unit Completed" and meets the definition of a "DOE weatherized unit." Weatherization services for Tier 2 are all cost-effective full weatherization services altering the building envelope: thermal and pressure boundaries. This is the house-as-a-system approach. Tier 2 services require Building Performance Institute (BPI) Building Analyst Certification.

   c. Tier 3: A completed Tier 3 project is a "Renewable." A renewable energy project provides cost-effective weatherization services considering long-term investment and modern renewable technologies. This tier expands our program services and will initially be on a case-by-case basis and pilot programs.

2. Tier Service Delivery Allowance

   a. The Weatherization Assistance Program Tier Model is established in policy see **Exhibit 5.8, *Tier Model***. The Tier model is an allowance to provide weatherization services in a different manner than historically. Each local agency has authorization to design their tier service delivery to allow personnel and contractors to provide allowable weatherization measures for each client in an efficient and cost effective manner. Local agencies are not restricted to providing weatherization measures in a consecutive manner based on the Tier Model; local agencies are encouraged to provide multiple weatherization measures or conduct multiple tiers concurrently.

   b. Local agencies will report project status in the tiers as established in policy, including in-progress and completed projects.

3. Period of Eligibility (also see **Section 1.3, *Period of Eligibility***)

   a. An applicant will remain eligible for additional tiers of weatherization services for 12 months from the date of completion of the previous tier.

   b. If an additional tier of weatherization work is expected to begin between 12 and 15 months from the date of completion of the previous tier, the household must show continued eligibility.

      A signed declaration of income statement for the previous three months may be used to update application if necessary.

c. If an additional tier of weatherization work has not begun after 15 months from date of completion of the previous tier, the household must reapply in full.

Allowable Costs

Tier Service Delivery is allowable cost under DOE, HHS, BPA, and MM funds. See **Chapter 6, *Allowable Costs***.

B. Procedure

1. Programmatic

   a. Client files must include the following documentation:

      (1) List of weatherization measures performed.

      (2) Project status in tiers, including start and completion dates for each tier.

      (3) Justification for claiming a completed project if all eligible measures are not performed.

   b. Local agency resource plan for Tier Service Delivery to identify responsibility (in-house, contracted services, or community partners) for each weatherization measure.

2. Required Installation Standards and Materials Specifications

   See ***Specifications for the Low-Income Weatherization Program*** on Commerce's Weatherization Documents Web page.

3. Best Practices

   Not applicable.

CHAPTER 6 ALLOWABLE COSTS

SECTION 6.1 GENERAL STANDARDS FOR ALLOWABLE COSTS

A. Policy

Allowable weatherization costs must be:

1. Reasonable for the performance of the contract and of benefit to the program for which the funds are provided.
2. Allocated to the contract under these policies.
3. Conform to any limitations or exclusions set forth in these policies or in the contract as to type or amount of cost of items.
4. Consistent with policies and procedures that apply uniformly to other activities of the organization and are accorded consistent treatment.
5. Determined in accordance with generally accepted accounting principles. See "The Yellow Book" (OMB Circular A-123) issued by the federal Office of Management and Budget (**www.whitehouse.gov/omb/circulars/**).
6. Adequately documented.

B. Procedure

1. Local agency files must include all required expenditure documentation.
2. See funding source specific terms and conditions, policies and procedures, or policies and guidelines for allowable costs specific to each funding source.
3. See **Chapter 5, *Providing Weatherization Services***, for allowable weatherization measures and fund source limitations & allowances.

SECTION 6.2 GENERAL STANDARDS OF FISCAL ACCOUNTABILITY

A. Policy

1. Method of Compensation

   Commerce will reimburse local agencies for all allowable costs upon receipt of authorized requests for reimbursement as directed by Commerce. See **Section 8.7, *Reporting and Reimbursement of Expenses***.

2. Accounting and Auditing

   Local agencies are responsible for complying with all applicable guidelines and procedures, demonstrating responsible management of cash flow, inventory control, equipment purchase, and administrative costs. See **Section 6.8, *Audits***.

3. Subcontracting

   a. If a local agency wants to subcontract work under this program, a description of its subcontracting process and copies of pertinent contracts must be submitted to Commerce in its annual General Weatherization Work Plan. See **Section 8.2, *General Weatherization Work Plan***.

   b. Subcontractors must be selected using competitive procedures among potential bidders for weatherization services. See **Section 8.4, *Subcontracting***.

4. Record-keeping

   a. Local agencies must keep records that fully disclose the following:

      (1) Amount and disposition of funds received.

      (2) Total cost of a weatherization project.

      (3) Source and amount of funds used from all funding sources.

   b. Records must be retained for six years from the last financial audit or the completion of the length of commitment, whichever is later.

Referenced in: 10 CFR 440.2
10 CFR 440.23
10 CFR 440.24
10 CFR 440.25
10 CFR 600
OMB Circular A-87
OMB Circular A-122
Commerce General Terms and Conditions
DOE Specific Terms and Conditions
HHS Specific Terms and Conditions
MM Specific Terms and Conditions

5. Reports

   Local agencies will provide reports or answers in writing to specific questions or surveys requested by Commerce or its funding sources by the specified deadline. See **Chapter 8, *Program Management, Administration, and Reporting*.**

6. Equipment Purchases

   a. All purchases of equipment with values exceeding $5,000 require Commerce written approval.

   b. Requests for vehicles purchased with DOE funding require prior written DOE approval. Allow 90 days for DOE review.

   c. See **Section 6.6, *Equipment***, for additional policies, including procurement with multiple fund sources and equipment sharing with non-weatherization programs.

7. Securing Commerce's Interest in Motor Vehicles, Equipment, and Fixtures

   Local agencies are responsible for ensuring Commerce's financial interest in motor vehicles, equipment, and fixtures with purchase values of $10,000 or more, purchased under Commerce contracts. See **Section 6.6, *Equipment***, for additional policies.

8. Inventory Control

   Local agencies are required to maintain an inventory of materials and non-expendable tools and equipment. See **Section 8.12, *Inventory Control***.

9. Authorized Expenditures

   OMB (Office of Management and Budget) Circular A-87, Cost Principles for State, Local, and Indian Tribal Governments, and OMB Circular A-122, Cost Principles for Nonprofit Organizations, are used as general guidelines for determining which weatherization costs are allowed.

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

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

B. Procedure

1. Local agency files must include the following documentation:

   a. Description of agency subcontracting process and copies of pertinent contracts as submitted in the General Weatherization Work Plan.

   b. All necessary records that disclose fiscal accountability.

2. See **Section 8.7, *Reporting and Reimbursement of Expenses***.

3. See **Section 6.8, *Audits***.

4. See **Section 8.2, *General Weatherization Work Plan***.

5. See **Section 8.4, *Subcontracting***.

6. See **Chapter 8, *Program Management, Administration, and Reporting***.

7. See **Section 6.6, *Equipment***, for procedures related to equipment purchase and securing Commerce's interest in motor vehicles, equipment, and fixtures.

8. See **Section 8.12, *Inventory Control***.

9. See **Chapter 5, *Providing Weatherization Services***, for allowable weatherization measures and fund source limitations & allowances.

10. See OMB Circular A-87, Cost Principles for State, Local, and Indian Tribal Governments.

11. See OMB Circular A-122, Cost Principles for Nonprofit Organizations.

SECTION 6.3 ADMINISTRATIVE COSTS

A. Policy

1. Administrative costs are costs associated with those functions of a general nature not clearly identifiable with a program. These functions include planning, budgeting and accounting, and establishment and direction of local agency policies, goals, and objectives.

2. Allowable administrative costs include costs associated with functions such as:

   a. General board/committee meetings.

   b. Executive Director.

   c. General staff meetings.

   d. Office management.

   e. Accounting, auditing, and budgeting.

   f. Corporate legal services.

   g. Personnel management.

   h. Purchasing and distribution of supplies.

   i. Insurance and bonding.

   j. Receptionist, switchboard, mail distribution, filing, and other central clerical services.

   k. Word processing and computer services.

   l. Computer equipment used for administrative functions.

   m. Organizational and procedure studies.

   n. General record keeping.

   o. Office space/facilities lease or rental – including outstations.

   p. Utilities in the office space/facilities.

q. Postage.

r. Duplicating/copying.

s. Telephone equipment and services.

t. Administrative staff training.

u. Applicable state and local taxes.

v. General personal liability and property insurance (Liability insurance for onsite work is a program cost. See **Section 6.4, *Program Operation Costs***.).

DOE allows general personal liability and property insurance to be charged to the liability line item of the contract.

3. Charge direct supervision of program services to those functions, not to administration.

Personnel typically identified as administration may relate, at times, more directly to program activities than to administration. Even some hours of "management staff" may be properly allocated to program operation costs, but only if the positions are not included in an indirect cost pool.

4. Cost Allocation Plans

The local agency's auditor must approve plans used to spread central administrative costs across local agency programs.

5. Indirect Rates

a. Local agencies may apply a federally approved indirect cost rate to charge administrative costs only if both of the following conditions are met:

(1) The agency has an approved indirect cost agreement with a cognizant federal agency.

(2) The indirect cost agreement precludes the application of the indirect rate to direct client benefits in this program.

b. The application of indirect cost charges may not result in exceeding applicable contract budget limits.

B Procedure

1. Local agencies must gain auditor approval of cost allocation plan.

2. Local agencies must submit a copy of their indirect cost agreement approval letter with the annual General Weatherization Work Plan. See **Section 8.2, *General Weatherization Work Plan***.

3. Local agency files must include the following documentation:

   a. All applicable administrative costs.

   b. Auditor approval of cost allocation plan.

   c. Indirect cost agreement approval letter.

SECTION 6.4 PROGRAM OPERATION COSTS

A. Policy

1. Program operation costs are costs that can be clearly identifiable with a program. Program operation costs include material and labor costs associated with installing weatherization measures, making energy-related health and safety or weatherization-related repairs, and other costs necessary to operate a weatherization program (often referred to as "program support").

   a. Allowable material costs include:

      (1) Material costs charged by a subcontractor.

      (2) Purchase and delivery of materials. See **Section 6.4.1, *Compliance with Federal Rules for Use of Recycled Insulation Materials***, for procurement guidance for recycled insulation materials.

      (3) Storage or warehousing of weatherization materials.

      (4) Payment of staff involved in purchasing, inventory, and distribution of weatherization materials.

      (5) Payment for labor involved in fabricating materials.

   b. Allowable labor costs include:

      (1) Labor costs charged by a subcontractor.

      (2) Local agency weatherization crew costs (salary and benefits).

   c. Other allowable program operation costs include:

      (1) Direct supervision of program services and other direct program management/oversight responsibilities.

(2) Intake and outreach staff.

(3) Weatherization audit and inspection.

(4) Transportation of materials, crews, tools, and equipment to and from the storage and weatherization sites (includes maintenance and insurance of vehicles).

(5) Printing when associated with materials used in energy conservation education or outreach.

(6) Office space and utilities as a percentage of the area used for direct applicant services.

(7) Office space and utilities used by program support personnel in program support functions.

(8) Telephone calls when documented as used for direct applicant services.

(9) Copying when copied materials are given to an applicant.

(10) Postage for material mailed to prospective or current applicants.

(11) Program-related liability insurance—including POI insurance.

(12) Equipment and tool purchase and maintenance—including computer and other electronic equipment and software used by weatherization program activities.

(13) Lease or rental of tools, equipment, and vehicles.

(14) Purchase of vehicles.

(15) Payments for liability insurance covering personal injury and property damage for on-site work.

(16) Payments permitted under the federal Workforce Investment Act (formerly JTPA) to supplement wages paid to training participants and public service employment workers under that program.

(17) Securing building permits when necessary for the installation of weatherization measures.

(18) Approved renewable energy systems (DOE funds only). See Section 5.7, *Renewable Energy Systems*.

2. Combined Funds

   a. When non-Commerce funds (such as utility funds) are combined with Commerce funds on a weatherization project, Commerce's share will be the minimum amount necessary to complete the weatherization work after funds from the other sources are used.

   b. Commerce funds for weatherization must not be used to supplant other funds or programs.

3. Dwelling Unit Cost Control Records

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

   b. The fiscal records for all dwelling unit expenditures must be traceable. Costs charged to each funding source must have purchase orders, inventory records, and time sheets identifying funding sources.

   c. DOE-Specific Limits

      When weatherization services are provided with DOE funding, the cost per weatherized dwelling unit may not exceed an average limit established by DOE. DOE adjusts that average limit annually. Those adjustments appear in Commerce's annual DOE state plan. *HHS, BPA, and MM do not have per unit expenditures limits.*

4. State and Local Taxes

   a. Charge applicable state and local taxes on purchases to the same budget category and funding source as the purchased item or service.

b. Local agencies making weatherization improvements under the weatherization program for low-income homeowners or renters are eligible for exemption from state sales tax and use tax. See Washington State Department of Revenue Special Notice: *Sales and Use Tax Exemption for the Weatherization Assistance Program*. Purchases of qualified materials must be accompanied by a *Buyers' Retail Sales Tax Exemption Certificate.*

5. Weatherization-related Repairs and Health and Safety Repairs

   All labor and material costs for weatherization-related repairs and energy-related health and safety repairs must be charged to the applicable budget category. Related expenditures may not exceed the average expenditure limits established for each contract fund source. See sections **5.3, *Health and Safety Measures and Repairs***, and **5.4, *Weatherization-Related Repair*.**

6. Low-Cost/No-Cost Weatherization Activities

   a. Low-cost/no-cost services may be provided to an eligible household, even when other measures are not provided.

      (1) Up to ten percent of a local agency's allocation may be used to perform low-cost/no-cost weatherization in eligible dwelling units.

      (2) Low-cost/no-cost measures include installation of water-flow controllers, furnace or cooling filters, or items that are primarily directed toward reducing air infiltration (weather-stripping, caulking, and glass patching, etc.).

   b. Do not count a unit that receives only low-cost/no-cost services as a completed unit on monthly reimbursement requests (**Exhibit 8.7A, *Sample Weatherization Program Request for Reimbursement***) or the **Monthly Weatherization Report for Completed Units (Exhibit 8.7B)**.

   c. DOE-Specific Limits and Exclusions

      (1) Under DOE, low-cost/no-cost materials are limited to $50 per dwelling unit. *There is no per dwelling unit limit for HHS, BPA and MM.*

      (2) No DOE funds may be used to install low-cost/no-cost materials.

(3) Low-cost/no-cost weatherization measures are excluded from the following requirements:

(a) One DOE weatherization activity per dwelling unit restriction.

(b) DOE average cost per unit expenditure.

7. Liability Insurance

   a. Liability insurance for onsite work is a program cost.

   b. Under the DOE contract, costs for liability insurance covering personal injury and property damage for on-site work may be charged to the liability line item of the contract.

B. Procedure

1. Local agencies must organize all bookkeeping and production records systems to account for the different cost allowances and budget categories of the various funding sources involved.

2. Local agencies must report program expenditures to Commerce as required.

3. See sections **5.3, *Health and Safety Measures and Repairs***, and **5.4, *Weatherization-Related Repair***.

4. See **Chapter 5, *Providing Weatherization Services***, for allowable weatherization measures and fund source limitations & allowances.

SECTION 6.4.1 COMPLIANCE WITH FEDERAL RULES FOR USE OF RECYCLED INSULATION MATERIALS

A. Policy

1. Commerce and local agencies must comply with Environmental Protection Agency (EPA) regulations regarding the use of recycled materials (40 CFR 247.12, Comprehensive Procurement Guideline for Products Containing Recovered Materials (**www.epa.gov/**).

   a. Local agencies are required to make good faith efforts to procure insulation products that contain recycled materials.

   b. Exceptions to this policy may be made only if the following conditions can be documented:

      (1) Inability of the product to perform its intended purpose.

      (2) Unavailability of the product at a reasonable price.

      (3) Inability to obtain the product within a reasonable period of time.

      (4) Inadequate number of vendors for obtaining and verifying estimates of recovered materials content to insure a satisfactory level of competition at the time of procurement.

2. In addition to meeting procurement specifications, local agencies must establish an affirmative procurement program consisting of four items.

   a. Preference program for purchasing designated items.

      (1) EPA regulations provide three general approaches:

         (a) Minimum content standards that identify the minimum content of recovered materials that an insulation product must contain.

         (b) Case-by-case procurement, allowing competition between insulation products made of new materials and those with recovered materials.

         (c) An alternative approach that accomplishes the same objectives as a) and b).

      (2) EPA regulations recommend that the procuring agency use minimum content amount for commercially available insulation products that may contain recovered materials. These include:

         (a) Cellulose, loose fill, and spray-on (75 percent post-consumer recovered paper by weight).

(b) Perlite composite board (23 percent post-consumer recovered paper by weight).

(c) Rock wool (50 percent recovered materials).

b. Promotion program.

c. Procedures for obtaining estimates and certifications of recovered materials content and for verifying the estimates and certifications.

d. Annual review and monitoring of the effectiveness of the program.

3. Further guidance is provided in the ***Specifications for the Low-Income Weatherization Program*** on Commerce's Weatherization Documents Web page.

B. Procedure

1. Local agencies must allow Commerce access to all affirmative procurement program documentation upon request.

2. Local agency files must contain the following documentation:

   a. Procurement conditions that prohibit compliance with 40 CFR 247.12.

   b. Verification the agency is in compliance with EPA's affirmative procurement program.

3. See ***Specifications for the Low-Income Weatherization Program*** on Commerce's Weatherization Documents Web page.

SECTION 6.5 TRAINING AND TECHNICAL ASSISTANCE

A. Policy

1. Expenditure of contract funds awarded specifically for training and technical assistance (T&TA) purposes are subject to the following conditions:

   a. Training must have direct application and benefit to local agency weatherization programs and assigned staff.

      If the training is not strictly for the benefit of the weatherization program staff, local agencies must document how other programs will share the training costs.

   b. Priority is to be given to direct training opportunities for staff, crews, and subcontractors.

   c. Staff salaries while attending training, providing training, traveling to and from training, and participating in on-the-job training is an allowable expense. Equipment and materials related to training may also be purchased with these funds, with appropriate written justification and prior approval from Commerce.

   d. T&TA funds cannot be used for:

      (1) Salaries not related to training activities;

      (2) Vehicle or equipment purchases; or

      (3) Program costs.

2. Local agencies must complete the ***Training and Technical Assistance Expense Form*** **(Exhibit 6.5A)**.

   a. Local agencies must include all names and titles of individuals attending training.

   b. Local agencies must keep Training and Technical Assistance Expense Forms on file for review by Commerce field representatives.

3. Commerce may occasionally reimburse local agency costs for providing, or travel to receive, training and technical assistance through the Peer Exchange Program.

   a. Prior Commerce approval is required for this reimbursement.

   b. Local agencies must submit a ***Peer Exchange Proposal Form*** **(Exhibit 6.5B)** directly to the attention of assigned Commerce field representative.

B. Procedure

Local agency files must include the following documentation:

1. Cost-sharing plan if training is not strictly for the benefit of weatherization program staff.
2. ***Training and Technical Assistance Expense Form (Exhibit 6.5A)***.
3. ***Peer Exchange Proposal Form* (Exhibit 6.5B)**.

SECTION 6.6 EQUIPMENT

A. Policy

1. Equipment Purchases

   a. All purchases of equipment with values exceeding $5,000 require Commerce written approval.

      (1) Local agencies must submit an ***Equipment Purchase Request/Approval Form*** **(Exhibit 6.6A)**.

      (2) Commerce's assigned field representative and the applicable program manager will review each request for approval.

   b. Requests for vehicles purchased with DOE funding require prior written DOE approval. Allow 90 days for DOE review.

      (1) Vehicles should be acquired with grant funds fromCommerce only after all other options have been explored.

      (2) Lease vs. purchase should be evaluated carefully.

   c. In some instances, purchases made with more than one fund source may be the only way to acquire needed equipment. If the equipment to be purchased for use in the local agency's weatherization program will also be used by other local agency programs, there should be a proportionate share in the purchase cost.

   d. DOE Allowance

      For the purposes of determining the average cost per dwelling limitation, costs for the purchase of vehicles or other certain types of equipment as defined in 10 CFR part 600 may be amortized over the useful life of the vehicle or equipment.

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

2. Securing Commerce's Interest in Motor Vehicles, Equipment, and Fixtures

   Local agencies are responsible for ensuring Commerce's financial interest in motor vehicles, equipment and fixtures with purchase values of $10,000 or more, purchased under Commerce contracts.

a. Motor Vehicles

(1) Local agencies will name Commerce as lien holder on Certificates of Title for motor vehicles. See RCW 46.12.095, Requirements for perfecting security interest (**http://apps.leg.wa.gov/rcw/**).

(2) Local agencies will forward copies of Certificates of Title for vehicles to Commerce with the expenditure report on which they are claimed.

b. Equipment

Every five years, beginning in calendar year 1992, local agencies will complete and submit to Commerce for approval, signed Uniform Commercial Code Financing Statements (Form UCC1), listing equipment other than motor vehicles described under a., and other than fixtures described under c., with acquisition costs of $10,000 or more and purchased under Commerce contracts. See RCW 62A.9A, Secured transactions, sales of accounts, contract rights and chattel paper – Part 5, Filing (**http://apps.leg.wa.gov/rcw/**).

(1) Commerce will be named as Secured Party.

(2) UCC1 statements will include the phrase: "all presently owned and after-acquired inventory and equipment."

(3) Commerce will determine which items it wishes to continue its secured interest in from previous filings.

(4) If approved, Commerce will sign the completed statements and file them with the Department of Licensing, UCC Division, Olympia, WA 98504.

(5) Commerce and local agencies will keep copies of all UCC filings.

c. Fixtures

Local agencies will complete and submit toCommerce for approval signed Uniform Commercial Code (UCC2) Forms for fixtures (assets attached to realty) with acquisition costs of $10,000 or more and purchased under Commerce contracts. See RCW 62A, Uniform commercial code (**http://apps.leg.wa.gov/rcw/**).

(1) UCC2 Forms may be obtained at the local county Auditor’s Office.

(2) Commerce will be named as Secured Party.

(3) If approved, Commerce will sign the completed statements and file them with the local county Auditor's Office in the county where the real estate is located.

(4) Commerce and local agencies will keep copies of all UCC filings.

3. Equipment Reserve Funds

   a. When Commerce establishes an equipment fund these funds must be used solely for approved equipment purchase or lease.

   b. Equipment purchased or leased through this fund must be used only to support weatherization programs in which the majority of funding is provided by Commerce.

   c. When funds are available, Commerce will invite agencies to submit a proposal for needed equipment. A sample proposal form is shown as **Exhibit 6.6B, *Equipment Reserve Fund Application***.

      (1) Commerce will evaluate proposals according to the following criteria:

         (a) Need (Why is the equipment needed?) - 20 points.

         (b) Age and condition of equipment or vehicles to be replaced (mileage, needed repairs, or other useful information) - 10 points.

         (c) Availability of other resources for purchasing equipment (Why are other funds not available to meet this need?) - 15 points.

         (d) Record of other recent similar purchases - 5 points.

      (2) All decisions on such funding by Commerce are final and are not subject to reconsideration.

B. Procedure

1. Local agency files must include the following documentation:

   a. Approved ***Equipment Purchase Request/Approval Forms*** **(Exhibit 6.6A)**.

   b. DOE approval for vehicles purchased with DOE funds.

   c. Approved ***Equipment Reserve Fund Applications*** **(Exhibit 6.6B)**.

   d. Original Certificates of Title for motor vehicles.

   e. UCC filings. Visit Washington State Department of Licensing's Web site, **http://www.dol.wa.gov/**, to download appropriate forms.

2. See RCW 46.12.095, Requirements for perfecting security interest (**http://apps.leg.wa.gov/rcw/**), for information regarding Certificates of Title for motor vehicles.

SECTION 6.7 BUDGET REVISIONS

A. Policy

1. Contract and contract amendment face sheets include approved budgets for local agencies.

2. Local agencies may cumulatively transfer up to five percent of the sum of all program line items among approved budget line items. Allowable transfers include:

   (1) Administrative funds may be transferred to Program Operations.

   (2) Program Operations is broken down into the following categories. Local agencies may transfer funds between these categories based on certain parameters.

      (a) Program

      (b) Health and Safety

      (c) Weatherization-Related Repair

      (d) DOE only: Liability Insurance and Financial Audit

   a. Training and Technical Assistance funds may not be transferred among line items.

3. Budget revisions in excess of five percent must be submitted in writing (email acceptable) to, and approved by, Commerce before local agencies submit expenditure reports reflecting the revisions.

   a. Local agencies must provide the original budgets and proposed changes to the appropriate weatherization program manager.

   b. Program managers will give approval via email, copying Commerce's program budget specialist.

4. No contracts shall be amended to adjust budgets, the scope of work, or to change other contract provisions after the termination of the contract.

B. Procedure

1. Local agencies must submit a written request (email acceptable) to Commerce for budget revisions in excess of five percent of the sum of all program line items.

2. Local agencies must retain records of all Commerce approved budget adjustments.

SECTION 6.8 AUDITS

A. Policy

1. All program funds made available to Commerce local agencies will be audited annually in accordance with the following:

   a. Generally accepted accounting principles.

   b. Governmental Auditing Standards ("The Yellow Book") issued by the General Accounting Office (GAO).

   c. The Office of Management and Budget (OMB) Compliance Supplement for Single Audits of State and Local Governments.

   d. OMB Circular A-133, Audits of States, Local Governments, and Non-Profit Organizations.

   e. DOE 10 CFR 600, Financial Assistance Rules.

   f. All state and federal laws and regulations governing the programs in which local agencies participate.

2. Costs of audits will be incorporated into Commerce's contracts, charged to the local agency's Administration category of expenditure.

   If local agencies meet the threshold contained in OMB Circular A-133, DOE allows the costs of financial audits to come off the top of the contract.

3. Local agency auditing will be conducted by any of the following entities:

   a. Office of State Auditor.

   b. A single independent Certified Public Accountant (CPA) firm selected by Commerce.

   c. CPA firms selected by the local agency at Commerce's discretion.

4. All auditors employed must provide positive assurance to local agencies that they meet independent CPA provisions defined in the Yellow Book, including annual training.

B. Procedure

Local agencies must allow Commerce access to all audit reports upon request, and if applicable, audit-finding action plans.

CHAPTER 7 PROGRAM INSPECTION AND MONITORING

SECTION 7.1 LOCAL AGENCY INSPECTION OF WEATHERIZATION WORK

A. Policy

1. Local agencies must have defined, written internal monitoring procedures to perform regularly as a means for quality control, compliance assurance, and risk assessment. Such procedures must include written inspection procedures that ensure comprehensive and consistent inspections of all units weatherized.

2. No dwelling will be reported to Commerce as completed until the local agency has performed a final inspection and certified that appropriate work has been completed in a quality manner.

3. Inspections shall take place within 30 days of completion of work on the residence.

4. A trained and qualified inspector, someone other than the installer(s), shall conduct inspections.

    a. Must be certified as a building analyst by the Building Performance Institute (BPI). Required dates for completion will be provided by Commerce through e-mail notification and website posting.

    b. Training and testing will be provided by the Peer Circuit Rider/Building Performance Center.

    c. Newly hired inspectors must have work reviewed by a certified Building Analyst 1 (BA1) until such time that they become certified.

B. Procedure

Client files must include signed and dated documentation of all inspections and final certification.

SECTION 7.2 COMMERCE PROGRAM MONITORING

A. Policy

1. Commerce conducts annual program monitoring in accordance with the ***Monitoring Protocol*.**

2. Local agencies will provide Commerce field representatives with all requested information and assistance in a professional, cooperative manner and by date requested.

   a. Local agencies will complete and submit to Commerce an annual General Weatherization Work Plan.

   b. Local agencies are expected to ensure that appropriate employees are available throughout the duration of the Commerce site visit, including employees who may have flexible work schedules.

   c. Requests to change a monitoring visit must be received in writing 30 days prior to scheduled visit (emergencies excluded).

   d. Executive directors are strongly encouraged to participate in monitoring exit conferences.

   e. Local agencies will have five working days to provide feedback on the draft monitoring report from the exit conference.

   f. Local agencies will make corrections to work quality issues within 30 days of monitoring visit and confirm with Commerce.

B. Procedure

See ***Monitoring Protocol*** on Commerce's Weatherization Documents Web page.

CHAPTER 8 PROGRAM MANAGEMENT, ADMINISTRATION, AND REPORTING

SECTION 8.1 SOLICITING PROVIDERS FOR WEATHERIZATION PROGRAM SERVICES

A. Policy

1. Primary service delivery is provided by community-based, nonprofit, and local government agencies. Commerce defines the above entities as local agencies.

   Commerce gives special consideration in designating local public or nonprofit agencies that received funds for energy related assistance programs under the 1964 Economic Opportunity Act.

2. Local agencies must have demonstrated, and continue to demonstrate, fiscal accountability and program effectiveness.

   If, in a particular geographic area, a program or local agency has been terminated, or failed to meet Commerce's requirements in the previous program year, a successor agency that operates in substantially the same manner will be considered.

SECTION 8.2 GENERAL WEATHERIZATION WORK PLAN

A. Policy

1. Local agencies will submit to Commerce an annual General Weatherization Work Plan according to instructions and deadlines established by Commerce.

   a. Local agencies must submit an electronic copy and a hard copy with original signatures.

   b. To access the current plan, visit the Weatherization Documents page on the Commerce website, **http://www.cted.wa.gov/portal/alias__cted/lang__en/tabID__513/DesktopDefault.aspx** .

2. Local agencies will use the following fund source program years when completing the annual plan:

   a. DOE - April 1 through March 31.

   b. HHS - October 1 through September 30.

   c. BPA – October 1 through September 30.

   d. MM - Biennium is July 1 of the first year through June 30 of the second year. Local agencies will use data for one year, not both, when completing the plan.

B. Procedure

1. Local agency files must include a copy of the current completed General Weatherization Work Plan.

2. See Weatherization Documents page on the Commerce website, ***http://www.cted.wa.gov/portal/alias__cted/lang__en/tabID__513/DesktopDefault.aspx***, to view the current year's plan.

SECTION 8.3 CONTRACTS AND AMENDMENTS

A. Policy

1. Commerce contracts to local agencies prior to the start of the program year. See **Exhibit 8.3A, *Sample Weatherization Contract Face Sheet***.

   a. The contract is comprised of the following:

      (1) Contract face sheet.

      (2) Pertinent exhibits (See **Exhibit 8.3B, *Sample Exhibit A***).

      (3) By reference, the General Weatherization Work Plan.

      (4) Commerce *General and Specific Terms and Conditions.*

   b. Fund source program years are as follows:

      (1) DOE - April 1 through March 31.

      (2) HHS - October 1 through September 30.

      (3) BPA – October 1 through September 30.

      (4) EM - Biennium is July 1 of the first year through June 30 of the second year.

   c. The contract face sheet specifies the amount of funds to be allocated to each budget category.

   d. The contract cites all applicable federal and state laws and regulations, as well as Commerce policies that govern local agency performance.

2. Commerce or the local agency may initiate amendments during the course of the contract period to change expenditures or production by mutual agreement. See **Exhibit 8.3C, *Sample Weatherization Contract Amendment Face Sheet*.**

   a. When additional funds are available after a contract is made between Commerce and the local agency, Commerce may increase the contract amount through a standard amendment.

      (1) A standard amendment requires revision to the original contract face sheet and authorized signatures from Commerce and the local agency.

      (2) Local agencies will submit a ***Signature Authority form*** **(Exhibit 8.3D)** annually with the General Weatherization Work Plan and update as needed.

b. No amendments may be made after the close of the contract period.

3. Local agencies will submit contracts and amendments according to instructions and deadlines established by Commerce.

B. Procedure

1. Local agency files must include the following documentation:

   a. Weatherization contract face sheets for each fund source. See **Exhibit 8.3A, *Sample Weatherization Contract Face Sheet***.

   b. Weatherization contract amendment face sheets for each fund source, as applicable. See **Exhibit 8.3C, *Sample Weatherization Contract Amendment Fact Sheet***.

   c. Signed signature authority forms. See **Exhibit 8.3D, *Signature Authority***.

2. See **Exhibit 8.3B, *Sample Exhibit A***.

3. See *General Weatherization Work Plan Form* on the Weatherization Documents page, ***http://www.cted.wa.gov/portal/alias__cted/lang__en/tabID__513/DesktopDefault.aspx***, to view the current year's plan.

4. See *Commerce General Terms and Conditions*.

SECTION 8.3.1 SPENDING LIMITS

A. Policy

1. Commerce may impose spending limits on contracts, restricting the amount of money a local agency may spend, regardless of the total amount of the contract.

   For example, spending limits may be used to limit expenditures until the local agency meets certain conditions or Commerce receives full program funding.

2. Within the limit set by Commerce, administrative expenditures cannot exceed a percent of the spending limit that is higher than the percent of the administrative funds in the contract award.

   For example, if the contract provides seven percent of the total award for administration, up to seven percent of the spending limit may be spent for administrative costs.

3. Commerce will only reimburse local agencies up to the amount of the spending limit until the local agency receives email or written notification from Commerce that the spending limit is lifted.

B. Procedure

Local agency files must include a hard copy of Commerce notification.

SECTION 8.4 SUBCONTRACTING

A. Policy

1. Local agencies may subcontract labor and installation services in accordance with procurement standards described in Commerce's *General Terms and Conditions,* and subject to Commerce's approval of plans provided in the local agency's General Weatherization Work Plan. See **Section 8.2, *General Weatherization Work Plan***.

    a. When contracting with installers, manufacturers, or suppliers, local agencies shall follow standard business practices for selecting the best weatherization material or installation for the best price.

    b. Local agencies are responsible for ensuring that subcontractors are familiar with program measures, installation specifications, and current techniques and methodologies.

2. Local agencies must certify annually that neither the organization nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in a weatherization contract with Commerce by any federal department or agency as part of the General Weatherization Work Plan. See **Exhibit 8.4A, *Certification Regarding Debarment, Suspension, or Ineligibility and Voluntary Exclusion – Primary Tier Covered Transactions***.

    a. Local agencies are prohibited to enter into contracts with parties that are suspended or debarred, or whose principals are suspended or debarred.

    b. Covered transactions include procurement contracts for goods and services equal to or in excess of $100,000 or more.

3. Commerce reserves the right to review and approve the selection process and the contract form used by local agencies.

B. Procedure

1. Local agency files must include the following documentation:

   a. All contracts entered into with subcontractors.

   b. ***Certification Regarding Debarment, Suspension, or Ineligibility and Voluntary Exclusion – Primary Tier Covered Transactions*** **(Exhibit 8.4A)**. The current form is located in the General Weatherization Work Plan on the Weatherization Documents page at **http://www.cted.wa.gov/portal/alias__cted/lang__en/tabID__513/DesktopDefault.aspx**.

2. See *Commerce General Terms and Conditions*.

3. See **Section 8.2, *General Weatherization Work Plan***.

SECTION 8.4.1 WARRANTIES, OWNER RELEASE, & WAIVER OF LIEN

A. Policy

1. Local agency subcontractors must provide a one-year warranty against defects in materials, manufacture, design, or installation of work performed under contract.

   a. Local agencies and their subcontractors must provide homeowners with the original warranty paperwork for materials and appliances installed or provided.

   b. Local agencies must confirm homeowner receipt of all warranty information.

2. Local agencies must receive owner authorization to install measures on a dwelling unit. **Exhibit 8.4.1A, *Property Owner Release Form***, is an example of acceptable documentation.

3. Prior to payment of any invoice to subcontractors for services or goods, a lien release must accompany the invoice. A lien release provides a safeguard to the homeowner and local agency against the possibility of subcontractor non-payment. **Exhibit 8.4.1B, *Affidavit and Waiver of Lien***, is an example of acceptable documentation.

B. Procedure

1. Client files must include the following documentation:

   a. Confirmation of homeowner receipt of warranty information.

   b. Scope of Work.

   c. **Exhibit 8.4.1A, *Property Owner Release Form***, or equivalent documentation.

   d. **Exhibit 8.4.1B, *Affidavit and Waiver of Lien***, or equivalent documentation for each paid subcontractor invoice.

2. See RCW 60.04 (**http://apps.leg.wa.gov/rcw/**), Mechanics' and materialmen's liens.

SECTION 8.5 CERTIFICATION REGARDING LOBBYING

A. Policy

Local agencies that receive $100,000 or more in federal funds, in one or more awards during the fiscal year, must file a Federal Certification Regarding Lobbying annually as part of the General Weatherization Work Plan. See **Exhibit 8.5A, *Federal Certification Regarding Lobbying***.

1. The same requirements apply to all levels of subcontract, sub grant, and contracts under grants, loans, and cooperative agreements.

2. Local agencies must certify that they will not use federal funds to lobby for support of federally funded programs.

3. If any funds other than federal are used for lobbying at the federal level, as defined in the certification, such activity must be reported on the **Standard Form LLL, *Disclosure of Lobbying Activities***.

B. Procedure

Local agency files must include the following documentation:

1. Copies of all certifications and disclosures signed by the local agency and submitted to Commerce. See **Exhibit 8.5A, *Federal Certification Regarding Lobbying***, or access the form located in the current General Weatherization Work Plan on the Weatherization Documents page at **http://www.cted.wa.gov/portal/alias__cted/lang__en/tabID__513/DesktopDefault.aspx**.

2. Copies of all certifications and disclosures signed by subcontractors and submitted to the local agency. See **Exhibit 8.5A, *Federal Certification Regarding Lobbying***, or access the form located in the current General Weatherization Work Plan on the Weatherization Documents page at **http://www.cted.wa.gov/portal/alias__cted/lang__en/tabID__513/DesktopDefault.aspx**..

3. Copies of Standard Form LLL, *Disclosure of Lobbying Activities*, as applicable. The form is available as an exhibit and may also be found at **http://www.whitehouse.gov/omb/grants/sflllin.pdf**.

SECTION 8.6 ISSUANCE OF WORKING CAPITAL ADVANCES

A. Policy

1. A local agency may request an initial working capital advance one month prior to planned expenditures using the "Advance Request" space of the applicable weatherization program request for reimbursement form. See **Exhibit 8.7A, *Sample Weatherization Program Request for Reimbursement*.**

   a. Requests for an advance may not exceed the local agency's planned expenditures for the first sixty days' Administration/Program or 10 percent of the total Administration/Program.

   b. Commerce will issue the advance once both parties sign the weatherization program contract and the local agency submits the request for advance.

   c. The working capital advance must be liquidated within sixty days of issue.

   d. Examples:

      (1) If a local agency has a $10,000 advance and sends in a request for reimbursement showing $8,000 in expenditures and estimates that its expenditures for the next month will be close to $10,000, then the local agency should enter $8,000 in the "Advance Request" space on its request for reimbursement. Commerce will apply the $8,000 the local agency spent towards liquidation of its original advance to show that those funds were expended first. Commerce will issue a new advance for $8,000 leaving the local agency with the $2,000 remaining from the initial advance and new advance of $8,000 for a total of $10,000. See **Exhibit 8.6A, *Working Capital Advance Example One*.**

      (2) If a local agency has a $10,000 advance and sends in a request for reimbursement with $12,000 of expenditures but wants to maintain only a $10,000 advance, the local agency should enter $10,000 in the "Advance Request" space. See **Exhibit 8.6B, *Working Capital Advance Example Two***.

      (3) If a local agency has a $10,000 advance and sends in a request for reimbursement for $10,000 but knows it will only need $5,000 for the next month, the local agency should request an advance of $5,000. See **Exhibit 8.6C, *Working Capital Advance Example Three***.

      (4) If a local agency has a $10,000 advance and sends in a request for reimbursement for $2,000 and requests an advance of $2,000, Commerce will issue it. However, if the local agency only spends another $2,000 the following month and it requests additional funds, the advance will not be approved and the expenditures will be applied against the $10,000 advance. Future requests for reimbursement will also be applied against the advance until local agency

expenditures increase or the advance is completely liquidated. See **Exhibit 8.6D, *Working Capital Advance Example Four***.

2. When Commerce receives a request for reimbursement after the advance is issued, the requested reimbursement will be deducted from the advance.

3. When an advance is reduced and performance verifies need, the local agency may submit a request for an additional advance on any month's request for reimbursement to bring them up to the sixty days of Administration/Program or ten percent of the total Administration/Program.

4. After sixty days, if the local agency has over projected its advance needs or has more than ten percent cash on hand, Commerce may request that the excess amount be returned by a check accompanying that month's request for reimbursement.

   When cash advance needs have been over projected and are reconciled, the local agency may request an additional advance for sixty days of Administration/Program or ten percent of the total Administration/Program. Commerce may, however, adjust the advance request based on the previous sixty days expenditures.

5. Written justification and prior approval is required for advance payments exceeding 10 percent of the total contract amount.

   a. Local agencies must submit their requests using the "Advance Request" section on the request for reimbursement form (**Exhibit 8.7A**) and also submit a justification for requesting the additional advance.

   b. Additional advances will be approved to meet occasional special needs required to meet exceptional production demands, not as a regular fiscal policy.

B. Procedure

1. Complete and submit to Commerce an advance request using the "Advance Request" space of the applicable weatherization program's request for reimbursement form. See **Exhibit 8.7A, *Sample Weatherization Program Request for Reimbursement*** or access current reimbursement forms on the Weatherization Documents page of the Commerce Web site, **http://www.cted.wa.gov/portal/alias__cted/lang__en/tabID__513/DesktopDefault.aspx**.

   Submit written justification if requesting an advance payment exceeding 10 percent of the total contract amount.

2. Local agency files must include the following documentation:

   a. Copy of weatherization program contract.

b. Copy of submitted advance request.

c. Copy of written justification submitted to Commerce if requesting an advance payment exceeding 10 percent of the total contract amount.

3. See the following working capital advance examples:

a. **Exhibit 8.6A, *Working Capital Advance Example One***.

b. **Exhibit 8.6B, *Working Capital Advance Example Two***.

c. **Exhibit 8.6C, *Working Capital Advance Example Three***.

d. **Exhibit 8.6D, *Working Capital Advance Example Four***.

SECTION 8.7 REPORTING AND REIMBURSEMENT OF EXPENSES

A. Policy

1. The payment system for local agencies is based on monthly reimbursement in the amount of actual expenditures from the previous month.

   No payment will be made until Commerce receives an accurate and complete request for reimbursement form (**Exhibit 8.7A, *Sample Weatherization Program Request for Reimbursement***).

2. Subsequent to the issuance of a working capital advance, Commerce will reimburse local agencies for expenditures which are within the budget categories reported on the request for reimbursement (**Exhibit 8.7A**). See **Section 8.6, *Issuance of Working Capital Advances***.

3. Reporting Requirements

   a. Monthly Requests for Reimbursement

      (1) Requests for reimbursement must be submitted with original signature monthly, due the 15th of each month for the previous month's expenditures. See **Exhibit 8.7A, *Sample Weatherization Program Request for Reimbursement***.

      (2) Each month must be reported on a separate form. Each fund source must be reported on a separate form.

      (3) Unpaid obligations should be included in requests for reimbursement on an accrual accounting basis.

      Exception: Unpaid obligations may be included in reports on a cash accounting system as part of a negotiated reporting requirement waiver. See *Reporting Requirement Waivers* in this section.

      (4) Monthly requests for reimbursement must be submitted even if there was no production or fiscal activity during the previous month.

      (5) Commerce will make an effort to correct incomplete or inaccurate requests for reimbursement by phone or email. If an incomplete or inaccurate request for reimbursement is returned for correction, the local agency must submit a

corrected request for reimbursement within ten working days from the date returned.

b. Monthly Weatherization Report for Completed Units

(1) Local agencies must electronically submit a ***Monthly Weatherization Report for Completed Units* (Exhibit 8.7B)** by the 15th of each month for the previous month's activities. See **Exhibit 8.7C, *Weatherization Report for Completed Units – Instructions***, for completion instructions.

(2) The report is required even if no units have been completed during any given month.

c. Final Contract Closeout Report

(1) Local agencies must submit a Final Contract Closeout Report for each funding source that accurately reflects the work completed and funds expended during the program year. See **Section 8.8, *Final Contract Closeout Report***, **Exhibit 8.8A, *Sample Final Contract Closeout Report (Forms 1-6)***, and **Exhibit 8.8B, *Sample Weatherization Contract Closeout Checklist***.

(2) Local agencies must submit hard copy reports toCommerce 45 days after the program year closes.

d. BPA Quarterly Report

BPA requires Commerce to collect specific information from participating local agencies.

(1) Local agencies with BPA contracts must submit quarterly reports to Commerce by the 15th of the month following the end of each quarter.

(a) January 15th

(b) April 15th

(c) July 15th

(d) November 15th

(2) Commerce provides local agencies with reporting templates that include the specific data BPA requires.

4. Reporting Requirement Waivers

   a. Commerce may consider waivers for situations such as delayed reporting or to allow local agencies on a cash accounting system to claim documented unpaid obligations on their request for reimbursement form (**Exhibit 8.7A**).

      Waivers that allow delayed reporting will not affect the working capital advance payment limit.

   b. Reporting requirement waivers must be requested in writing in accordance with Commerce *General Terms and Conditions*.

5. Evaluation Data Collection and Reporting

   Commerce will, from time to time, conduct an evaluation of its low-income weatherization program to determine the extent to which it is accomplishing its objectives and at what cost.

   For example, Commerce will assist DOE in its national evaluation. In preparation for the evaluation, DOE requests that Commerce work with its local agencies during the evaluation period to ensure that signed client waivers are acquired enabling program access to utility and other energy vendor billing records and that account information, including account number, the name to which the account is billed and the billing address, for all energy vendors, both electric and the primary heating source, is accurately recorded for all clients. Account information must include both consumption and expenditure data. See **Exhibit 2C, *Sample Weatherization Program Utility Information Release Waiver***, for a sample client waiver.

   a. Whenever possible, local agencies are encouraged to obtain 12 months pre-weatherization billing data (usage and cost).

   b. Additional evaluation data collection responsibilities will be defined as needed.

B. Procedure

1. Client files must include copies of signed utility information release waivers. **Exhibit 2C, *Sample Weatherization Program Utility Information Release Waiver***, is an example of acceptable documentation.

2. Local agency files must include the following documentation:

   a. Copies of submitted requests for reimbursement (**Exhibit 8.7A, *Sample Weatherization Program Request for Reimbursement*).** DOE, HHS, BPA, and MM request for reimbursement forms are available on the Weatherization Documents page of the Commerce website, **http://www.cted.wa.gov/portal/alias__cted/lang__en/tabID__513/DesktopDefault.aspx.**

   b. Copies of submitted ***Monthly Weatherization Reports for Completed Units*** **(Exhibit 8.7B).** See **Exhibit 8.7C** for completion instructions.

   c. Copies of final contract closeout reports for each funding source. See **Section 8.8, *Final Contract Closeout Report*,** for policies and forms.

   d. Copies of completed final contract closeout checklists for each funding source. See **Section 8.8, *Final Contract Closeout Report***, for policies and forms.

   e. Copies of BPA quarterly reports for applicable local agencies.

   f. Copies of approved Commerce reporting requirement waivers.

   g. Copies of evaluation data and reports requested by Commerce.

3. Local agencies must have a current W-9 on file with Commerce.

4. See Commerce *General Terms and Conditions*.

5. Local agencies must send hard copies of all applicable reports to:

   Department of Commerce
   Community Services and Housing Division
   Housing Improvements and Preservation (HIP) Unit Budget Analyst
   P O Box 42525
   Olympia WA 98504-2525

SECTION 8.8 FINAL CONTRACT CLOSEOUT REPORT

A. Policy

1. Local agencies must submit a final report for each funding source that accurately reflects the work completed and funds expended during the program year. See exhibits **8.8A, *Sample Final Contract Closeout Report (Forms 1-6)*** and **8.8B, *Sample Weatherization Contract Closeout Checklist***.

2. Local agencies must submit reports to Commerce 45 days after the program year closes.

   Failure to provide timely closeout reports in accordance with Commerce requirements may result in penalties which may include, but not be limited to, Commerce denying or delaying local agency applications in future funding rounds.

3. Local agencies must submit closeout reports after the close of the contract period, during the transfer of obligations to another local agency, or upon termination of the contract for any reason.

4. Unexpended funds returned to Commerce at the end of a contract period must be returned with Administrative and Program Support funds in proportion to contract awards.

B. Procedure

1. Local agency files must include copies of final contract closeout reports for each funding source (**Exhibit 8.8A, *Sample Final Contract Closeout Report (Forms 1-6)***).

2. See contract closeout report forms and instructions (**Exhibit 8.8B, *Sample Weatherization Contract Closeout Checklist*)** provided by Commerce at least 30 days before the due date.

3. See the following sections for additional policies and procedures that pertain to final contract closeout reports:

   a. **Section 8.9, *Counting Year-End Unit Completions***.

   b. **Section 8.10, *Refunds***.

   c. **Section 8.11, *Program Income***.

   d. **Section 8.12.2, *Weatherization Materials Transfer and Inventory***.

SECTION 8.9 COUNTING YEAR-END UNIT COMPLETIONS

A. Policy

1. At the close of a contract period, local agencies must claim as completed units only those that have been inspected and certified as completed. See *(**Exhibit 8.9, "Completed Unit" Definition and Discussion**)*.

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

   b. Units that have been partially weatherized but not completed or inspected cannot be counted in the total production of that contract period.

2. DOE's overall investment cannot exceed the average annual cost per unit.

3. Local agencies may use their 45-day closeout period to complete commitments initiated before the end of their contract period.

   Commitments may include inspection of units to count them in program year production.

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

Note: Definition of DOE Weatherized Unit

Per *WPN 04-1, 2003 (p. 25):*
To assist State and local agencies in determining what a DOE weatherized unit is, DOE offers the following definition. *A DOE Weatherized unit is: A dwelling unit on which a DOE-approved energy audit or priority list has been applied and weatherization work has been completed. As funds allow, the DOE measures installed on this unit have an Savings-to-Investment Ratio (SIR) of 1.0 or greater, but also may include any necessary energy-related health and safety measures. The use of DOE funds on this unit may include, but are not limited to, auditing, testing, measure installation, inspection, or use of DOE equipment and/or vehicles, or if DOE provides the training and/or administrative funds. Therefore, a dwelling unit that meets both the definition of a DOE weatherized unit and has DOE funds used directly on it must be counted as a DOE completed unit.*

The above definition is not intended to impede or otherwise cause difficulties to States and local agencies that have entered into a leveraging partnership where other sources of funds are involved. If there is uncertainty in determining how best to account for the completed weatherized units under such an arrangement, contact your respective Regional Office for guidance.

B. Procedure

See **Section 8.8, *Final Closeout Report***, for policies and procedures that pertain to the counting of year-end unit completions.

SECTION 8.10 REFUNDS

A. Policy

1. Local agencies may receive and re-spend refunds from property owners who choose to sell their property to non-low-income purchasers after the weatherization work has been completed by the local agency with funds awarded under prior year contracts. See exhibits **1.4.1A, *Weatherization Program Property Owner/Agency Agreement***, and **1.4.1B, *Weatherization Program Property Owner/Agency Agreement for Multi-Family Buildings***, for conditions.

2. Refunds must be used first to weatherize units in the current contract period.

3. Units weatherized with refunds must be included in the total unit count for the contract period in which they were spent. Units must be reported monthly on the ***Monthly Weatherization Report for Completed Units*** **(Exhibit 8.7B)**.

4. Do not include refund dollar amounts in monthly requests for reimbursement. Refund dollar amounts will be accounted for in the ***Final Contract Closeout Report*** **(Section 8.8)**.

B. Procedure

1. Local agency files must include the following documentation:

   a. Applicable property owner/agency agreements (exhibits **1.4.1A, *Weatherization Program Property Owner/Agency Agreement***, and **1.4.1B, *Weatherization Program Property Owner/Agency Agreement for Multi-Family Buildings*)**.

   b. ***Monthly Weatherization Report for Completed Units*** **(Exhibit 8.7B)**.

   c. ***Final Contract Closeout Report*** **(Exhibit 8.8A)**.

2. See **Section 1.4.1, *Use and Monitoring of Property Owner/Agency Agreements***.

SECTION 8.11 PROGRAM INCOME

A. Policy

1. Local agencies must track program income and expend it first to avoid reporting at year's end.

2. Local agencies must report program income if left unexpended in final contract closeout reports (See **Section 8.8, *Final Contract Closeout Report***) to account for general program income earned from the following:

   a. Activities supported by a contract award.

   b. Income resulting from grants.

3. Unless restricted by contract, local agencies may retain program income received from services provided and usage or rental fees.

4. Local agencies may use program income as follows:

   a. To pay all or part of the local agency share of allowable project costs during the same budget period.

   b. To pay for costs not included in the total approved budget if Commerce determines that such costs are directly related to the objectives of the Federal statute under which the grant was awarded (weatherization related activities for low-income clients).

5. Commerce and its funding sources have no right to any portion of general program income earned or accrued after the project ends or the contract is terminated.

B. Procedure

1. Local agencies must have in place a system for tracking all program income.

2. Local agencies must report all program income at the end of each contract period. See **Section 8.8, *Final Contract Closeout Report***, for policies and forms.

Referenced in: 10 CFR 600.124
10 CFR 600.225
WPN 06-1, 2005
DOE Specific Terms and Conditions
HHS Specific Terms and Conditions
BPA Specific Terms and Conditions
MM Specific Terms and Conditions

SECTION 8.12 INVENTORY CONTROL

A. Policy

1. Local agencies must establish a written inventory policy.

   Written inventory policies must include the coordination of all functions – including scheduling, completions, purchasing, storage, and cash flow.

2. Local agencies must maintain records, perform inventories, and maintain control systems to prevent loss, damage, or theft of equipment, materials, and supplies**.**

3. Local agencies must use a master control system.

4. Quarterly physical counts must be done to verify book records.

5. A daily usage system must be a central feature of the inventory system.

6. An automatic ordering system for frequently used materials must exist.

7. All non-expendable purchases with a value of $5000 or more, and which have a useful life of more than a year, must be tagged with a unique number to reflect funding sources and must be logged into property control records for identification purposes.

8. All materials received must be accounted for by invoices from vendors which describe the material(s), number of units, unit cost, total costs, shipping charges, if any, and sales tax.

B. Procedure

1. Local agency files must include a written inventory policy.

2. See **Section 8.8, *Final Contract Closeout Report***, for policies and procedures pertaining to equipment inventory.

SECTION 8.12.1 DISPOSITION OF EQUIPMENT

A. Policy

Local agencies are required to maintain an inventory for all purchases of equipment with a useful life of one year or more and a purchase price of $5000 or more.

1. If a local agency has no need for equipment purchased with weatherization funds, for a purchase price of $5000 or more, the local agency must do both of the following:

   a. Notify Commerce in writing of its intent to dispose of the equipment. The notice must include a complete description, including the condition, of the equipment.

   b. Offer the equipment to local agencies with weatherization programs.

      (1) This process is coordinated through the field representative of the local agency wishing to dispose of the equipment.

      (2) Equipment will be given to local agencies on a first come, first served basis.

2. If no local agencies want the equipment, it must, with written Commerce approval, be sold.

   a. In the event the equipment has a title, the local agency must advertise the equipment in a local community publication, asking for sealed bids to be submitted by a specific date. The opening bid date must be published in the advertisement.

      Equipment must be sold to the highest bidder.

   b. The local agency must use the income in the program which originally purchased the equipment.

   c. Proceeds from equipment sales must be tracked and reported as program income.

B. Procedure

1. Local agency files must include the following documentation:

   a. Copy of written notification to Commerce regarding intent to dispose of unnecessary weatherization equipment by first offering the equipment to local agencies that provide weatherization services.

   b. Copy of written Commerce approval to sell the equipment if no local agency desires it.

c. Equipment sales receipt.

2. See **Section 8.11, *Program Income***.

3. See **Section 8.8, *Final Contract Closeout Report***, for policies and procedures pertaining to reporting program income during contract closeout.

SECTION 8.12.2 WEATHERIZATION MATERIALS TRANSFER AND INVENTORY

A. Policy

1. Local agencies may transfer materials inventory from one contract to another, within the same program, and between different programs.

   Transfers within the Same Program

   a. At the close of a program contract period, unused materials may be purchased by the same program in the next contract period.

   b. Local agencies must report the value of materials as a receipt and expenditure to the new contract for the program purchasing them, and as a credit to the program which is selling them. The credit is shown on the Final Contract Closeout Report as a reduction in expenditures to date for materials. See **Section 8.8, *Final Contract Closeout Report,*** for additional information and forms.

2. Materials inventory transfers may be made at any time during a contract period, as well as at the close of a contract when there is a remainder of unused materials on hand.

3. Local agencies must document the receipt and transfer of materials.

4. Transfers must be reported in the month the transfer takes place on the monthly request for reimbursement form (**Exhibit 8.7A, *Sample Weatherization Program Request for Reimbursement*)**.

5. In the case of a transfer at the end of a contract, the transfer must be reported in the ***Final Contract Closeout Report*** **(Section 8.8)**.

B. Procedure

1. Local agency files must include the following documentation:

   a. Copies of requests for reimbursement forms (**Exhibit 8.7A**).

   b. Copies of applicable forms in the ***Final Contract Closeout Report*** **(Exhibit 8.8A)**.

2. See **Section 8.8, *Final Contract Closeout Report***

CHAPTER 9 HEALTH AND SAFETY

SECTION 9.1 LOCAL AGENCY AND/OR SUBCONTRACTOR HEALTH AND SAFETY

A. Policy

The Weatherization Assistance Program provides weatherization services in a manner that minimizes risk to workers. The Weatherization Assistance Program remedies energy-related health and safety hazards, which are necessary before or because of, the installation of weatherization materials.

B. Procedure

All reasonable precautions must be taken against performing work on homes that will subject workers to health and safety risks. The standards included here provide only general guidelines for health and safety concerns. Detailed specifications regarding worker health and safety are found in OSHA Safety and Health Standards (29 CFR 1926\1910) published by the U.S. Department of Labor; and corresponding WISHA Rule WAC 296-62. Worker safety rules of general application are also contained in State of Washington General Safety and Health Standards, Chapter 296-24 WAC, published by the Department of Labor and Industries. These standards are applicable to all workers providing services using funding under the DOE WAP program.

1. Training and Monitoring

The Weatherization coordinator is responsible for maintaining the local agency's weatherization health and safety program. Specific responsibilities may be delegated to adequately trained and competent personnel.

a. Employee Training - New employees shall not begin working in the field until training is provided. Training will include:

(1) Conventional health and safety issues, including heavy lifting, safe ladder usage, electrical safety, power tools, other work practices, and conditions encountered in the weatherization program.

(2) Use, maintenance, and importance of protective equipment such as eye and ear protection, respirator, and gloves.

(3) Proper usage of hazardous chemicals and substances such as foams, sealants, and cleaners in the weatherization work environment.

(4) The Material Safety Data Sheets (MSDS) provided by suppliers that describe the method of properly handle potentially hazardous materials. Inform employees where the MSDS are located, how to understand their content, and how to obtain and use appropriate hazard information.

(5) All field staff (auditors, inspectors, and crew) shall have current First Aid and CPR proficiency cards. (Per WAC 296-155-120)

b. Safety Meetings - Safety meetings shall be conducted monthly. The content of meetings should focus primarily on issues of current importance, for example, OSHA requirements, new information on safety procedures, or product related information (MSDS). During the meeting, employees should be encouraged to ask questions.

(1) The main purpose will be the ability of the employee to retain and understand information covered during the meeting.

(a) Limit the amount of information covered to just one issue, when possible, such as lifting, tool maintenance, electrical equipment, or understanding of Material Safety Data Sheets.

(b) Posters relating to such matters are available and should be displayed during the month that particular issue is discussed.

(2) Minutes of each meeting shall be recorded and kept on file, and include:

(a) list of employee attendance; and

(b) topics discussed and concerns.

c. On-Site Inspection

An announced, on-site inspection of each crew shall be conducted monthly by the Weatherization Coordinator or Analyst/Instructor. This inspection will include:

(1) Ascertaining the extent of the client's understanding of weatherization activities being performed. If health and safety issues are documented, this information shall also be included in the discussion.

(2) Inspecting condition of personal safety equipment and confirming that all crew members are adequately supplied. Crew members must wear prescribed equipment if warranted by the activities being conducted.

(3) Checking that each crew vehicle is supplied with a:

(a) Complete first aid kit designed to provide basic first aid;

(b) Adequately charged hand-operated fire extinguisher, designed for all three types of fire (electrical, wood, and liquid). Ensure service date has not expired; and

(c) Binder containing list of hazardous chemicals (common and chemical name), location where they are used, usage and hazardous information (signs/symptoms of exposure and required first aid), and list of Material Safety Data Sheets. (Note: Copies of MSDS are not required if master files are accessible by all crew members.)

(4) Inspect hand and power tools and similar equipment. Any found to be defective should be tagged and removed from service. Equipment not in use shall be properly stored.

(5) Inspect work area to ensure activities are conducted in a safe manner, including provision of adequate light, proper disposal of debris, connection of power equipment to a ground fault circuit interrupter, and resolution of health and safety issues.

2. General Work Practices

The prevention of occupationally induced injuries and illnesses will be given precedence over production activities. To the greatest degree possible, the contractor will ensure that all equipment and facilities are in compliance with the Washington Industrial Safety and Health Administration (WISHA) standards. Weatherization personnel are required to exhibit caution and care during the course of the workday.

a. The Crew Leader/Foreman

The crew leader/foreman is responsible for being in compliance with any instructions pertaining to health or safety as they apply to crew production activities:

(1) Contact client before performing work. Provide the opportunity for discussing crew activities that will occur and occupant safety while work is in progress. When subcontractors are used, the program manager will be responsible for client contact.

(2) Ensure each crewmember is reasonably protected when production activities are being conducted.

(3) For pre-1978 buildings: Satisfy Section L. Lead-Based Paint Hazard Control. Inform the client of the nature of the work to be done, and encourage that children be off-site while the work is taking place.

b. Personal Protective Equipment

The use of personal protective equipment will be strictly enforced. Hearing and ear protection are required for individuals working around high decibel equipment. Each

crew person will wear a respirator, protective eyewear, and protective clothing when necessary. Respiratory protection is required for individuals working in high dust environments, including when using loose fill insulation blowing equipment, installing materials in attic and floor areas, and during prolonged use of grinding or power saw equipment. When working in an environment in which lead based paint dust will be generated, each employee within the work area may be required to wear a properly fitted National Institute of Occupational Safety and Health (NIOSH)-approved HEPA respirator and protective clothing which will be removed upon vacating the work area. (See OSHA and WISHA rules, Section L.3, Other Federal Government Regulations.)

c. Hand and Power Tools

All hand and power tools and similar equipment shall be maintained in a safe condition. This equipment will be inspected daily, and any equipment found defective shall be tagged and removed from service until it has been repaired or replaced. Protective guards are to be in place and functioning properly while a power tool is in use.

All electrical equipment, tools, and extension cords shall be grounded properly. All electrical power for 120-volt or greater will be protected by a ground fault circuit interrupter (GFCI). Any extension cords found defective (insulation worn or cut, or frayed wires) are to be removed from the job site and disposed of.

It is recommended that, when using power tools on surfaces that contain lead-based paint, a HEPA dust collection attachment be used. Tools shall be cleaned after use.

d. General Fall Protection

Portable ladders shall be placed on a substantial base at a four-to-one pitch. Extension ladders are to be extended a minimum of 36 inches above the landing (i.e., where roof access occurs), or where not practical, be provided with grab rails and be secured against movement while in use. Portable metal ladders shall not be used where they may contact electrical conductors.

The use of ladders with broken or missing rungs or steps, broken or split side rails, or with other faulty or defective construction is prohibited. When ladders with such defects are discovered, they shall immediately be withdrawn from service.

Extra precaution is required while weatherization activities are conducted on the roof area. When an individual is above 16 feet or adequate stability cannot be maintained, safety gear, such as harness or safety straps, is required.

e. Housekeeping Activities

All scrap lumber, waste material, and debris shall be removed from the immediate area as work progresses. An area outside the home should be designated for storing such material, which should be removed from the premises at the end of each

workday or when the job is completed. (Local agencies and subcontractors are encouraged to recycle materials whenever possible.)

Equipment shall be removed from the immediate work area and properly stored when no longer required or when each phase of the weatherization process is completed. Individuals shall be equipped with a tool belt or vest, in which hand tools not in use are then properly stored and readily accessible when required.

When lead-based paint dust is generated during the course of work, the area must be cleaned no later than the end of each workday. All materials used in the debris collection system removed in a lead-safe manner, the area thoroughly vacuumed using a HEPA vacuum, and wash and wipe down the area with a detergent solution.

f. Attic/Crawl Space Areas

When possible, cut out holes required for venting before work is started, installing vents after weatherization activities are completed. This procedure provides both additional ventilation and light.

Precaution shall be taken when working in areas with low clearance. Work in areas with less than 24-inch clearance may be waived.

Before weatherization activities are conducted, the following is required:

(1) Health and safety corrective action documented on the Job Order Sheet is to be completed.

(2) Specific instructions are read and understood. Further clarification may be required from the Energy Analyst.

(3) An adequate and safe means of access is provided.

(4) Each individual has accessed the area and become familiar with existing conditions.

SECTION 9.2 CLIENT HEALTH AND SAFETY

A. Policy

The Weatherization Assistance Program provides weatherization services in a manner that minimizes risk to clients. The Weatherization Assistance Program remedies energy-related health and safety hazards, which are necessary before or because of, the installation of weatherization materials.

The Weatherization Assistance Program defers work on dwellings without providing weatherization services when problems are encountered that are beyond the scope of the Weatherization Assistance Program. For the policies and procedures for deferral, see **Section 5.5, *Deferral Standards***.

B. Procedure

1. Awareness

   Awareness of potential hazards is essential to providing quality services. DOE's preferred approaches to common hazards are provided in **Exhibit 9.10, *Potential Hazard Conditions***. Other energy-related hazards are considered on a case-by-case basis.

2. Prevention

   Prevention is the best solution to any health and safety hazard. The Weatherization Assistance Program takes all reasonable precautions when performing work on homes that will subject clients to health and safety risks. Before beginning work on the residence, the agency must take into consideration the health concerns of each occupant, the condition of the dwelling, and the possible effect of work to be performed on any particular health or medical condition of the occupants. When a person's health is fragile or the work activities would constitute a health or safety hazard, the occupants at risk will be required to leave the home until work is completed, or the work may be deferred until such time that the conditions or circumstances are more favorable.

Department of Commerce
Innovation is in our nature.

Specifications and Standards For Managing the Low-income Weatherization Program

for
United States Department of Energy
United States Department of Health and Human Services
Bonneville Power Administration
and
Matchmakers

Prepared By:
Washington State Department of Commerce
Community Services and Housing Division

April 2009 Edition

(with 2010 revisions)

WEATHERIZATION WORKS

April 2009
(Revised April 2010)

Specifications and Standards for Managing the Low-Income Weatherization Program

Table of Contents

April 2009
(Revised April 2010)

Attachments Renamed

Exhibits mentioned in April 2008 version of the Specifications and Standards for the Low-income Weatherization Program were referred to Attachments in previous versions. They have been renamed and renumbered to conform with the exhibit nomenclature in Chapter 5, Providing Weatherization Services of the **Policies and Procedures Manual**. Exhibits for the Specifications are located in '**Supporting Documents for the Low-income Weatherization Program**'.

This conversion table is provided as a guide for those who are familiar with the Attachment designations.

Attachments *	New Exhibit #		Last Modified
Attachment 1	*Ex 5.S1*	*Mold Assessment and Release example*	June 2006
Attachment 2	*Ex 5.S2*	*Pollution Source Survey example*	June 2006
Attachment 3	*Ex 5.1A*	*Priority List of Insulation measures*	April 2009
Attachment 4	*Ex 5.1A*	*Priority List of Non-insulation Measures*	April 2009
Attachment 5	*Ex 5.3.1B*	*Combustion Safety Technical Support Document*	April 2010
Attachment 6	*Ex 5.3.1A*	*Combustion Safety Test Report*	April 2010
Attachment 7	*Ex 5.S3*	*Diagnostic Test Report*	April 2009
Attachment 8	*Ex 5.S4*	*Building Airflow Standard (BAS)*	June 2006
Attachment 9	*Ex 5.S5*	*ASTM E-84-01, Flame spread and smoke development*	June 2006
Attachment 10	*Ex 5.5A*	*Weatherization Deferral Form example*	June 2006
Attachment 11	*Ex 5.S6*	*Policy Notice for Using TREAT* - Deleted	April 2010
Attachment 12a	*Ex 5.S7a*	*Electric heating system work order example*	June 2006
Attachment 12b	*Ex 5.S7b*	*Gas forced air heating system work order example*	June 2006
Attachment 12c	*Ex 5.S7c*	*Oil forced air heating system work order example*	June 2006
Attachment 12d	*Ex 5.S7d*	*Oil burner retrofit example*	June 2006
Attachment 13	*Ex 5.S8*	*Safety Label for Domestic water heaters*	June 2006
Attachment 14	*Ex 5.S9*	*Cost Effective Guidelines and Examples*	June 2006
Appendix A	*Ex 5.S10*	*Material Specifications*	June 2006
NA	*Ex 5.8*	*Weatherization (Wx) Assistance Program Tier Model*	April 2010

* These exhibits are for informational purposes and should be considered example forms intended to show the type of information that is required, with the exception of the *Combustion Safety Test Report* and *Diagnotic Test Report*, which are required forms.

Section 1.0 General Requirements

The Local Agency shall meet program requirements for insurance, licensing, labor standards, warranties and guarantees, applicable permit compliance, applicable code and regulation compliance, applicable staff certifications, and site clean-up and salvage. All work shall be performed in a professional manner following standard residential construction practices.

1.1 Subcontractors

The following requirements apply to subcontractors (Service Dealers) who work in units that are to be weatherized.

1.1.1 Subcontractor license and insurance requirement

All Subcontractors must be licensed, bonded and insured in accordance with Commerce policy and state law. Copies or printouts of individual contractor license, insurance and bonding information available from the Washington State Department of Labor and Industries contractor web site (**https://fortress.wa.gov/lni/bbip/**) must be kept on file for all contractors and updated, at a minimum, annually.

If the client has a service dealer of record, it is allowable for the Local Agency to contract with that dealer to perform the necessary work, if the dealer is fully insured and licensed.

***Dealer of Record defined**: A service dealer who has been the client's supplier for a period of time.*

1.1.2 Competency

It is important that installers and technicians be qualified to do the work required under this program. The Local Agency should be aware that there are many trades for which the State of Washington does not require workers to have a professional license. Therefore, the competence of the installer or repair technician must be determined by other means such as the general reputation of the business, competency certifications provided by equipment manufacturers, or by technical schools with Heating, Ventilation, and Air Conditioning (HVAC) or other programs.

1.2 Warranties

The Local Agency and all Subcontractors shall provide warranties in writing against any defect in the material, manufacture, design or installation of all materials, equipment, or products that is found within one (1) year from the date of completion of installation. The defects found within the warranty period shall be remedied

without charge and within a reasonable period of time. The warranty information shall be given to the occupant and a copy placed in the client file.

1.3 Code compliance

The Local Agency shall require all Local Agency crews and Subcontractors installing all materials, equipment, or products to comply with all applicable federal, state, and local laws and code regulations.

1.4 Asbestos

When the presence of asbestos is suspected and likely to be disturbed during the installation, modification or replacement of any materials, equipment or products, all health and building regulations and codes requirements shall be followed. Refer to *Washington Administrative Code, Chapter 296-65* (**http://www.lni.wa.gov/wisha/rules/asbestos/Default.htm**). An asbestos abatement work permit must be obtained from the local building department, or from the state of Washington, Department of Labor and Industries prior to performing work that would result in disturbing the asbestos material.

1.5 Materials

All materials used shall meet the specifications found in **Exhibit 5.S10, *Material Specifications***.

1.5.1 Alternate materials

The Local Agency shall get written approval to use alternate materials from the Commerce monitor assigned to the Local Agency prior to the use of such materials.

1.6 Manufacturer's requirements

The Local Agency and Subcontractors shall conform to all manufacturer's requirements regarding installation, use and maintenance of all materials, equipment, or products installed or supplied through the weatherization program.

1.7 Certificate of insulation

The certificate of insulation shall contain the following information, and shall be completed in ink and signed by the installer:

a. Address of residence.

b. Date of installation.

c. Name, address and phone number of installer.

d. Amount (number and size of bags).

e. Final R-value of insulation.

f. Area of space in square feet that was insulated.

g. Settled density coverage chart for loose-fill insulation (or post empty bag with chart).

1.7.1 Posting of certificate

Upon completion of the installation of the insulation, the completed certificate shall be posted in the interior of the area insulated in a location nearby, and visible, from the access to the area. A copy of the certificate shall also be kept in the client file of the Local Agency.

1.7.2 Posting empty bag/wrapper

Upon completion of the installation of the insulation, the Local Agency or Subcontractor shall post near the Certificate of Insulation an empty bag or wrapper from the insulating material that was installed.

1.7.3 Delivery of certificate

The completed certificate shall be kept in the permanent file of the Local Agency. A copy of the certificate will also be given to the client.

Section 2.0 Home Energy Audits

All homes receiving weatherization services shall receive an on-site audit.

2.1 Scope of audit

The Local Agency shall evaluate the dwelling for the following:

a. Health and safety issues that may negatively affect occupants.

b. Building durability issues that may negatively affect or prohibit installation of energy efficiency measures.

c. Comfort issues that may cause increased energy use.

d. Cost effective energy efficiency improvements.

2.2 Audit requirements

All audits will include:

a. Diagnostic testing (blower door testing). See **Section 4, *Diagnostic Testing***. **Exhibit 5.S3, *Diagnostic Test Report.***

b. Combustion safety diagnostic testing when combustion appliances are present. See **Exhibit 5.3.1B, *Combustion Safety Technical Support Document***.

c. Mold disclosure report. See **Exhibit 5.S1, *Mold Assessment and Release form example***.

d. Pollution Source Survey. See **Exhibit 5.S2, *Pollution Source Survey example***.

e. Visual inspection, which shall include inspecting all accessible areas as follows:

1. Attics.
2. Crawlspaces.
3. Building envelope.
4. Roofs.
5. Insulation levels.
6. Heating systems.
7. Ventilation systems.
8. Interior surfaces.
9. Appliances.
10. Home energy bills.
11. Stairs, ramps, landings, handrails.

12. Other structural elements.
13. Plumbing and electrical where insulation may be installed.
14. Plumbing and electrical in areas where humans may come into contact.
15. Smoke alarms and CO detectors.

2.2.1 Historical preservation considerations

All audits shall note any historical preservation requirements and shall consider these requirements when determining the scope of work that will be used to complete weatherization work on the dwelling unit.

2.3 Review of audit with client

The Local Agency shall review the findings of the audit and anticipated scope of work with the occupants of the dwelling. Documentation of the audit findings and anticipated scope of work shall be retained in the client file.

2.4 Client authorization

The Local Agency shall obtain a signature from the client (occupant of the dwelling unit), and the landlord (if it is a rental dwelling) authorizing installation of the measures to be performed on the eligible dwelling prior to work commencing. A copy of the signed authorization shall be retained in the client file.

***Exception*:** Low-cost/No-cost measures may be installed before audit findings are reviewed with the occupants and landlord.

2.5 Audit documentation

The Local Agency shall document the findings of all audits in the client file. These findings shall describe the condition of the home at the time of the audit, the work performed, and the final condition of the home.

Exception*:** If during the audit it is determined the best course of action is to defer service as per Commerce policy **Chapter 5, *Providing Weatherization Services;* Section 5.5 *Deferral Standards, a completed audit is not required.

2.5.1 Photographic record

The Local Agency shall record the condition of the home by taking a minimum of 2 photographs of the home's exterior elevation that capture the essence of the dwelling unit. These photographs shall be dated and retained in the client file.

2.6 Audit tool

The most cost-effective measures as determined by the Priority List of Weatherization Measures or TREAT will ordinarily be installed. See **Section 2.7, *Priority List of Insulation Measures*.**

A Priority List has been adopted for single family and mobile home conservation measures. See **Exhibit 5.1A, *Priority List of Weatherization Measures*.**

Exception: Measures not included in the Priority List of Weatherization Measures, or specifically permitted by policy, will require use of TREAT to justify investment by the weatherization program.

TREAT (Targeted Residential Energy Analysis Tools) has been adopted as the authorized energy audit tool to be used in the weatherization program. It is required for analysis of multi-family homes (five or more units) and may also be used for single-family houses and mobile homes.

2.6.1 Savings to investment ratio (SIR)

The Local Agency shall install those individual conservation measures that have a savings to investment ratio of 1.0 or greater.

***Exception*:** A measure with an SIR of 1 or greater can be deferred if the Local Agency does not have adequate funding to install the measure.

2.6.2 Computerized audit program maintenance

The Local Agency is required to maintain the following areas and data related to the computerized audit:

a. Annually update setup parameters for fuel costs using local data or Commerce provided default values.

b. Annually update setup parameters for installed measure costs using local data or Commerce provided default values.

c. Annually update setup parameters for local cooling and heating degree-days.

d. Update new versions of software as required by Commerce.

e. All auditors shall be trained and certified by Commerce to perform a computerized energy audit.

2.6.3 Calculation of installed measure cost

The Local Agency shall calculate installed measure costs. Only conservation measures shall be included in the calculation. Measure costs shall be calculated using one of the following methods:

a. Installed measure costs are equal to verifiable contractor costs.

b. Local crew-based agencies may calculate and document their construction costs including materials, labor costs, and associated overhead.

c. Local crew-based agencies may calculate and document their construction costs including the actual materials and labor costs and then use a 20% multiplier (20% of the materials and labor) for an estimated associated overhead.

Associated Overhead Costs are those overhead costs associated with a particular installed measure, including, but are not limited to: benefits/fringe, rent, telephone, utilities, insurance, vehicle costs (purchase, operating, insurance, depreciation, repair and maintenance), tools costs (purchase, amortization/depreciation, storage, and repair and maintenance).

2.7 Priority List of insulation measures

When computerized audit is not used, the Local Agency shall utilize the Commerce approved Priority List of Insulation Measures (**Exhibit 5.1A, *Priority List of Weatherization Measures***) to determine whether insulation should be installed and if so, how much insulation should be installed in a home.

2.8 Priority List of non-insulation measures

The Local Agency shall utilize the state approved Priority List of non-insulation measures (**Exhibit 5.1A, *Priority List of Weatherization Measures***) to determine priority non-insulation measures.

2.9 Analysis of base load costs

The Local Agency shall analyze base load costs for each dwelling unit when fuel histories are available. Base load cost data shall be used to determine cost-effective energy conservation and energy education opportunities

Section 3.0 Combustion Safety Testing

The Local Agency shall perform a State of Washington approved combustion safety test procedure as detailed in the **Exhibit 5.3.1B, *Combustion Safety Technical Support Document*** in all dwellings that have a functioning combustion appliance.

Combustion Appliances Defined*: any liquid, gas, or solid fuel burning appliances including water heaters, wood stoves, ranges, ovens or stove tops, furnaces, boilers, space heaters, fireplaces, fireplace inserts, and gas logs.*

3.0.1 Pre weatherization combustion safety testing

The Local Agency shall perform a Combustion Safety Test for every combustion appliance prior to installing any conservation measures that alter the building shell, HVAC system, or interior configuration (including comfort air sealing or altering of interior doors) of the dwelling. An **Exhibit 5.3.1A, *Combustion Safety Form*** shall be filled out for each appliance and be present in the client file.

3.0.2 Post weatherization combustion safety testing

The Local Agency shall perform a Combustion Safety Test for every combustion appliance at the conclusion of the weatherization project.

3.0.3 In-progress combustion safety testing

The Local Agency or Subcontractor shall perform a worst-case depressurization test **Exhibit 5.3.1B, *Technical Support Document* *page 3*** and draft test ***page 6. Line # 13)*** at the end of the work day when work has been done that alters the building shell, HVAC system, or interior configuration (including comfort air sealing, altering of interior doors) of the dwelling unit. If the system fails, the Local Agency shall take immediate action before leaving the dwelling unit to ensure that the occupant's health and safety is not compromised.

Exception:

a. In progress testing using “furnace heat” during extreme hot outdoor temperatures may be deferred as long as all the following conditions are documented and met:

   1. Water heater is “fired up” during testing.

   2. Test using the summer blower if applicable.

3. If the home has central forced air cooling it will be used in conjunction with the test.

4, The furnace is turned off and client has been informed not to use.

5. The Local Agency shall perform a final and complete Combustion Safety Test for every combustion appliance at the conclusion of the weatherization project.

3.1 Draft and spillage tests

The Local Agency shall perform spillage and draft tests for all natural and induced draft space heating systems and water heaters. Draft and spillage shall first be tested under worst-case (**Exhibit 5.3.1B, *Technical Support Document* *page 3)*** conditions, and then repeated for natural conditions if the appliance fails under worst-case.

3.1.1 Single chimney with multiple appliances

When a chimney is shared by multiple appliances, the appliance with the smallest Btu input rating shall be tested first, and remaining appliances shall be tested in order of increasing input rate.

3.1.2 Multiple fuel sources vented into a single chimney

Multiple fuel sources vented into a single chimney are cause for deferral of services until the situation is corrected.

3.1.3 Draft testing

The Local Agency shall measure vent draft pressure at steady-state operating conditions of all heating and hot water combustion appliances.

Exceptions:

b. Sealed Combustion or Power Vented (90% +): No draft measurement required. Recommend technician confirm draft at termination. If it is unsafe to access termination point for testing due to the height of the roof or weather conditions an alternative is to access flue products by disconnecting the drain line.

c. Solid fuel-burning appliances.

d. Gas fireplace inserts.

1. Atmospheric or Natural Draft (70%): Draft testing shall be done in the center of the longest, straightest, accessible section of the vent connector. Holes made for the purpose of measuring draft shall be drilled using 5/16th bit. Once test is complete, seal hole with High Temperature RTV silicone caulk. Cover with aluminum tape or plug with a 3/8 inch tap bolt made of stainless steel or nylon.

2. Induced Draft (80%): Draft testing shall be done a minimum of 3 feet downstream of the inducer motor. The preferred location for CO testing is the same hole used for draft testing. Holes made for Draft and CO testing shall be drilled using a 5/16th bit. Once test is complete seal the inner liner with High Temperature RTV silicone caulk and a 3/8 inch tap bolt made of stainless steel or nylon or seal interior hole with RTV silicone and cover exterior hole with aluminum tape.

Appliances shall draft at or above (i.e. have more draft) the minimum acceptable draft level detailed in Table 1. If the draft test fails, the Local Agency shall make appropriate repairs before proceeding with weatherization services or defer the project until problem is corrected.

Table 1: Minimum Acceptable Draft Test Action Levels [1]

Outside Temperature (degree F)	Draft Pressure Standard (Pa)
<10	-2.5
10-90	(Outside temp / 40) – 2.75*
>90	-0.5

**Calculation is as follows: Divide the outside temp by 40, then subtract 2.75 from this value. The result is the minimum acceptable draft.*

3.1.4 Spillage

The Local Agency shall test for spillage on all atmospheric draft appliances. Local Agency shall measure and record the amount of time it takes for spillage to stop and draft to be established. Any appliance that continues to spill flue gases beyond the maximum established time limits identified in Table 2 fails the spillage test. If the unit fails, Local Agency shall make appropriate repairs or defer the project until the problem is corrected.

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[1] **Building Performance Institute** Standard

Induced draft heating systems shall be checked for spillage at the base of the chimney liner or flue. If a chimney is shared between an induced draft heating system and a natural draft water heater, spillage shall be checked at the water heater draft diverter.

Table 2: Maximum Acceptable Appliance Spillage Periods [2]

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

Exception: Wood stoves and fireplaces shall not be tested for spillage.

3.2 Heat rise

The Local Agency shall test all forced air heating systems for heat rise. If the heat rise is outside the manufacturer's acceptable range the system fails. If the heating unit fails the heat rise test, The Local Agency shall have the appropriate repairs made or defer the project until the problem is corrected.

Exception: If manufacturer's acceptable heat rise range is unavailable, the default acceptable heat rise range is greater than 40° and less than 70° Fahrenheit.

3.3 Carbon monoxide tests

The Local Agency shall perform a CO test in all combustion appliances. The Local Agency shall measure CO in the undiluted flue gasses in the flue of the appliance, using a digital gauge that measures in parts per million (ppm). For all combustion appliances, CO shall be measured at steady-state operating conditions. CO levels must be recorded and appropriate actions taken, as detailed in Table 3.

a. Atmospheric or Natural Draft (70%): CO testing shall be done in the undiluted flue products at the heat exchanger cell outlets.

b. Induced Draft (80%): CO testing can be done anywhere in the vent connector or at the vent termination if the appliance is vented by itself. The preferred location for CO testing is the same hole used for draft testing. Holes made for Draft and CO testing shall be drilled using a 5/16th bit. Once test is complete seal the inner liner with High Temperature RTV silicone caulk and a 3/8 inch tap bolt made of

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[2] **Building Performance Institute** Standard

stainless steel or nylon or seal interior hole with RTV silicone and cover exterior hole with Aluminum tape.

c. Sealed Combustion or Power Vented (90% +): CO shall be tested, preferably at the termination. If it is unsafe to access termination point for testing due to the height of the roof or weather conditions an alternative is to access flue products by disconnecting the drain line.

3.3.1 The Local Agency shall not drill holes in flues for power vented or sealed combustion units. CO shall be measured at the exterior outlet of the flue.

3.3.2 **Gas ovens and range tops**

Gas ovens and range tops, CO shall be tested in accordance with the **Exhibit 5.3.1B, *Combustion Safety Technical Support Document***.

Table 3: Carbon Monoxide Test Action Levels [3]

CO Test Result*	Retrofit Action
0 – 25 ppm	Proceed with work
26 – 99 ppm	Recommend cleaning of appliance burner
100 - 400 ppm	Weatherization work may not proceed until the system is serviced and the problem is corrected
> 400 ppm	Notify owner and occupant in writing. Work may not proceed until the problem is corrected, either by Local Agency or owner.

* *CO measurements for undiluted flue gases and range tops*

***Exception**:* Carbon monoxide testing of wood burning appliances flue gases is not required.

3.3.3 Ambient carbon monoxide

The Local Agency shall monitor ambient CO levels upon entering the combustion appliance zone and during the test period for all appliances. If ambient levels exceed 9 ppm at any time, turn off the appliance immediately and make appropriate repairs. The maximum allowable ambient CO level in a dwelling where weatherization work has been completed is 9 ppm.

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[3] **Building Performance Institute** Standard

3.4 Combustion appliance zone depressurization

The Local Agency shall perform a worst-case depressurization test in each combustion appliance zone. When combustion appliance zone (CAZ) depressurization limits are exceeded under worst-case conditions, the depressurization shall be brought within acceptable limits as detailed in Table 4.

Table 4: CAZ Depressurization Limits [4]

Venting Condition	Limit* (Pascals)
Stand alone natural draft water heater (including outside chimneys)	-2
Natural draft boiler or furnace vented in combination with water heater	-3
Fireplace	-4
Natural draft boiler or furnace with vent damper commonly vented with water heater	-5
Wood stoves and fireplace inserts, including air tight models with outside combustion air	-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
Chimney-top draft inducer; High static pressure flame retention head oil burner; Direct vented appliances; Sealed combustion appliances;	-50

* *Worst case CAZ depressurization minus baseline pressure*

If reasonable efforts cannot meet or reach the CAZ Depressurization Limits standard, the Local Agency shall document in the client file the actions taken and the education provided to the client.

3.5 Documentation

The Local Agency shall document in the client file repairs and the actions taken to correct all combustion safety failures.

3.6 Un-vented fuel burning space-heating appliances

The Local Agency shall not proceed with weatherization of dwellings that have existing un-vented fuel burning space-heating appliances until they are removed. The Local Agency shall notify the owners and the occupants of any hazards that exist with

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[4] **Building Performance Institute** Standard

un-vented space heaters, and of the program requirements that un-vented space heaters be removed before weatherization services can be delivered.

3.7 Required equipment

The Local Agency shall:

a. Use a digital manometer to perform all pressure diagnostic-testing measurements.

b. Use a digital CO measurement device that is capable of measuring 1ppm to 1000 ppm.

c. Have diagnostic testing equipment calibrated and maintained as recommended by the manufacturer.

d. Keep on file a record of maintenance and calibration for all diagnostic equipment.

Section 4.0 Diagnostic Testing

The Local Agency shall perform diagnostic testing on all dwelling units prior to weatherization measures being installed and upon completion of each project. An **Exhibit 5.S3, *Diagnostic Test Report*** shall be filled out and be present in the client file.

4.1 Single point blower door test

The Local Agency shall perform a single point blower door test at 50pa before any weatherization measures are installed, and at the conclusion of any project where air-sealing, building shell alteration, duct sealing, insulation, or any other measure that may alter the natural or mechanical air changes of the home is performed. Results of pre- and post-weatherization blower door testing must be documented in the client file.

4.1.1 Location

The Local Agency shall install the blower door in a doorway that provides for the most accurate test. See **Energy OutWest Weatherization Field Guide, Section 2.3, *Blower-door testing, Blower door test procedures***. The location of the doorway where the tests are taken shall be documented in the client file.

4.1.2 Baseline data

The Local Agency shall document baseline information, such as wind speed, temperature, etc, using a diagnostic test report. See **Exhibit 5.S3, *Diagnostic Test Report***.

4.2 Zonal pressure testing

The Local Agency shall perform zonal pressure testing in all zones (attics, crawlspaces, garages, unconditioned crawlspaces, etc) with more than 50 sq. ft. of common surface with the intended thermal boundary of the dwelling. The test shall be performed prior to the installation of weatherization measures that alter the shell of the dwelling. Zonal pressures shall be recorded with reference to (WRT) the living space of the home. Post zonal pressure testing shall be done before the installation of attic or crawlspace ventilation. Pre and post zonal pressure measurements shall be documented in the client file.

4.2.1 Duct system testing

The Local Agency shall perform pressure pan (or pressure block) testing of all forced air duct systems. Duct system standard for tightness is 1pa or less at each supply register. The standard for return plenums is 5pa or less. (See **Section 13.6, *Duct***

Sealing). Post testing of ducts in enclosed cavities, such as wall bays, dropped ceilings, floor joists, mobile home bellies, etc., shall be performed prior to insulating those cavities. Pre and post duct pressure pan measurements shall be recorded in the client file.

Exceptions:

a. Duct systems that are entirely within the heated building envelope and not connected to any exterior wall, attic or ceiling building component or buffered zone, are not required to be tested.

b. The Local Agency may use a duct tester to perform duct tightness testing. The standard for tightness is 100 cfm leakage to outside at 25pa.

4.3 Dominant duct leak testing

The Local Agency shall perform dominant duct leakage testing on all homes with ducted forced air heating distribution systems when any part of the system is located outside the thermal and pressure boundary. Dominant duct leakage testing shall be performed on mobile homes. Pre and post dominant duct leakage measurements shall be recorded in the client file. See **Energy OutWest Weatherization Field Guide, Section 2.7, *Duct-Blower Leak-Testing, Dominant duct leakage*.** Standard for dominant duct leakage is no more than 1.5pa or 100cfm of leakage to outside.

4.4 Room-to room pressure differential testing

The Local Agency shall test and record the pressure differential between rooms with supply, return, or both ducts and the main body of the dwelling. Pressure differentials of more than 5pa must be corrected. See **Energy OutWest Field Guide , Section 2.7, *Duct-Blower Leak-Testing, Room pressure imbalance***. Pre- and post-pressure differential measurements shall be recorded in the client file.

4.5 Diagnostic testing equipment

The Local Agency shall:

a. Use a digital manometer to perform all pressure diagnostic testing measurements.

b. Have blower door(s) maintained and digital manometer(s) calibrated as recommended by the manufacturer.

c. Keep on file a record of maintenance and calibration for all diagnostic equipment.

Section 5.0 Building Envelope Air Sealing

The Local Agency shall perform air sealing when it is determined by a weatherization audit to be effective based on one of the following considerations: health, safety, building durability, or cost-effectiveness.

5.0.1 Air sealing locations

Air seal the building envelope including the heating or cooling duct system, at the pressure boundary and align it with the thermal boundary.

5.0.2 Priority air sealing

Priority air sealing shall be performed, and shall include air sealing of all large holes, including obvious bypasses, chase ways, and gaps that exist between the unconditioned areas and the conditioned areas.

5.0.3 Determining cost-effectiveness

Each agency will establish a cost-effectiveness guideline. This guideline will reflect the cost to achieve a 100CFM50 reduction as a result of air sealing. Air sealing shall continue until the additional costs of air sealing cannot be justified in terms of the energy savings it will produce. A savings to investment ratio (SIR) of one or greater shall be used when determining the cost-effectiveness of air sealing. Documentation of the air sealing time and efforts must be present in the client file. After all air sealing in an attic/ceiling addressing health, safety and durability issues is complete, then air sealing should continue until it is determined that further work is not cost effective. Reference materials for establishing a cost effectiveness guideline can be found in *Residential Energy* by John Krigger*, Appendix A-12, Air Sealing Economic Limits.*

5.0.4 Use of pressure diagnostics and blower door

The Local Agency shall perform a pre and post retrofit blower door test on all homes. Blower-door guided air sealing shall be used to assist in determining appropriate air sealing measures. Pre and post blower door test results (CFM50) shall be recorded in the client file.

5.0.5 Target air-leakage reductions

The Local Agency shall air seal homes to 100% of the calculated Building Airflow Standard (BAS), See **Exhibit 5.S4, *Building Airflow Standard (BAS)***. If this target cannot be reached the Local Agency shall document the reason in the client file.

5.1 Preferred installation method

The preferred method for installing air-sealing materials is from the attic side, not living space side, of ceilings and attics, from the inside surface of walls, and from the underside of floors.

5.1.1 Dirt and debris removal

All loose dirt and debris or other materials that might prevent the adherence of the air-sealing materials to the surface shall be removed prior to installation.

5.1.2 Depth of sealant

Sealant shall be installed following the manufacturer's recommendations.

5.1.3 Filler materials

Filler materials that will adequately support the sealant, such as polyurethane foam, backer rod or other suitable materials will be installed in cracks deeper than 1/2 inch to a depth of 3/8 inch below adjacent surfaces to support the sealant when necessary.

5.2 Sealing bypasses around chimneys, flues and stovepipes

Bypasses around chimneys, flues and stovepipes shall be sealed using non-combustible materials rated for this use.

5.2.1 Fireplaces with broken or missing dampers

Installation of chimney top dampers or an inflatable draft stopping device is allowable.

5.3 Sealing non IC-rated fixtures

Non IC-rated fixtures in a closed top dam shall not be air sealed.

***Closed top dam defined**: A fixture that is dammed with a metal, sheetrock, or other non-combustible material that extends at least 24 inches above the fixture and has a cover over the top that will prevent insulation from entering inside the dammed area.*

Section 6.0 Attic/Ceiling Insulation

Attics/Ceilings will be insulated if the cost to insulate is justified using an evaluation of cost-effectiveness where the Savings to Investment Ratio (SIR) is 1or greater. The *State Energy Code* has established R-38 as the target level for insulating attics/ceilings.

6.0.1 Insulation material shall be installed in a uniform manner throughout the attic and cover exterior wall plates with a minimum R-7 of insulation.

6.0.2 When insulating attic/ceilings the thermal and pressure boundary shall be aligned.

6.1 Ceiling loading

The Local Agency is responsible for ensuring that the ceiling can bear the loads that will be imposed when insulation (new or additional) is installed.

6.2 Insulating floored attics

Floored over attic spaces shall be insulated to the highest R-value approaching R-38, without altering the structure.

6.3 Insulating knee walls

Knee walls adjoining attic spaces shall be insulated to a minimum of R-11, and to a maximum R-19. Insulation shall be permanently fastened. Fastening shall be in accordance with the guidelines for underfloor insulation.

6.3.1 Cavity under knee wall

The floor cavity immediately below the knee wall shall be air sealed prior to insulation.

6.3.2 Vapor barrier

Any vapor barrier that is installed shall be located on the warm side of the wall being insulated.

6.3.3 Potential human contact

Insulation installed in knee wall side attics that is subject to routine human contact shall be covered with material having a flame spread index of 25 or less and smoke developed index of not greater than 450 when tested in accordance with ASTM- E84-01, **Exhibit 5.S5, *Flame Spread and Smoke Development***.

6.4 Sloped ceilings

Sloped ceiling cavities shall be insulated using one of the following methods:

a. Dense pack the sloped ceiling area. Seal all penetrations and bypasses along slope to prevent any moisture migration. Refer to **Energy OutWest Weatherization Field Guide Section 5.4, *Attic Insulation***.

b. Sloped cavities may be insulated with loose fill, batt or rigid insulation while maintaining a ventilated one (1) inch air space between the insulation and the roof sheathing. Refer to **Energy OutWest Weatherization Field Guide Section 5.4, *Attic Insulation***.

6.5 Attic/Ceiling damming

Attic/ceiling damming requirements are detailed below.

6.5.1 Recessed lighting fixtures and other heat-producing fixtures

If insulation is installed, existing non IC-rated recessed lighting fixtures and other heat-producing fixtures shall be replaced with air tight and Type IC-rated fixtures.

These Type IC-rated, metal recessed lighting fixtures and other heat-producing fixtures, that are certified by an independent laboratory as being capable of dissipating fixture heat, can be covered with insulation. These fixtures shall be marked as UL listed "Recessed fixture Type IC".

Exceptions: If replacement or retrofit of fixtures is not practical:

A solid, flame-resistant enclosure shall be securely attached over or around all recessed lighting fixtures or other heat-producing fixtures (including door bell transformers) that are not listed for insulation cover (IC). Such enclosures shall:

a. Keep insulation at least three (3) inches but not more than four (4) inches from the sides of the fixture.

b. Be made from metal or sheetrock, or other material with a flame spread rating of 25 or less, in accordance with ASTM E-84.

c. Be securely attached to the ceiling structure to prevent their displacement during and after the installation of insulation.

d. A closed -top enclosure must extend at least four (4) inches above the top of insulation. No insulation shall be installed on top of the enclosure.

e. If a closed-top enclosure is impractical, an open-top enclosure can be used. An open-top enclosure shall extend at least four (4) inches above the final level of

insulation. There shall be one (1) inch or more air space above the dam. All other requirements listed above still apply.

6.5.2 Exhaust fans

Exhaust fans in attics and/or dropped ceilings are not considered heat-producing fixtures.

6.5.3 Soffits and dropped ceilings

Damming shall be installed in soffits with heat-producing, non IC-rated fixtures prior to installation of insulation. If damming cannot be installed, no insulation shall be installed in the soffit. Refer to **Section 23, *Lighting Retrofit***.

6.5.4 Flues and chimneys

If insulation is added, these conditions apply:

a. All combustible insulation materials shall be kept at least three (3) inches and no more than five (5) inches from metal flues or masonry chimneys.

b. Any combustible insulation that is found within three (3) inches of a flue or chimney shall be removed.

c. A retaining wall of either solid, non-combustible material or fire rated material with a flame spread of 25 or less, extending a minimum of four (4) inches above the level of loose-fill insulation shall be installed around metal flues or chimneys.

d. Non-combustible batt insulation shall not require a shield but shall maintain a three (3) inch clearance from chimney or flue.

6.5.5 Mechanical equipment

Furnaces or water heaters located in attics shall be surrounded by a retaining wall that extends at least four (4) inches above the level of surrounding insulation. The retaining wall shall maintain clearances specified by the mechanical equipment's manufacturer.

6.5.6 Mechanical equipment access

When HVAC or other mechanical equipment is located in an attic, access shall be provided to allow for equipment maintenance and repairs. The access shall be at least 14.5 inches by 24 inches, and should be as close to the HVAC equipment as possible. The pathway from the access hatch to any attic HVAC equipment shall be insulated with batts, rather than loose fill insulation.

6.6 Exhaust ducting in attics/ceilings

Refer to **Section 10, *Mechanical Ventilation***.

6.7 Heating and cooling ducting in attics/ceilings

Refer to **Section 13, *Heating and Cooling Ducts***.

6.8 Knob and tube wiring in ceilings/attics

Insulation may be installed over knob and tube wiring found in attics or ceilings when the following procedures are followed.

6.8.1 Inspection

The wiring shall be surveyed by a licensed electrical contractor who shall certify in writing that the wiring is in good condition with no evidence of improper overcurrent protection, conductor insulation failure or deterioration, and with no improper connections or splices. Repairs, alterations or extensions of or to the electrical system shall be inspected by an electrical inspector as defined in *WAC 296-46B-394 Wiring methods and materials -- Concealed knob-and-tube wiring* (**http://apps.leg.wa.gov/WAC/default.aspx?cite=296-46B-394**). A copy of the electrician's certification shall be present in the client file.

6.8.2 Overcurrent protection

All knob and tube wiring that is to be covered with insulation shall have overcurrent protection in compliance with the *National Electrical Code, Table 310-16, 60°C column*. Overcurrent protection shall be either circuit breakers or Type S fuses. Type S fuse adaptors shall not accept a fuse of an ampacity greater than is permitted in the above-referenced National Electric Code.

6.8.3 Insulation

After inspection and any subsequent repairs and corrections are made, or over current protection installed, fiberglass or cellulose insulation may be installed. Loose or rolled thermal insulating materials may be installed over knob and tube wiring as long as the insulation meets the National Fire Protection Association (NFPA) 101 Life Safety Code, as identified with a flame spread factor of 25 or less as tested using *ASTM E-84*. See **Exhibit 5.S5, *Flame Spread and Smoke Development***. Foam insulation is not allowed for use with knob and tube wiring. If repairs or overcurrent protection are not made or provided, then no insulation shall be installed in contact with the knob and tube wiring, and the owner of the building will be notified in writing of the areas needing repair, or circuits needing overcurrent protection.

6.9 Wiring (other than knob and tube)

Insulation may be installed over wiring (other than knob and tube wiring) found in attics or ceilings when the following procedures are followed.

6.9.1 Wiring

All visible wiring shall be inspected by the Local Agency to ensure that the covering is intact and that there is no non-conforming wiring, such as extension cords, speaker wiring, automotive wiring, etc. or wiring less than 14 gauge, that is integrated into the house electrical system in the attic.

6.9.2 Splices and connections

All splices and connections shall be in UL approved junction boxes that have covers that are attached with screws.

6.10 Attic access

Access shall be provided into attic spaces wherever it is practical for a person to reasonably work. Access shall be from the dwelling interior. Attic access covers and doors that open to conditioned living spaces shall be tight fitting. All installed attic access shall be easily movable, such as on hinges or screwed. No nails can be used to secure attic access covers.

***Exception*:** If no interior access is practical, access shall be provided through the exterior of the dwelling. Exterior access shall be sized to allow for entry into the attic. All installed attic access shall be easily movable, such as on hinges or screwed. Nails shall not be used to secure attic access covers.

6.10.1 Framing access openings

Attic entry access shall be framed to prevent loose-fill insulation from falling or sloughing through the opening. If interior access is to be installed, it shall have an opening of least 14.5 inches by 24 inches, and be installed in a workmanlike manner. In all cases, a rigid dam around the opening shall extend at least four (4) inches above the level of the insulation.

Exception: When the access is located in an area where a rigid dam is not practical, fiberglass batts surrounding the opening and extending back from the opening a minimum of 16” can be used.

6.10.2 Knee-wall access openings

If attic access is provided through a kneewall, the access shall be at least 14.5 inches by 24 inches and be insulated to R-11. All installed knee-wall access shall be easily

movable, such as on hinges or screwed. No nails can be used to secure knee-wall access covers.

6.10.3 Insulating access openings

Attic access covers shall be insulated to the same level as the surrounding area.

6.11 Retractable ladders

Attic access doors that incorporate retractable ladders or similar devices shall be insulated to at least R-28 by installing an insulating cover over the opening of the attic. This cover shall be designed and installed in a fashion that will allow it to be easily removed and reinstalled by the homeowner when the attic access is used.

6.12 Passive ventilation

Installation of ventilation is allowable. The installation of additional ventilation is not required. If ventilation is installed, the code minimum shall not be exceeded.

6.12.1 Roof top vent locations

Roof top vents (i.e., roof jacks) shall not be installed in the lower portion of a roof. Roof top vents installed on cedar shake roofs shall be of a type designed for that purpose.

6.12.2 Ventilation baffling

Baffling shall be installed for those eave/soffit vents that are necessary to meet minimum ventilation requirements. Baffling shall be installed in a fashion that will permanently maintain the airflow from the vent. Baffling shall be installed in a fashion that allows the maximum amount of insulation to be installed over the top plates of outside walls. Baffling shall extend a minimum of four (4) inches vertically above the level of insulation and be stapled on the inside.

6.12.3 Vent screening

Existing vents which are not screened shall be covered with non-corroding wire mesh with openings of one-eighth (1/8) inch.

6.13 Certificate of insulation

A certificate of insulation will be completed and posted as per **Section 1, *General Requirements***.

Section 7.0 Wall Insulation

Walls shall be insulated if the cost to insulate is justified using an evaluation of cost-effectiveness where the Savings to Investment Ratio (SIR) is 1 or greater.

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

a. Knob and tube wiring: Wall cavities that contain knob and tube wiring that cannot be certified.

b. Insulated cavity: Cavities that are fully insulated.

c. Cavities containing ducts/heaters: Any part of the cavity that is used as, or contains, an HVAC duct, contains a gas wall furnace, or contains an electric wall heater or other heat-producing device.

d. Uninsulated soffit next to cavity: Cavity is open to an uninsulated soffit with a recessed light fixture or other heat-producing device that cannot be properly dammed.

e. Cavities next to fireplace or chimney: Cavity is next to a masonry fireplace or chimney with less than three-inch clearance between cellulose and masonry.

f. Cavity next to pocket door: Wall cavity is connected to an unprotected pocket door cavity.

g. Repairs needed: Interior or exterior repair is needed and will not be performed as part of the weatherization package of the dwelling, water leaks are present, or substandard interior or exterior sheathing is present.

h. Solid walls: Walls are solid masonry, concrete, concrete block, wood, or adobe.

7.1 Timing of wall insulation

Wall insulation shall be installed after the following activities have taken place:

a. Knob and tube wiring inspection.

b. Electrical repairs in walls done by weatherization program.

c. Required damming and/or blocking is installed.

7.2 Dense pack wall insulation

All closed wall cavities that can be insulated shall be insulated with cellulose by means of dense-packing insulation methods at a density of 3.5 to 4 pounds per cubic foot.

***Exceptions*:**

a. If the home's pre-insulation cfm50 is less than 100% of the calculated Building Airflow Standard (**Exhibit 5.S4, *Building Airflow Standard***), the wall cavities do not have to be insulated using the dense pack method.

b. On a project-by-project basis, products other than cellulose may be used, with reasons documented in client file.

7.2.1 Fill tube method

Insulation will be installed using the fill-tube method.

7.2.2 Interior/exterior installation

Contractors shall get a signed authorization prior to drilling from the homeowner or landlord allowing the contractor to drill holes in the home. Dense pack insulation may be installed from the exterior or interior.

7.2.3 Water column (WC) pressure

Insulation blowing machines shall be tested and perform at a minimum of 80 inches WC on the date of installation. This measurement shall be recorded on the certificate of insulation.

7.2.4 Balloon-framed walls

Walls that do not have a top and/or bottom plate (balloon-framed) shall have stops installed in the top and/or bottom of the cavity before insulating. The stops shall be installed in a manner that will withstand dense-pack insulation installation.

7.3 Treatment of interior and exterior surfaces

The following procedures should be followed when treating exterior or interior surfaces for insulation purposes.

7.3.1 Asbestos

Exterior and interior siding shall be inspected prior to any work. Siding that may contain asbestos shall be tested and, if found to contain asbestos, shall not be disturbed.

7.3.2 Lead based paint

Exterior and interior siding shall be inspected prior to any work. Siding surfaces that may be coated with lead-based paint shall be tested, or presumed to be coated with lead-based paint. Work shall follow procedures in **Section 9, *Lead Based Paint***.

7.3.3 Removing exterior siding

Exterior siding shall be removed or lifted to gain access to the exterior wall for drilling. Siding shall be replaced after insulation is installed. Any siding that is damaged shall be repaired or replaced with matching siding that is primed and painted to match existing siding.

7.3.4 Drilling exterior siding

Exterior siding not containing asbestos that cannot be removed or lifted before drilling walls may be drilled through with the owner's permission. Holes shall be drilled in a level line, and all holes will be filled with a tight-fitting, wooden plug that is installed using an exterior grade, non-silicone-based adhesive, and then filled and smoothed with exterior-grade spackle, textured to match existing surface(s), primed, and painted to match existing siding.

7.4 Open wall cavities

The following procedures shall be followed when insulating open wall cavities.

7.4.1 Insulating open cavities

Batt insulation shall be tight fitting, but not compressed. Insulation installed on the interior of home shall be covered with a fire-rated material having a flame spread index of 25 or less and smoke developed index of not greater than 450 when tested in accordance with ASTM – E84-01. See **Exhibit 5.S5, *Flame Spread and Smoke Development***.

7.4.2 Fire rating

All exposed faces and edges of insulation that are combustible shall be covered with a non-combustible material with a fire rating of not less than 15 minutes, as tested in

accordance with ASTM E-84-01. **Exhibit 5.S5, *Flame Spread and Smoke Development***.

7.4.3 Open garage walls

When wall insulation is installed in open wall cavities the insulation shall have a covering with a flame spread index of 25 or less and smoke developed index of not greater than 450 when tested in accordance with ASTM - E84-01. If the insulation does not meet this standard, a covering may be applied that does meet the standard.

7.5 Cavities containing chimney/flue

A cavity containing a metal chimney or flue without a solid barrier and a three-inch clearance zone shall be insulated with blown fiberglass.

7.6 Certificate of insulation

A certificate of insulation will be completed and posted as per **Section 1, *General Requirements***.

Section 8.0 Crawlspace /Underfloor/Perimeter Insulation

Floors over unconditioned crawlspaces and basements or walls of crawlspaces or basements shall be insulated if the cost to insulate is justified using an evaluation of cost-effectiveness where the Savings to Investment Ratio (SIR) is 1.0 or greater.

Exceptions:

a. Clearance between ground and structural framing of sub floor is less than 18 inches.

b. Floor contains knob and tube wiring that cannot be certified safe by a licensed electrician or inspector as defined in RCW 19.28.070.

c. There is sewage waste on the ground, or any other condition is present that poses a health or safety hazard that cannot be corrected with available repair funds.

d. The sub-floor, floor or structural members are wet, rotten or unsound and the problem cannot be corrected with available repair funds.

e. Insect or rodent infestation is present that cannot be eliminated prior to insulating.

f. Extensive debris or household goods or personal belongings are present.

8.0.1 Insulation levels

Insulation shall fill the cavity and have an SIR of 1.0 or greater.

8.0.2 Installation standard

Insulation shall be installed as follows:

a. Be in substantial contact with the sub-floor with no voids or gaps.

b. Insulation batts shall not be compressed more than 10% of rated thickness.

c. Insulation shall be cut to fit each joist space.

d. All ends shall fit tight without overlapping.

e. Insulation shall fit tight against structural members, rim joist, foundation walls and pipes.

8.0.3 Insulation in area of routine human contact

Underfloor insulation installed over an unconditioned basement or crawlspace subject to routine human contact shall be covered with material having a flame spread index

of 25 or less and smoke developed index of not greater than 450 when tested in accordance with ASTM- E84-01. See **Exhibit 5.S5, *Flame Spread and Smoke Development***.

8.1 Ducts in crawlspaces

Ducts in crawlspaces shall be treated in accordance with **Section 13, *HVAC Ducting***.

8.2 Insulation support systems

The floor support matrix shall be used to determine insulation support systems.

FLOOR SUPPORT MATRIX						
Floor Type	**Support Material**	**Material requirements**	**Maximum Spacing**	**Acceptable patterns**	**Minimum fastener type**	**Minimum fastener depth**
Joist up to 24"	Lath	3/8X1.5"	20"O.C.	Across floor joists	Corrosion resistant 3/8"crown 18AWG	5/8"
Joist up to 24"	Twine	150 LBS. polyester, polypropylene or nylon	12" O.C.	Shoelace/Zigzag (must be stapled at each joist	Corrosion resistant 3/8"crown 18AWG	5/8"
Post &Beam over 32" O.C.	Lath	3/8X1.5"	20" O.C.	Across floor beams up to 54". If over 54" need center support	Corrosion resistant 3/8"crown 18AWG	5/8"
Post &Beam over 32" O.C	Twine	150 LBS. polyester, polypropylene or nylon	12"	Shoelace up to 54" across. If over 54" need center support	Corrosion resistant 3/8"crown 18AWG	5/8"

8.2.1 Lath Method

The lath used shall be dry, a minimum 1/4” thick, and not damaged. The lath shall be sized and spaced so insulation does not sag. The exterior row of lath shall be no more than 4” from the foundation wall and 20” on center in the field. Lath or other approved support mechanism shall be provided within 4 inches of the end of any batt.

The wood lath shall be fastened to the bottom of beams or joists using galvanized roofing nails which allow 5/8-inch penetration of the joist, or zinc coated, stainless steel or similar corrosion resistant staples with a minimum 3/8" inch crown and 5/8 penetration of the joist.

8.2.2 Twine method

Materials used for the twine method shall meet the following conditions:

a. Twine must be polyester, polypropylene, or nylon and have a breaking strength of at least 150 pounds.

b. Twine shall be installed in a joist-to-joist shoelace or zigzag pattern across each joist space with anchor points no more than 12 inches apart. Anchor points may not be placed in the joist/beam closer than 4 inches to the underside floor surface.

c. Nails used as anchors shall be hot-dipped, galvanized metal, or have similar corrosion resistance, and penetrate the beam/joist at least 5/8-inch.

d. Staples used as anchors shall be made of stainless steel or equivalent material of similar corrosion resistance (such as galvanized metal, nickel, solid bronze, or aluminum). Staples must be a minimum of 18 gauge, penetrate the joist a minimum of 5/8 inch, have at least a 3/8 inch crown width, and be made in a divergent point or modified divergent point style.

e. Shall be anchored to parallel joists or beams spaced up to 52 inches apart.

8.2.3 Wire hanger method

The use of wire hangers or “tiger teeth” shall not be considered an acceptable method of support for underfloor insulation.

8.2.4 Alternative insulation and methods of support for underfloor insulation

Other insulation or support methods may be acceptable. They shall be installed according to the manufacturer's recommendations and meet the SIR of 1.0 or greater. The Local Agency shall notify Commerce field monitor prior to installation.

8.3 Ground cover

Ground cover moisture barrier shall be installed in accordance with the following:

a. Shall be installed in a crawlspace when no ground cover exists or when an existing ground cover has been extensively damaged.

b. All wood or other cellulose fiber-based debris, where practical, shall be removed before new ground cover is put in place.

c. The ground cover shall be 6 mil black polyethylene, or its equivalent in perm-rating, strength, and resistance to soil-chemical degradation.

d. All joints shall be lapped a minimum of 12 inches.

e. The poly cover shall extend at least 6 inches up the foundation wall or pier blocks, but shall not contact any wood members.

f. New ground cover may be installed over existing ground cover that is deteriorated or incomplete.

g. When existing ground cover is clear it must be covered with black.

***Exception*:** When underfloor insulation is installed over an unconditioned basement and the basement has no exposed soil (has a concrete floor and walls), ground cover is not required.

8.4 Crawlspace access

All crawlspaces shall have an access. The minimum access opening size shall be 18 x 24 inches.

***Exception*:** Smaller access is allowable when dictated by existing framing.

8.4.1 Exterior access

Exterior access to the crawlspace shall have a cover or door that fills the opening, is tight fitting, and can be securely attached using hand-operable mechanical fasteners. Nails shall not be used to secure access covers to framing. Cover and framing material exposed to weather, or in contact with soil or concrete, shall be pressure treated or cedar. Other types of wood may be used if they are primed and painted with exterior grade paint. Nails, screws, fasteners or other hardware used shall be made of galvanized metal, stainless steel, or similar corrosion resistant material.

***Recommendation**:* Cover crawlspace access wells with a shed roof type cover where bulk moisture is an issue. Construct the cover to conform to well dimensions. Include appropriate roofing material, prime or paint, or use treated plywood. Install handles for ease of removal. Do not install vents.

8.4.2 Interior access

Interior access to the crawlspace shall have a cover or door that fills the opening and is reasonably tight fitting. Horizontal access covers shall provide structural support equivalent to that of ¾ inch plywood. Access covers adjacent to a conditioned space shall be insulated to a minimum of R-19 for horizontal openings and to a minimum of R-11 for vertical openings. The insulation shall be permanently attached to access covers. Interior access covers shall be weatherstripped.

8.5 Installation of passive ventilation

Installation of passive ventilation is allowable. The installation of additional ventilation is not required. If ventilation is installed, the code minimum shall not be exceeded.

8.5.1 Closeable vents

Closeable vents are allowable.

8.5.2 Vent opening location

New vent openings shall not be located within 12 inches of existing water pipes.

8.5.3 Vent screening and framing

All new and existing vents shall be screened with ¼ inch corrosion resistant wire mesh, secured on all four sides, and trimmed so that no exposed edges of the wire mesh are showing from the outside. Expanded metal covers may be used. Wood framing in contact with concrete or ground shall be pressure treated or cedar.

8.6 Sealed crawlspace and mechanical ventilation

If a crawlspace is going to be sealed, the passive ventilation openings in the exterior perimeter walls shall be eliminated and the perimeter wall air-sealed. An exhaust fan shall be installed and made operational in the crawlspace. The exhaust fan shall be rated for continuous operation (44,000 hours), sized to provide a minimum of 1 CFM exhaust for every 50 square foot of crawlspace floor area, AND create a minimum -2 pascal and a maximum -5 pascal, pressure differential with respect to (WRT) the conditioned space. Exhaust termination shall be a minimum of 5 feet (measured on the horizontal) from any operable door or window fresh air inlet. Refer to **Section 10, *Mechanical Ventilation***. Ground cover is required as detailed in **Section 8.3, *Groundcover***.

8.6.1 Combustion appliances in sealed crawlspaces

Combustion appliances shall not be located in sealed crawlspaces.

Exception: Direct vent, sealed combustion appliances with powered exhaust may be located in a sealed crawlspace.

8.7 Crawlspace/unconditioned basement combination

In instances where an unconditioned basement and crawlspace are found in the same structure, two treatment options are acceptable and shall be evaluated for cost effectiveness:

8.7.1 Crawlspace/unconditioned basement combination; option1

Treat the entire area as a crawlspace and insulate accordingly.

8.7.2 Crawlspace/unconditioned basement combination; option 2

Construct a permanent wall dividing the two areas. Treat each area according to relevant specifications.

8.8 Crawlspace/conditioned basement combination

Construct a permanent wall dividing the two areas. Treat each area according to relevant specifications.

8.9 Rim joist area

Rim Joist areas shall be air sealed and insulated to R-19 or the highest level practical.

8.10 Exterior perimeter insulation

Exterior perimeter insulation shall be an acceptable alternative to underfloor insulation at the discretion of the Local Agency. When exterior perimeter insulation is installed the Local Agency or Subcontractor shall follow the specifications detailed below.

8.10.1 Minimum R-Value for walls

Insulation installed shall have a minimum thermal resistance of R-10.

8.10.2 Insulation installation

Insulation shall be installed from the bottom edge of the siding to a depth equal to the local "frost line" (as determined from local building or water utility officials) or two feet below grade, whichever is greater.

***Exception*:** Insulation shall not be installed, nor excavation take place, below the level of any foundation footing.

8.10.3 Excavation in preparation for insulation

Prior to any excavation, the Local Agency or Subcontractor shall reach an agreement with the client regarding protection or removal and replacement of any plants or other items which will be disturbed and damaged by the excavation. Any required excavations shall be promptly backfilled after work is completed, and all plants or other items replaced in their original locations, unless released, in writing, from this obligation by the client.

8.10.4 Utility locating

The Contractor/installer shall be responsible to locate, protect, and if damaged, repair any underground cables, pipes, utility lines or other obstructions during excavation.

8.10.5 Surface preparation and attachment of insulation

The foundation surface shall be cleaned and prepared in accordance with the insulation manufacturer's recommendation. Insulation shall be attached to the foundation according to manufacturer's specifications.

8.10.6 Protection and flashing of insulation

Insulation material shall be protected and flashed to prevent water intrusion, rated for ground contact where required, and be acceptable to the owner. Above grade, the insulation shall be covered with a suitable coating that matches adjacent walls (or previous foundation surface) in color and general surface appearance.

8.11 Interior perimeter insulation

Interior perimeter insulation shall be considered an acceptable alternative to underfloor insulation at the discretion of the Contractor. When interior perimeter insulation is installed the Contractor/Installer shall follow the specifications detailed below.

8.11.1 Minimum R-Value

Insulation installed shall have a minimum thermal resistance of R-10.

8.11.2 Batt or blanket insulation installation

Batt or blanket insulation shall extend from the bottom surface of the sub-flooring (including band joists) downward to the crawlspace floor. All seams between adjacent batts, blankets, or sheets shall be either continuously taped or stapled (on no more than 6-inch spacing) along their entire length.

8.11.3 Rigid insulation

The insulation shall start at the bottom of the sill and extend to the crawlspace floor. The insulation shall be mechanically fastened every 22 inches and adhered to the foundation according to manufacturer's specifications.

8.11.4 Spray foam insulation

The insulation shall start at the bottom of sill plate and extend to the crawlspace floor.

8.12 Cantilevered floors

Cantilevered floors shall be insulated using one of the following methods.

8.12.1 Insulate cantilever open through rim

When the floor joists extend beyond the foundation wall and the rim area is open, extend the insulation batt into the cantilevered area from the crawlspace. The thickness of the batt insulation shall be thick enough to satisfy the requirement that insulation be in substantial contact with the underfloor. Air seal penetrations through sheathing or sub floor.

8.12.2 Insulate cantilever open under floor

Installer/Contractor shall install insulation batt that is the full thickness of the floor joist from the exterior. A cover of 3/8 inch exterior grade sheathing or similar material shall protect the insulation installed. If subjected to intermittent moisture (i.e. splashback, etc.), wood sheathing shall be primed on all exposed sides or pressure treated plywood used. Air seal penetrations through sheathing or sub floor.

8.12.3 Insulate cantilever no access

Installer/Contractor shall drill through existing interior or exterior cover, blow insulation into all joist cavities until full, plug holes using plugs and glue recommended for the surfaces being glued. Fiberglass insulation shall be blown at a density of 1.5 pounds per cubic foot and cellulose insulation shall be blown at a density of 3.5 pounds per cubic foot. Air seal penetrations through sheathing or sub floor.

8.13 Floor over attached garage no access

Installer/Contractor shall drill through existing interior or exterior cover, blow insulation into all joist cavities until full, plug holes using plugs and glue recommended for the surfaces being glued. Cellulose insulation shall be blown at a density of 3.5 pounds per cubic foot. If the ceiling being drilled for access is drywall

or plaster, the holes shall be plugged and skim coated with joint compound ready for light sand.

8.13.1 Floor over attached garage open joists

Underfloor insulation installed in open floor joists over a garage shall be covered with material having a flame spread index of 25 or less, and a smoke developed index of not greater than 450 when tested in accordance with ASTM- E84-01**.** See **Exhibit 5.S5, *Flame Spread and Smoke Development***.

Section 9.0 Moisture Control

The Local Agency shall identify and document in the client file problems in the dwelling unit resulting from high moisture levels. The cause or source of the high moisture levels shall be alleviated prior to the completion of weatherization services. Where remediation cannot be accomplished with available funds, weatherization services shall be deferred until the cause or source of the problem(s) has been alleviated. Refer to Commerce policy **Chapter 5, Providing Weatherization Services; Section 5.5 *deferral standards***. See also **Exhibit 5.5A, *Weatherization Deferral Form example***.

Moisture problem defined: *Any condition which, if left unattended, will allow moisture in any state (liquid, vapor or ice) to damage the dwelling structure. Evidence of moisture problems includes, but is not limited to, visible rot, mold, peeling paint, swollen/bulged/soft building materials and/or discoloration of building component surfaces.*

9.1 Plumbing

Prior to completion of weatherization services the Local Agency or Property Owner shall repair any plumbing leak found to be wetting insulation and/or floor, wall, or ceiling components of the dwelling.

9.2 Roof

The Local Agency shall inspect the roof, flashing details, and penetrations for indications of leaks prior to insulating. Attics or ceiling cavities may be insulated when, in the judgment of the Local Agency, the roof in its current or repaired condition following a weatherization repair is expected to last, without leaking, a minimum of 5 years. Attics covered by roofs that do not meet this standard shall not be insulated. Refer to **Section 6, *Attic/Ceiling Insulation***.

9.3 Inside surfaces of roof framing/sheathing

The Local Agency shall inspect the inside surfaces of the roof framing and sheathing for indicators such as mold, rot, water damage, condensation, etc., that pose heat loss, indoor air quality, health, safety and/or durability problems. If these problems exist the cause of the problem shall be corrected before completion of weatherization.

9.4 Gutters, downspouts and runners

If necessary to prevent rainwater from entering the crawlspace or basement, all missing or faulty gutter or downspout components shall be repaired or installed.

9.5 Below grade vents and penetrations in foundation walls

When crawlspace vents and other penetrations are found to be installed below grade they shall be inspected to determine whether water from outside is entering the crawlspace through the vents or penetrations. The Local Agency shall eliminate the path of water into crawlspace through the vents or penetrations.

9.6 Ground cover

All crawlspaces shall have ground cover installed as outlined in **Section 8.3, *Ground Cover***.

9.7 Sump pumps

A sump pump may be replaced, repaired or installed to prevent water from accumulating under a dwelling.

9.8 Mechanical crawlspace ventilation

In crawlspaces with seasonal standing water an exhaust fan may be installed provided that the specifications for a sealed crawlspace detailed in **Section 8.6, *Sealed Crawlspace and Mechanical Ventilation*** are met.

9.9 Source specific ventilation

A working exhaust fan shall be present in:

a. Kitchens with gas combustion appliances. Refer to **Section 10, *Mechanical Ventilation***.

b. Any bathroom having a working shower or bathtub. Refer to **Section 10, *Mechanical Ventilation***.

Exceptions:

a. Bath exhaust may not be required where occupancy and usage patterns indicate infrequent use and there is no evidence of moisture problems. The reason for not installing a fan must be documented in the client file.

b. Bath exhaust may not be required when whole house ventilation is functioning as designed.

9.10 Whole house ventilation

A whole house ventilation system may be installed to alleviate high moisture conditions. Refer to **Section 10, *Mechanical Ventilation***.

9.11 Dehumidifiers

A dehumidifier may be replaced, repaired or installed to prevent water damage to a dwelling unit having persistent and unresolved high moisture levels. The installation shall comply with specifications detailed in **Section 11, *Dehumidifiers***.

9.12 Client controlled conditions

The Local Agency shall inform the client of any observed client controlled conditions contributing to high moisture levels in the dwelling. The Local Agency shall document in the client file those recommendations that would help lower moisture levels.

9.13 Mold

The Local Agency shall follow Department of Energy guidelines for inspecting dwelling units for mold.

9.13.1 Documentation of mold condition(s)

The Local Agency shall record mold conditions found prior to weatherization in the client file. Documentation shall include the location and an estimate of the area in square feet as well as photographs and a narrative description of all observed mold conditions found on surfaces in the unit.

9.13.2 Pre-work notification

If weatherization work will be done, the Local Agency shall provide to the occupant and owner of the dwelling unit a written description of the proposed work that is to be performed, which includes notification that the work to be performed is expected to alleviate the observed mold, and not promote new mold growth. The occupant and owner shall sign a statement acknowledging receipt of the information. A copy of the signed statement and the pre-weatherization mold report shall be retained in the client file. See **Exhibit 5.S1, *Mold Assessment and Release Form example***.

9.13.3 Additional notification materials

In dwelling units where mold conditions have been identified, the Local Agency shall give to the dwelling's occupant(s) a copy of the EPA booklet *"A Brief Guide to Mold, Moisture, and Your Home"* (**http://www.epa.gov/mold/moldresources.html**) before the start of any work. The Local Agency shall document in the client file that this booklet was received by the occupant(s). This verification will include a signed statement from the occupant(s) that they received the EPA booklet.

9.13.4 Personnel training

The Local Agency shall provide training in the mold inspection and documentation protocols established by the Department of Energy for all staff charged with assessing projects for weatherization.

9.13.5 Mold clean up limitation

Weatherization in dwelling units with mold conditions greater than 30 contiguous square feet must be deferred until the mold conditions are remediated by the owner or a company licensed and insured to provide mold abatement. Mold conditions may be alleviated by a Local Agency but the area must not exceed 30 contiguous square feet.

9.13.6 Alleviation of mold conditions

In all situations where mold conditions are to be alleviated, the underlying cause of water accumulation shall be identified and rectified. The remediation efforts shall be documented in the client file. When the underlying cause of water accumulation cannot be rectified within the weatherization program parameters, the work shall be deferred, and this shall be documented in the client file

9.13.7 Worker protection

Procedures for worker protection found in U.S. Department of Labor Occupational Safety and Health (OSHA) *"A Brief Guide to Mold in the Workplace"* (**http://www.epa.gov/mold/moldresources.html**) shall be followed when alleviating mold conditions.

9.13.8 Occupant protection

Procedures for occupant protection found in U.S. Department of Labor Occupational Safety and Health (OSHA) *"A Brief Guide to Mold in the Workplace"* (**http://www.epa.gov/mold/moldresources.html**) shall be followed when alleviating mold conditions.

Section 10.0 Mechanical Ventilation

The Local Agency shall provide mechanical ventilation to alleviate excess moisture and the buildup of indoor pollutants. Local Agency shall install-mechanical ventilation in accordance with this section whenever the CFM 50 measured is less than the 100% of the calculated Building Airflow Standard. See **Exhibit 5.S4 *Building Airflow Standard (BAS)***.

10.0.1 Control infiltration

Contractor shall install all priority and cost effective air sealing work on dwelling units receiving weatherization as outlined in **Section 5, *Building Envelope Air Sealing***.

10.0.2 Building Airflow Standard

Contractor shall calculate Building Airflow Standard (BAS) using each of the three formulas listed in **Exhibit 5.S4 *Building Airflow Standard (BAS)*** and select the highest BAS calculated.

The following are all different terminology for the same airflow standard, and definitions can be found in **Definitions**.

The Building Airflow Standard (BAS)
The Building Tightness Limit (BTL)
The Minimum Ventilation Level (MVL)

10.0.3 Pollution source survey

Contractor shall complete a pollution source survey for all households and refer to it when determining ventilation strategy. Conditions requiring higher ventilation rates than indicated by the BAS shall be documented in the client file. Refer to **Section 2.2, *Audit Requirements***. A sample pollution source survey that local agencies may use or customize can be found in **Exhibit 5.S2, *Pollution Source Survey Example***.

10.0.4 Fan testing

All accessible, exhaust ventilation fans shall be performance tested and the actual CFM flow of the fan documented in the client file. All newly installed fans shall be performance tested. Testing shall be performed with a flow hood or an exhaust fan flow meter used in conjunction with a digital manometer.

Exception: Range hoods are not required to be performance tested. Information and education shall be provided to the client to ensure the proper use of the ventilation system installed.

10.1 Electrical connections

Fans installed shall be hard-wired by a licensed electrician or other Washington State Labor and Industries certified specialty contractor operating within the limitations of their license.

10.2 Damper

All fans shall be equipped with a back draft damper located at either the fan outlet or the vent termination.

***Exception*:** Fans designed and wired to operate continuously do not require a damper.

10.3 Whole house mechanical ventilation required

Mechanical ventilation is required if, as a result of the weatherization process, the CFM50 as measured using a blower door is less than 100% of the calculated BAS. The Local Agency may select option 1 or 2 in order to meet this requirement.

10.3.1 Option 1:

Determine ventilation requirement using the table below. Install a fan that is sized to meet or exceed flow requirement.

WHOLE BUILDING VENTILATION REQUIREMENTS

Number of bedrooms	0-1	2-3	4-5	6-7	>7
<1500 square feet	30	45	60	75	90
1501-3000	45	60	75	90	105
3001-4500	60	75	90	105	120
4501-6000	75	90	105	120	135
6001-7500	90	105	120	135	150
>7500 square feet	105	120	135	150	165

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(These are continuous flow numbers in measured, cubic feet per minute CFM)

10.3.2 Option 2:

Determine Building Airflow Standard (BAS) by calculation using **Exhibit 5.S4, *Building Airflow Standard (BAS)***.

Divide BAS ____ by n factor.

f. Record BAS ÷ n = _____ CFM required.

g. Determine final CFM 50 using a blower door.

h. Divide final CFM 50 by n factor used in BAS calculation.

i. Record CFM50/n = _____CFM natural estimate.

j. Subtract CFM natural estimate from CFM required.

k. CFMreq.- CFMnat = _____mechanical ventilation flow requirement.

l. Install fan sized and performance tested to meet or exceed flow requirement.

Note: n =20. For a more accurate conversion factor, see Residential Energy by John Krigger, Appendix A-11.

10.3.3 Whole house ventilation systems

The following types of whole house ventilation systems may be installed to meet the whole house ventilation requirement.

a. Exhaust fan sized to meet the minimum airflow requirement at 0.25 inches of water gauge and wired to operate continuously.

b. Exhaust fan sized to exceed the minimum airflow requirement at 0.25 inches of water gauge and controlled by a 24-hour timer set to meet the minimum airflow requirement.

c. Integrated outside air with forced air furnace air handler and distribution installed in accordance with the provisions detailed in the Washington State Ventilation and Indoor Air Quality Code (**http://www.sbcc.wa.gov/pages/code.html**).

d. Supply air fan sized to meet the minimum airflow requirement at 0.25 inches of water gauge and installed in accordance with the provisions detailed in the Washington State Ventilation and Indoor Air Quality Code (**http://www.sbcc.wa.gov/pages/code.html**).

e. Energy or Heat Recovery Ventilators sized to meet the minimum airflow requirements and installed in accordance with the provisions detailed in the Washington State Ventilation and Indoor Air Quality Code (**http://www.sbcc.wa.gov/pages/code.html**).

10.3.4 Whole house fan requirements

a. Fans installed to provide whole house ventilation shall have a sone rating of 1.5 or less as determined by the Home Ventilation Institute (**www.hvi.org/**).

b. Fan motors shall be rated for continuous use (44,000 hours). See **Section 8.6, *Sealed Crawlspace and Mechanical Ventilation***.

***Exception*:** Vibration isolated, remote mounted fans are exempt from some rating requirements.

10.3.5 Energy use

Exhaust fans installed to provide whole house ventilation shall have an operating watt draw of 50 watts or less.

10.3.6 Control of whole house mechanical ventilation

Fans installed to meet whole house ventilation requirement shall be hard wired for continuous operation.

Exceptions:

a. When the measured airflow of fan installed exceeds the minimum airflow requirement, a twenty-four hour timer may be installed to control the fan. The Timer shall be set to achieve the minimum ventilation requirement over a 24 hour period as determined by option 1 or 2 above.

b. Whole house ventilation is provided using an outside air opening integrated with the air handler fan of a forced air heating system controlled by a 24 hour timer set to deliver ventilation in excess of minimum ventilation requirement over a 24 hour period determined by option 1 or 2 above.

c. Air to air heat exchanger is installed and is capable of delivering airflow in excess of minimum ventilation requirement over a 24 hour period determined by option 1 or 2 above.

10.4 Source specific exhaust in kitchens

A working exhaust fan shall be present in kitchens where a gas combustion range, cook top, or oven is present.

10.4.1 Ventilation level

A kitchen exhaust installed by the Local Agency shall be Heating Ventilation Institute (**www.hvi.org/**) rated to deliver a minimum of 100 cfm at 0.25 inches water gauge.

10.4.2 Fan rating

Exhaust fans installed directly over a range or oven must be rated for installation in this location.

10.4.3 Kitchen fan control

Kitchen fans shall be controlled by the manufacturer's switch or a wall mounted switch.

10.4.4 Kitchen fan exhaust ducting shall be:

a. Constructed of galvanized metal, stainless steel or copper with a wall thickness of not less than 30 gauge.
b. Insulated to minimum R-4 (R-11 with unfaced fiberglass insulation) if duct is more than 6 feet in length, and passes through unconditioned space.
c. Air tight, with smooth interior finish and ducted to the outside.
d. Connected to a collar of termination cap. Collar shall pass through the roof sheathing.
e. Mechanically fastened at each joint using a minimum of 2 screws, and taped using aluminum butyl tape, to the fan outlet and to the collar of termination cap.
f. Terminated using a terminal cap with opening size at least equivalent to the net free area of the duct.
g. Direct run having no more than the equivalent of 2, 90 degree elbows in the run.
h. Supported allowing no more than 2 feet of horizontal run without support at the center with strapping having a minimum width of a ½ inch.

10.5 Source specific exhaust in bathrooms

Each bathroom where a tub or shower is present shall have an operable fan that is rated to deliver 50cfm at 0.25 inches water column.

***Exceptions*:**

a. Bath exhaust may not be required where occupancy and usage patterns indicate infrequent use and there is no evidence of moisture problems. The reason for not installing the fan must be documented in the client file.
b. Bath exhaust may not be required when whole house ventilation is functioning as designed.
c. Mechanical exhaust is not required in water closets, laundry rooms, lavatories, and utility rooms.

10.5.1 Sone rating

Exhaust fans installed to provide local bathroom exhaust shall have sone rating of 1.5 or less.

10.5.2 Energy use

Exhaust fans installed to provide local bathroom exhaust shall have an operating watt draw of 50 watts or less.

10.5.3 Manual control/switch

The manual control for the bathroom exhaust fan shall be capable of being set to manually run the fan for a minimum of 1 hour and shut off automatically. The contractor shall install a replacement control if the existing control does not meet this requirement.

10.5.4 Bathroom fan exhaust ducting shall be:

a. Metal, 30 gauge, minimum thickness (galvanized metal, aluminum, copper, or stainless steel) or PVC, schedule 40, minimum thickness.

***Exceptions*:**

1. Where rigid vent pipe is impracticable, aluminum flex duct may be used for runs no longer than 2 feet from fan to vent cap.

2. Mylar flex or rigid aluminum flex duct may be used if the duct diameter is increased an additional 50% from the fan outlet diameter. In no installation shall the flex duct be allowed to loop. If running flex duct across varying heights (such as ceiling joists), the flex duct shall be stretched and secured to a splint to avoid sagging and the collection of condensation.

b. Insulated to minimum R-4 (R-11 with unfaced fiberglass insulation) if duct is more than 6 feet in length, and passes through unconditioned space.

c. Air tight and ducted to the outside (preferably through a vertical surface, rather than through the roof).

d. If ducting through the roof, connected to a collar of the termination cap. Collar shall pass through the roof sheathing.

e. Mechanically fastened at each joint using a minimum of 2 screws, and taped using aluminum butyl tape, to the fan outlet and to the collar of termination cap.

f. Termination cap shall have at least the equivalent net free area of the fan outlet.

g. Supported where duct runs horizontally using nylon, plastic or metal strapping with a minimum width of ½ inch. Support strapping or hangers shall not compress the insulation. Support strapping or hangers shall be installed within 1

foot of a joint or connection and a minimum of every 4 feet thereafter, or per manufacturer's recommendation.

10.6 Crawlspace and garage ventilation

Exhaust fans may be installed for operation in crawlspaces or garages to exhaust pollutants and maintain a pressure boundary relative to the dwelling unit. Fan installed shall meet requirements detailed in **Sections 10.3.4 *Whole House Fan Requirements* and 10.3.5 *Energy Use***.

10.6.1 Sizing crawlspace and garage fans

The Local Agency shall size the fan to maintain negative pressure of 2 to 5 pascals relative to the dwelling unit. Refer to **Section 8.6, *Sealed Crawlspace and Mechanical Ventilation***.

10.6.2 Crawlspace and garage fan controls

Exhaust fans installed in crawlspaces shall be wired to exhaust continuously with a switch near the fan to allow shut down of fan for maintenance.

10.6.3 Verification of fan performance

The Local Agency shall verify that fan performance during normal operating conditions creates a negative pressure with reference to the dwelling unit of 2 to 5 pascals.

10.6.4 Fan rating

Fans installed for the purpose of maintaining a pressure boundary shall be rated for continuous operation.

10.6.5 Fan termination point

Fans installed for the purpose of maintaining a pressure boundary shall not terminate within 10 feet of a door, window, combustion appliance air-intakes, or fresh air intakes.

10.7 Dryer ducting

Clothes dryers shall be vented directly to the outside in accordance with the following procedures.

10.7.1 Dryer vent ducts in attics

Dryer vent ducts in attics shall conform to the following:

a. Extend directly to the outside of the structure.

b. Have a smooth interior finish.

c. Vent shall terminate in a non-screened vent cap with a damper.

d. Not exceed 25 feet in length from dryer location to outlet terminal, the maximum length shall be reduced 2.5 feet for every 45 degree elbow and 5 feet for each 90 degree elbow.

e. Extension material in excess of 6 feet must be metal with a non-ribbed interior and must be mounted in such fashion that no traps or reversing horizontal runs are present. Horizontal runs shall be sloped toward the vent discharge. Discharge will not place moisture on building materials or walkways.

f. Screws shall not be used to connect dryer ducting.

g. An approved flex duct may be used for extensions of 6 feet or less.

10.7.2 Dryer ducts in crawlspaces/basements/cellars

Dryer vent ducts in crawlspaces, basements, or cellars shall:

a. Have a smooth interior finish.

b. Be extended directly to the outside of the structure.

c. Not exceed 25 feet in length from dryer location to outlet terminal. The maximum length shall be reduced 2.5 feet for every 45 degree elbow and 5 feet for each 90 degree elbow.

d. Have no more than 3, 90-degree elbows present.

e. Be supported using nylon, plastic, or metal strapping with a minimum width of ½ inch. Support strapping or hangers shall be installed within 1 foot of a joint or connection and a maximum of every 4 feet thereafter.

f. Terminate in a non-screened vent cap with a damper.

g. Have extension material in excess of 6 feet that is metal with a non-ribbed interior and mounted in such fashion that no traps or reversing horizontal runs are present. Horizontal runs shall be sloped toward the vent discharge. Discharge shall not place moisture on building materials or walkways.

h. Screws shall not be used to connect any dryer ducting.

i. An approved flex duct may be used for extensions of 6 feet or less.

10.8 Outdoor air inlets

Outdoor air inlets for individual rooms when installed shall:

a. Have a controllable and secure opening.

b. Be sleeved and flashed or otherwise designed so as not to compromise the properties of the wall or window in which they are placed.

c. Be screened or otherwise protected to prevent entry of leaves, debris, or pests.

d. Not be located within 10 feet of hazardous or unsanitary locations.

Section 11.0 Dehumidifiers

The installation of a dehumidifier is allowable, provided it is determined to be the most effective and cost-efficient method of reducing moisture problems or high moisture buildup in a home. Dehumidifiers shall be installed only after other measures with less of an energy penalty have been found ineffective at reducing moisture problems.

Moisture Problem Defined: *Any condition which, if left unattended, will allow moisture in any state (liquid, vapor, or ice) to damage the dwelling structure. Evidence of moisture problems includes, but is not limited to, visible rot, mold, peeling paint, swollen/bulged/soft building materials and/or discoloration of building component surfaces.*

11.0.1 Post-weatherization dehumidifier installation

A Local Agency made aware of a moisture problem developing as a result of, or still remaining after, installation of weatherization measures may return to a closed weatherization job and install a dehumidifier, if it is determined to be the most effective and cost-efficient method for reducing moisture buildup.

11.1 EnergyStar rated and AHAM certified

The dehumidifier installed shall be Energy Star rated and certified by the Association of Home Appliance Manufacturers (AHAM) Specification DH-1 (**www.AHAM.org**).

11.2 Sizing

The Local Agency shall size dehumidifiers for installation according to the general guidelines below, and shall be controlled by a humidistat to automatically maintain the desired humidity level. Dehumidifier capacity shall be determined by the rated capacity test contained in AHAM Specification DH-1.

Floor Area of House (sq. ft.)	Dehumidifier Capacity (Pints/24 hours)
Up to 1,000	25
1,000-2,000	30
2,000-3,000	35

11.3 Low temperature location

When the dehumidifier is to be located in a basement or other area where the normal operating temperatures are expected to be below 65 degrees Fahrenheit, the Local Agency shall install a dehumidifier rated to operate in “low temperature” conditions.

11.4 Electrical safety

The Local Agency shall observe all manufacturer warnings regarding electrical safety. The Local Agency shall not allow drain hoses, water drainage, or disposal near electrical circuits, cords, or devices.

11.5 Hose to drain required

The Local Agency shall install a hose to drain the dehumidifier's water bucket. Hose shall be mechanically attached to the water bucket outlet and terminate at a drain or sump. Hose installed shall not create a tripping hazard.

Section 12.0 Heating Systems

Contractors shall ensure that upon completion of weatherization services all dwelling units have a safe, operable, permanently installed, and adequate heating system.

Heating System Defined: *Heating system is any component of a residential space heating system which:*

a. Distributes heat (duct work, air handler, baseboard, pipes, or radiators.

b. Generates heat or controls combustion (furnace, boiler, space heater, or safety controls).

c. Ventilates products of combustion (flue, vent pipe and chimney).

d. Stores and supplies fuel for the heating system (tank or fuel line)

Adequate Heat Defined: *Heating facilities are considered adequate if they are capable of maintaining a room temperature of 65 degrees F in all habitable rooms and bathrooms when the outside design temperature is reached.*

12.1 Inspection and testing of heating systems

The Local Agency shall inspect and test the heating system(s) in each dwelling unit for safe operation prior to delivering weatherization services. The Local Agency shall document in the client file the condition of heating system prior to weatherization. Refer to **Exhibit 5.S7A *Electric heating system work order example*, Exhibit 5.S7B *Gas forced air heating system work order example*, Exhibit 5.S7C *Oil forced air heating system work order example*,** or **Exhibit S7D, *Oil burner retrofit example*,** and **Exhibit 5.3.1A, *Combustion Safety Form*** .

12.1.1 Inspection of electric heating systems

The minimum requirement for electrically heated dwelling units is:

a. Visual inspection of the electrical system.

b. Visual inspection of heating system clearances to combustibles.

c. Visual inspection of air handler (if present).

d. Verification that the system is permanently installed and securely attached to the floor, wall, or ceiling.

The Local Agency shall test all forced air heating systems for heat rise. If the heat rise is outside the manufacturer's acceptable range the system fails. If the heating unit fails the heat rise test, The Local Agency shall have the appropriate repairs made or defer the project until the problem is corrected.

Exception: If manufacturer's acceptable heat rise range is unavailable, the default acceptable heat rise range is greater than 40° and less than 70° Fahrenheit.

12.1.2 Inspection and safety testing of gas and oil heating systems

The Local Agency shall ensure that dwelling units with combustion appliances are tested in accordance with theCommerce approved Combustion Safety Form. Refer to **Section 3, *Combustion Safety***.

12.2 Electric heating system service

Electric heating systems shall be serviced to:

a. Correct hazards identified during initial inspection.
b. Complete system checks and repairs detailed in the work order form.
c. Improve distribution efficiency.

12.2.1 Minimum service – no hazards

a. Fan blades and cabinet of the air handler cleaned free of all visible dirt.
b. Check and change furnace filter if necessary.

12.3 Gas and oil heating system service

Gas and Oil fired heating systems shall be serviced to:

a. Correct hazards identified during combustion safety inspection and testing.
b. Improve combustion or distribution efficiency.

12.3.1 The minimum service for a gas or oil heating system where no hazards have been identified:

a. Clean air handler of furnace or unit heater.
b. Check and change furnace filter if necessary.

12.4 Heating system replacement

Heating system replacement is allowable when the Local Agency determines that it is more cost effective to replace the heating system than it is to repair or replace inefficient, non-operable, unsafe components. Estimated repair costs, usable life and efficiency considerations used to justify decision to replace shall be documented in the client file.

12.4.1 Replacement for efficiency

Replacement of a gas or oil fired heating system is allowable to improve efficiency when justified using a Savings to Investment Ratio (SIR) greater than 1.0 as calculated by the computerized audit tool TREAT.

The Annual Fuel Utilization Efficiency (AFUE) rating of the existing heating system shall be determined either from the manufacturer's information or by the type and age of the unit.

a. The replacement cost shall be determined by the Local Agency using Commerce established procurement guidelines.
b. Generate SIR using TREAT software for replacement with 80% AFUE and 90% AFUE choose replacement efficiency with higher SIR.

12.4.2 Permit required

Necessary permits shall be obtained prior to the replacement of the heating system. All applicable code regulations must be met as described in **Section 1, *General Requirements***.

12.4.3 Minimum efficiency of new system

All new oil or gas heating systems installed shall have a minimum AFUE rating of 80%.

12.5 Wood and pellet stoves

The Local Agency shall have a trained technician clean and perform a safety inspection on all operable solid fuel burning stoves. Repair technician shall list recommended corrections, and corrections made, for safe operation. This information shall be provided to the occupant and a copy kept in the client file.

12.5.1 Information on clean burning practices

The Local Agency shall provide all clients with solid fuel burning information pamphlet on clean and efficient burning techniques.

Section 13.0 Heating and Cooling Ducts

All heating and cooling ducts located outside the heated envelope of the dwelling unit shall be insulated to a minimum of R-8. Where determined necessary by diagnostic testing, leakage in ducts will be reduced to lowest practical level. When ducts are insulated or sealed they must meet the requirements detailed in this chapter.

13.1 Duct survey, inspection, and testing

The Local Agency shall conduct diagnostic testing and visually inspect all accessible ducting in the heat distribution system including the plenum, trunk and branch lines. Refer to **Section 4, *Diagnostic Testing***.

3.2 Pressure pan testing required

Pressure pan testing of duct systems is required. Refer to **Section 4.2, *Zonal pressure testing***.

***Exceptions*:**

a. The Local Agency may elect to have ducts tested using a duct testing device and the associated procedures outlined by the manufacturer as an alternative to pressure pan testing.

b. The entire distribution system is located within the envelope's conditioned space.

13.3 Dominant duct leak test required.

Dominant duct leak test is required. Refer to **Section 4.3, *Dominant duct leak testing***.

13.4 Ducts, duct sealing. and duct insulating materials

Materials used for replacement, repair, and sealing of ducts shall be approved and listed in **Exhibit 5.S10, *Standards for Weatherization Materials***.

13.5 Ducts to be repaired or replaced

The Local Agency or Subcontractor shall reconnect all serviceable ductwork found disconnected from boots, trunks, or plenums. Method used for reconnection shall be permanent and appropriate to the materials being connected. All ductwork that is torn, crushed, or severely deteriorated shall be replaced or repaired.

13.6 Duct sealing

When determined necessary by diagnostic testing or visual inspection, ducts shall be sealed to the following standard:

a. All accessible connections to the air handler cabinet and plenums both inside and outside shall be sealed to provide permanent, air tight connections using mastic, mastic and fiber mesh.

b. All accessible ductwork-to-ductwork connections both inside and outside shall be sealed to provide permanent, air tight connections using mastic, mastic and fiber mesh tape.

c. All accessible elbows, holes, joints, seams, including lateral seams shall be sealed to provide permanent, air tight connections using mastic, mastic and fiber mesh tape.

13.6.1 Gaps

Gaps greater than 1/8 inch shall be sealed with a 2-inch wide fiber mesh tape embedded in mastic.

13.6.2 Timing

Ducts shall be sealed prior to insulating.

13.7 Flex duct requirements

a. Flex duct, existing or installed, shall be insulated to a minimum, effective R-8.

b. Flex duct shall be of the proper length for connection between two points without excessive bends or sag.

c. Horizontal and vertical runs of flex duct shall be supported using nylon, plastic, or metal strapping having a minimum width of ½ inch. Support strapping or hangers shall not compress the insulation.

d. Support strapping or hangers shall be installed within 1 foot of a joint or connection with a maximum of 4 feet between supports.

e. Flex duct shall not be installed in a manner allowing direct contact with the ground.

f. Flex duct shall be connected to metal collars or boots using a layer of mastic between the metal and inner layer of the flex duct. The inner layer of the flex shall be secured using a compression strap. The outer layer of insulation shall also be secured using a compression strap.

13.8 Metal duct

a. Metal duct, existing or installed, in unconditioned spaces shall be insulated to a minimum, effective R-8.

b. Metal ducts shall be of proper length without unnecessary elbows or changes in direction.

c. Sections shall be securely connected to each other using a minimum of 3 screws for round ducts and 4 for rectangular.

d. Insulation shall be permanently secured with rot and stretch proof twine or rust-proof wire, without unduly compressing the insulation.

e. Horizontal and vertical duct runs shall be supported using nylon, plastic, or metal strapping having a minimum width of ½ inch. Support strapping or hangers shall not unduly compress the insulation.

f. Support strapping or hangers shall be installed within 1 foot of a joint or connection with a maximum of 4 feet between supports.

g. Metal ducts shall not be installed in a manner allowing direct contact with the ground.

13.9 Rigid fiberglass duct board

Rigid fiberglass duct board shall not be used to fabricate ducts.

13.10 Perimeter wall insulation

Where perimeter insulation, R -10 or greater, has been installed on the walls surrounding a basement or sealed crawlspace containing heating or cooling ducts, the ducts shall not be insulated unless a SIR greater than 1 is demonstrated.

Section 14.0 Thermostats

Installation of a thermostat or replacement of an existing thermostat is allowable.

14.1 Determining type of thermostat to install

Contractor shall determine if a standard or a programmable thermostat should be installed, and install the appropriate thermostat. All thermostats shall have a dead-band range of less than two degrees. To meet this requirement bi-metal, line-volt thermostats shall have third party verification

14.1.1 Operating instructions for programmable thermostats

The Local Agency shall ensure that the dwelling unit occupants fully understand the benefits of a programmable thermostat and can demonstrate how to program the thermostat for optimal use, and how to change the back-up battery.

14.2 Thermostat power source

Thermostats shall be source powered. Programmable thermostats shall also have a battery backup.

14.3 Required thermostat features

Thermostats shall be digital, have a built in anti-short-cycle feature and include a positive on-off switch that is easily accessible. Programmable thermostats shall also have a 7-day cycle, or a 5 day-2 day cycle, a set-back capability of at least 10 degrees, and provide at least 4 program periods per day.

14.4 Location

All installed thermostats shall be reachable and readable by the primary occupant(s).

14.5 Placement

The top of the thermostat shall be 60 inches from the floor. When an occupant uses a wheelchair, thermostat top shall be 48 inches from floor.

14.6 Thermostats for heat pump systems

Thermostats used with heat pump systems shall be designed so that temperature pick-up is accomplished by using heat pumping as much as possible, and electric resistance elements only when necessary.

Section 15.0 Water Pipe Insulation in Unconditioned Spaces

The Local Agency shall install insulation on accessible hot and cold water lines in unconditioned spaces.

Exceptions: Water pipes shall not be insulated if any of these conditions are present:

a. Water pipes or valves are leaking or are improperly supported.

b. When electric heat tape is being used to prevent freezing of pipes.

15.1 Pipe insulation R-value

Water pipe insulation installed by the Local Agency shall have a minimum effective insulation value of R-3.

15.2 Installation standard for foam pipe insulation

Insulation shall be installed to these standards:

a. Insulation with a lengthwise slit shall be positioned on horizontal pipe so that the slit is on the bottom side of the pipe.

b. Insulation shall be sized to fit and firmly secured to the pipe. Products that are glued shall use the manufacturer's recommended adhesive and all slits in the material shall be sealed.

c. Products that are not glued shall be held in place with elasticized tape, wire, or plastic ties.

d. Elasticized tape shall be applied around each joint between separate pieces of material.

e. If ties are used, they must be made of either galvanized wire or non-slipping plastic.

f. The ties shall be spaced at one inch from each end of the material and thereafter every nine (9) inches on center.

g. Other techniques for attaching pipe insulation may be acceptable if approved in writing by Commerce.

h. Insulation material shall be cut and folded, or otherwise molded, to completely cover all elbows or curved pipe without compressing the insulation or allowing gaps to occur in the insulation.

15.3 Installation standard for fiberglass

If fiberglass batts are used, then the batts shall be at least R-7 when flat. After installation a minimum of R-3 shall be present on any water pipes, including piping for refrigerator ice makers that are not enclosed within the floor insulation. The insulation shall be permanently attached to the pipe with wire, cable ties, twine, strapping tape, or by other approved methods. Waste or drain pipes are excluded from this insulation requirement. Water pipes that are protected by (enclosed within) installed floor insulation are not required to be separately wrapped.

15.4 Insulation of pipes exposed to weather

If insulation is installed on pipes exposed to the weather, then such insulation shall be resistant to degradation from moisture, ultraviolet light, and extremes in temperature, or a jacket or facing shall be installed that protects the insulation from these conditions.

Section 16.0 Water Heater Insulation

Water heaters in unconditioned spaces shall be insulated.

Unconditioned space (in relation to water heaters) defined*: The areas of a dwelling unit that are not intentionally heated.*

***Exceptions*:** A tank shall not be insulated if any of the following conditions exist and cannot be corrected with available funding:

a. Internal insulation is R-10 or greater.

b. There is evidence of leaks or other impending failure.

c. External insulation is prohibited by the manufacturer.

d. There is evidence of improper combustion for a gas-fired unit.

e. Vent pipe or draft hood is improperly installed.

f. There is improper or inadequate venting for a gas fired unit.

g. Combustion air supply is improper or inadequate.

h. A temperature and pressure relief valve is not present or is located more than 6 inches from the tank or is capped or plugged.

i. Hazardous or improper electrical connections are present.

j. Thermostat cover plate is not present.

k. Burner access doors are not present.

l. Adequate clearances cannot be maintained.

16.1 Insulation wrap R-value

Insulating wraps shall have an insulation value of R-10 or greater.

a. Insulate the first 6 feet of both cold-water inlet and hot-water outlet pipes beginning at the water heater tank, to a minimum of R-3.

b. For water pipe insulation installation standards, refer to **Section 15, *Water Pipe Insulation***.

16.2 Minimum clearances for heat producing appliances and venting

Clearances between the surface of the wrap or pipe insulation and adjacent heat producing appliances, including vent connectors, shall be maintained according to state and local codes.

16.3 Enclosure wall clearances

Water heaters shall meet the manufacturer's clearance requirements when installed in closets and enclosed spaces.

16.4 Temperature setting

Prior to the installation of an insulating wrap, the hot water temperature shall be set at 120 degrees F. Test the water temperature, measured at a sink and adjust setting so that the temperature is within the range of 120 – 130 degrees F.

Exception: If the client requests a temperature outside the accepted range of 120 – 130 degrees F the Local Agency shall document this request in writing in the client file.

16.5 Installation procedures

Insulation wraps shall be installed according to the methods and procedures in the **Energy OutWest Field Guide Section 4.2, *Domestic Hot Water Systems, water heater blankets***.

16.6 Safety label

A Commerce approved safety label shall be installed on the insulating wrap in a visible location. For a sample label with the information required on the label See **Exhibit 5.S8, *Safety Label for Domestic Water Heaters***.

Section 17.0 Window Replacement and Repairs

Window replacement or repair is allowable for any of the following reasons as long as the conditions of Commerce's window replacement and repair policy are met.

17.0.1 Energy efficiency

Windows and storm windows may be replaced or repaired for energy efficiency reasons if the investment of Commerce administered Wx funds (DOE. HHS, BPA, and MM) is justified using an evaluation of cost-effectiveness where the Savings to Investment Ratio (SIR) is 1or greater. See Commerce policy **Chapter 5, *Providing Weatherization Services;* Section 5.1A.2.a *Home Energy Audits***.

17.0.2 Health and safety reasons

Windows may be replaced or repaired if the window's condition is compromising the health and safety of the dwelling unit occupants. If the cost to replace the window is less than the cost to repair the window, then the window shall be replaced.

17.0.3 Security reasons

Windows may be replaced or repaired for security reasons. If the cost to replace the window is less than the cost to repair or replace components of the window that will reasonably assure that the window is secure, then the window shall be replaced.

17.0.4 Durability reasons

Windows may be replaced or repaired for durability reasons if any window components have failed or are deteriorated and they have compromised the structural integrity of the window or of the wall framing around the window. If the cost to replace the window is less than the cost to repair the window, then the window shall be replaced.

17.0.5 Client comfort

Specific windows that affect client comfort may be replaced. Written justification of need for each window must be in the client file. No more than 2 windows may be replaced in a home for client comfort reasons.

17.1 Lead based paint

The Local Agency shall address painted window components in houses built before 1978 using lead safe work practices unless testing indicates no lead based paint is present. See **Section 21, *Lead Based Paint***.

17.2 Replacement windows

Replacement windows shall have a U-factor rating of 0.30 or less and an air leakage rating of less than 0.3 cfm/sq.ft. An area weighted U-factor calculation may be used to demonstrate compliance. The replacement window shall have a label from the National Fenestration Rating Council (**http://www.nfrc.org/label.aspx**) that indicates the U-factor rating, the air leakage rating, the appropriate structural performance rating for the geographical area where the window is installed, and the appropriate solar heat gain coefficient (SHGC) for cooling climates.

17.2.1 Photo documentation

Both a dated "before" photo and written justification that clearly identifies the physical reason the window needs replacement shall be kept in the client file.

A log will be maintained and provided to Commerce upon request that identifies every project that received window replacement.

17.2.2 Screens

All replacement windows that are openable shall have a removable insect screen.

17.2.3 Exterior and interior trim

Trim shall be installed in a workmanlike manner and shall match the existing trim as much as is reasonably practical. Exterior trim, for replacement windows, whether existing or new, shall have any bare wood surfaces primed with an exterior grade primer.

Exception: If cedar trim is used in an exterior application, then no primer or sealer is required.

17.3 Storm windows

A storm window may only be installed over a prime window that is structurally sound. The prime window shall be free of decay, broken windowpanes, worn or damaged rollers, missing, deteriorated or broken glazing, and broken sashes. The Local Agency shall evaluate the costs to replace a window unit with the costs associated with repairing a prime window and installing a storm window to ensure that the most cost-effective treatment is applied.

17.3.1 Operable storm windows

Operable storm windows shall be installed over existing operable prime windows, and the storm window shall not interfere with the operation of the prime window. If the operation of the prime window is impeded by paint buildup, mechanical fasteners, or other reasons, a storm window can be installed if the window is restored to an operating condition or if the Local Agency and homeowner agree in writing that the non-opening window is not required for egress or ventilation.

17.3.2 Storm window removal

All storm window installations shall provide an easy method of removing the storm sashes so that both the storm and prime windows can be washed.

17.3.3 Jalousie prime windows

Jalousie windows or other window types with a glass-to-glass contact cannot be weatherized using a storm window. Jalousie windows may be replaced.

17.4 Safety glass

Safety glass shall be used in replacement window units or replacement glazing in locations where required by building codes and areas identified in the following sections.

17.4.1 Sidelights

When sidelight windows are replaced or repaired, safety glass is required when all of the following conditions are met:

a. The glazed panel is within 12 inches of the door opening.
b. The glazed panel is within 60 vertical inches of the floor.
c. The window is in the same plane as the door when the door is closed.

17.4.2 Other safety glass locations

Safety glass shall be installed when all of these conditions are met:

a. A glazed panel is greater than 9 square feet when measured from the inside of the sashes.
b. The lowest edge of a glazed panel is less than 18 inches above a walking surface.
c. There is a walking surface within 36 horizontal inches of a glazed panel.

17.4.3 Shower and tub safety glass requirements

Safety glass is required in shower and bathtub enclosures for exterior windows that are less than 60 inches above the floor of the enclosure.

17.4.4 Safety glass requirements

Safety glass shall conform to the Safety Glazing Certification Council (SGCC) labeling requirements. Installed safety glass shall have a permanently affixed manufacturer's label or etching.

17.5 Replacement glazing

Replacement glazing shall meet the specifications found in **Exhibit 5.S10*: Standards for Weatherization Materials***.

17.6 Obscure glass

Obscure glass shall be installed in windows where privacy is important. The Local Agency shall make the owner aware of locations where obscure glass is to be installed.

Section 18.0 Door Replacement and Repairs

Door replacement or repair is allowable for the following reasons as long as the conditions of Commerce's door replacement and repair policy are met.

18.0.1 Energy efficiency

Doors can be replaced or repaired for energy efficiency reasons if the total cost to install is justified using an evaluation of cost-effectiveness where the Savings to Investment Ratio (SIR) is 1 or greater.

18.0.2 Health and safety reasons

Doors can be replaced or repaired for health and/or safety reasons if the door's condition is compromising the health and/or safety of the dwelling unit occupants. If the cost to replace the door is less than the cost to reasonably repair the door, then the door shall be replaced.

18.0.3 Security reasons

Doors can be replaced or repaired for security reasons. If the cost to replace the door is less than the cost to repair or replace components of the door that will reasonably assure that the door is secure, then the door shall be replaced.

18.0.4 Durability reasons

Doors can be replaced or repaired for durability reasons if any door components have failed or have been damaged and they have compromised the structural integrity of the door. If the cost of replacement is less than the cost to reasonably repair the door, then the door shall be replaced.

18.1 Lead based paint on door components

The Local Agency shall address painted door components in houses built before 1978 using lead safe work practices, unless testing indicates that no lead is present. See **Section 21, *Lead Based Paint***.

18.2 Replacement doors

Replacement doors shall be metal, insulated, and match the style of the existing doors where practical, and shall be hinged. If a new exterior door and jamb is being installed, the door shall have three hinges. All exterior door replacements shall be exterior grade. All replacement doors shall have an insulated core with a minimum R-6 insulation value.

***Exception*:** Wood, fiberglass, or composite doors are allowable if a metal door cannot be used. Wood doors shall be solid core. Veneers on wood doors shall be a minimum of 1/8 inch thick hardwood.

18.2.1 Photo documentation

Both a dated "before" photo and written justification that clearly identifies the physical reason the door needs replacement shall be kept in the client file.

18.2.2 Exterior and interior trim

Trim shall be installed in a workmanlike manner and shall match the existing trim as is reasonably practical. Existing or new trim shall have all nails set and holes filled with an exterior grade filler. Exterior trim for replacement doors and doorframes, whether existing or new, shall have any bare wood surfaces primed with an exterior grade primer.

***Exception*:** If cedar trim is used, then no primer or sealer is required.

18.3 Replacement door jambs

Replacement doorjambs shall have a width that is no greater than the finished wall thickness, and not less than ¼ inch of the finished wall thickness.

18.4 Door finishes

Replacement wood doors will be primed and painted or sealed on both sides and on all four edges with an exterior grade paint. Metal doors shall have a factory primer.

18.5 Locksets and deadbolts

New replacement doors shall have a new lockset and deadbolt installed. The lockset and deadbolt shall be keyed alike. The Local Agency will provide two keys to the owner or occupant of the dwelling unit. When multiple locksets are installed in the same dwelling unit they shall have matching keys.

18.6 Other attached items

Address numbers that were present on the existing front door or trim shall be reinstalled on the new door. Peepholes shall be installed on solid doors and shall be no more than 60" from the bottom of the door. If an existing door had a mail slot or mechanical doorbell, the Local Agency shall provide alternatives that do not require penetration of the door.

Section 19.0 Carbon Monoxide Detectors

In dwelling units with combustion appliances or attached garages a minimum of one operable carbon monoxide detector shall be installed.

19.1 Detector standards

Detectors shall have:

a. A 5-year warranty for residential models or 1-year warranty for commercial low-level models.

b. An electrochemical sensor.

c. A digital display that indicates CO levels in Parts Per Million (ppm).

d. The ability to detect and display low levels of carbon monoxide starting at 10 ppm.

e. A label to verify testing and listing to the UL 2034 Standard.

Exception: CO Detectors need not be UL listed if a low level detector is desired. To comply with this exception, these commercial low-level detectors must meet or exceed all of the following:

(1) a. through d. above.

(2) ACGIH and NIOSH Standards.

19.2 Detector power options

a. Hardwired detectors

Hardwired detectors are allowable. Hardwired detectors shall have a 9-volt, lithium battery backup.

b. Battery-operated detectors

Battery operated detectors shall include a battery with a life expectancy equal to or greater than the detector's warranty period. They shall make an audible noise when the battery is at the end of its life cycle.

c. Plug in detectors

Plug in detectors shall have a tamper-resistant connection to a continuously energized 120-v AC power source. They shall not be on a switched plug or on a GFCI protected circuit. Plug in detectors shall have a battery backup.

19.3 Labeling devices

All installed detectors shall be labeled in a permanent fashion with the date of installation visible while detector is mounted on the wall.

19.4 Manufacturer's instructions

The manufacturer's instructions including the owner's manual, warranty, and the expected lifetime of the unit information shall be left with the occupant of the dwelling unit.

19.5 Education of dwelling unit occupants

The Local Agency shall provide the occupant(s) of the dwelling unit with verbal and written information regarding the dangers of CO, how to read the CO detector, instructions on how to respond to CO levels above 10 ppm, and the applicable information regarding the expected useful life of the CO detector installed. The Local Agency shall document in the client file that the occupant(s) received the CO detector information.

19.6 Installation location(s) for CO detectors

In dwelling units with combustion appliances or attached garages a minimum of one operable carbon monoxide detector shall be installed in the vicinity of the sleeping rooms. Where practical, detectors shall be mounted:

a. In a visible location.

b. On walls between 5 and 6 feet from the floor.

c. No closer than 5 feet from combustion appliances, chimneys, flues, or inside corners.

d. On each level with a combustion appliance.

19.7 Installation in sleeping areas

A CO detector shall be installed inside any closable sleeping room that contains a combustion appliance.

19.8 Testing

The Local Agency shall test each detector for proper operation after installation as per test procedures in the owner's manual provided by the manufacturer.

Section 20.0 Smoke Detectors

Local agencies have the option of installing smoke detector(s). When installed, smoke detectors shall be installed in accordance with manufacturer's requirements.

20.1 Detector standards

Detectors installed by the Local Agency shall have a minimum ten-year operating life, and shall be clearly marked as "UL approved."

20.2 Detector power options

Detector shall be powered by one of the following methods:

a. Hardwired: Hardwired detectors are allowable only when the installation is approved in advance by the Commerce monitor assigned to the Agency. Hardwired detectors shall have a lithium battery backup.

b. Battery operated: Battery operated detectors shall have a lithium battery. They shall make an audible alarm when the battery is at the end of its life cycle.

***Exceptions*:**

a. Existing hard-wired smoke detectors that are not working may be replaced with a new hard-wired smoke alarm.

b. Smoke alarms with a visual alarm for hearing impaired individuals shall be installed in addition to a standard smoke alarm.

20.3 Labeling devices

All installed detectors shall be labeled in a permanent fashion with a visible date of installation while detector is mounted on the wall.

20.4 Manufacturer's instructions

The manufacturer's instructions shall be left with the occupant of the dwelling unit.

20.5 Education of dwelling unit occupants

The Local Agency shall provide the occupant(s) of the dwelling unit with verbal and written information regarding the operation of the smoke detector(s), the importance of testing and battery replacement.

20.6 Installation location(s) for smoke detectors

Smoke detectors shall be installed on walls or ceilings per manufacturer's requirements.

20.7 Testing

The Local Agency shall test each detector for proper operation after installation.

Section 21.0 Lead Based Paint

All weatherization work shall be performed following the DOE Lead Safe Weatherization protocol.

21.1 Applicable regulations and requirements

The regulations and requirements for lead based paint can be found in **Section 5.13 of the DOE *Weatherization Program Notice (WPN) 03-1*** and ***WPN 02-6***., *WPN 08-6, and WPN 09-6.*

21.2 Worker certification

All individuals performing weatherization work in target housing shall have completed Lead Safe Weatherization and Work Practices based on the Montana State University (MSU) curriculum, and shall be a Renovation, Repair, and Painting Certified Renovator. The Work Practices component shall be hands-on training, and include all of the 11 required RRP hands-on activities, plus an additional four hours of hands-on training in work practices that includes setting up a window J-bag and performing a window change-out; performing a thermostat change-out; setting up a trough for an exterior wall drill and practicing drilling using water mist, shaving cream and a shrouded drill hooked up to a hepa vac; drilling through sheetrock using mist, shaving cream and a vac held near the hole saw; setting up a zip wall; and performing a hepa vac filter change-out.

***Exception*:** Workers who are in their first nine months of employment are exempt from the worker certification requirement, but they must be working with a certified lead safe weatherization worker any time they are performing lead safe weatherization work.

21.2.1 Records of certification

The Local Agency shall keep records of certification at the Local Agency's office for all workers performing lead safe work. Subcontractors shall provide the Local Agency with records of certification of workers who are performing lead safe weatherization work.

21. Client notification

The Local Agency shall give to the occupant(s) of target housing a copy of the EPA pamphlet *"Renovate Right"* before the start of any work. A Spanish version is available: *"Remodelar correctamente"* The Local Agency shall document in the client file that the occupant(s) received the EPA pamphlet.

21.4 When Lead Safe Weatherization protocols apply

Lead Safe Weatherization protocols shall be followed if a dwelling unit was constructed before 1978.

Exceptions:

a. Dwelling unit tested and determined to be free of lead based paint.

b. The amount of disturbed lead based paint surface does not exceed de minimus levels (6 square feet per room of interior surfaces, 20 square feet of exterior surfaces, 10% of a small component type, such as a window sill).

   The de minimus level exemption shall ***NOT*** apply to any of the following work:

   1. Window replacement,
   2. Demolition of painted surface areas, or
   3. Using any of the prohibited work practices, including but not limited to:
      - Open-flame burning or torching;
      - Machines to remove paint through high-speed operation without HEPA exhaust control; or
      - Operating a heat gun at temperatures at or above 1100 degrees Fahrenheit

c. As a result of the work, the OSHA/DOSH airborne lead level will not exceed 30 micrograms per cubic meter.

Lead Safe Weatherization protocols shall be followed if the agency chooses to assume the dwelling unit has lead based paint and the anticipated weatherization work will disturb more than the de minimus levels.

21.5 Documentation

The Local Agency will document in the client file all of the following that apply:

a. That lead based paint is presumed to exist in the dwelling unit.

b. Any testing, and the test results, that were done to identify lead based paint hazards.

c. A description, including location in the dwelling unit, of the weatherization work that was done using lead safe work practices.

Section 22.0 Low-Cost No-Cost Measures

The purchase and installation of Low-cost No-cost energy conservation measures is allowable.

22.1 Types of measures

Installation of any of the following Low-cost No-cost measures are allowable:

a. Water flow restrictors.

b. Furnace or cooling filters, up to one-year supply.

c. Items that are primarily directed at reducing infiltration, such as weather-stripping, caulking, and glass repairs.

d. Brochures and other written information concerning the potential savings from installation of Low-cost No-cost measures.

e. Compact fluorescent light bulbs.

Section 23.0 Lighting Retrofits

Retrofit of lighting fixtures is allowable if the cost is justified using an evaluation of cost-effectiveness where the Savings to Investment Ratio (SIR) is one or greater.

23.1 Type of fixtures

Fixtures that are installed shall be hard-wired fluorescent or LED fixtures that meet all of the following:

a. UL listed.

b. EnergyStar compliant or comparable in energy use and cost.

c. Fully warranted for one year after the date of installation.

d. Interior fixtures shall be with electronic ballast only.

23.2 Exterior fixtures

Exterior fixtures shall be constructed of UV resistant materials and rated for installation in damp or wet locations. Magnetic ballast fixtures are allowed.

23.3 Installation requirements

Fixtures shall be installed in accordance with all applicable codes governing installation of electrical devices and shall be installed by a contractor licensed to perform this work.

Section 24.0 Compact Fluorescent Lamps

The Local Agency shall replace incandescent screw-in light bulbs that typically operate continuously for more than three hours with compact fluorescent screw-in bulbs (CFLs) in each dwelling unit receiving weatherization services. CFLs may be installed in other areas where lighting is frequently .used.

***Exceptions*:** CFLs should not be installed if any of the following conditions exist:

a. Socket or fixture is nonfunctional, damaged, or unsafe.

b. Circuit is controlled by a solid-state timer.

c. Circuit is controlled by a non-CFL compatible dimmer.

d. Fixture is located in a storage room, closet, or other seldom used room.

e. Fixture is controlled by an occupancy sensor.

f. The client refuses to have CFLs installed.

24.1 Types of compact fluorescent lamps

CFLs that are installed shall be EnergyStar compliant and be warranted for one year from the date of purchase.

24.2 Light output

CFLs must provide light output levels that meet or exceed the level of the bulbs that they are replacing.

24.3 Torchiere replacement

With client approval, high intensity incandescent or halogen 1200w or more shall be removed and replaced with Energy Star rated compact fluorescent light bulbs or CFL torchiere lamps.

24.4 Outdoor locations

CFLs may be installed in outdoor locations attached to the dwelling provided they are installed in a fixture that protects the lamp from the weather.

24.5 Field testing

The installer shall test all installed CFLs before leaving the dwelling unit, and shall ask the client if the lighting level is adequate, if the client is available.

24.6 Consumer conservation education: Disposal of CFLs

The Local Agency shall give to the occupant(s) information on the proper disposal of CFLs in their area. CFLs contain about 4 milligrams of mercury sealed in the glass tubing of the bulb. They must be disposed of as Household Hazardous Waste (HHW) at an approved site. The Local Agency shall document in the client file that the occupant(s) received the CFL disposal information.

Section 25.0 Refrigerator Replacement

Refrigerators shall be replaced when the replacement is justified using a State approved evaluation of cost-effectiveness where the Savings to Investment Ratio (SIR) is 1.0 or greater.

25.1 Document cost-effectiveness

The Local Agency shall document in the client file that the replacement is cost-effective with an SIR of 1.0 or greater, and the method used to determine the SIR.

25.2 Allowable methods to determine SIR

The Local Agency shall use one of the following methods to determine the SIR before replacing a refrigerator:

a. TREAT (Targeted Residential Energy Analysis Tool).

b. Refrigerator Replacement Analysis Tool: See **Exhibit 5.1.6A, *Economic Analysis of Refrigerator Replacement***.

25.2.1 Data logging and data bases

The Local Agency shall use a minimum of 2 hours of data logging information, or data base referrals to determine energy usage of existing refrigerators.

25.3 Replacement refrigerators

Replacement refrigerators shall have the following features:

a. EnergyStar rating.

b. Automatic defrost.

Replacement refrigerators shall not have extra features such as door ice, through-the-door water dispensing, or automatic icemakers.

Exceptions:

a. A non-EnergyStar refrigerator may be installed provided the SIR for the non-EnergyStar model is demonstrated to be higher than the SIR for the EnergyStar model.

b. If the refrigerator you are replacing is like-for-like and still meets the SIR of 1 or greater. This is to include the cost of disconnect and reconnection of existing water supply only.

25.4 Refrigerator sizing

The smallest size refrigerator that is practical for each household shall be installed. The following guidelines shall be used:

Family of 1-2	15 cubic foot
Family of 3-5	18 cubic foot
Family of 5 or more	21 cubic foot

25.5 Client agreement

The Local Agency and client shall have a written agreement that is documented in the client file that the refrigerator being replaced will be removed by the Local Agency. Additional refrigerators or freezers, whether working or not, may be removed upon written agreement between the owner and the Local Agency.

25.6 Establishment of ownership

If the refrigerator is installed in a rental unit, the ownership of the existing and the replacement refrigerator shall be established, and documented in the client file. This shall be done before the replacement refrigerator is installed.

25.7 Disposal of removed refrigerators

The Local Agency shall remove the old refrigerator from the property and dispose of it at an EPA-approved disposal site that reclaims the refrigerant. The client file will contain documentation of the proper disposal from the disposal facility, or a statement signed by a commercial vendor indicating that the vendor will dispose of the refrigerator at an approved disposal site that reclaims the refrigerant.

Section 26.0 Mobile Home Weatherization

The local agency shall weatherize all mobile homes in accordance with all applicable sections of the *State of Washington, Weatherization Program Specifications* and the specific requirements detailed in the following *Sections 1 through 25*.

26.1 Underfloor insulation

Contractors blowing insulation into the cavity between rodent barrier and sub-floor shall install fiberglass insulation only, at a density of 1.5 pounds per cubic foot (lb/cu.ft.). Insulation shall be in substantial contact with the underfloor. Open floor cavities shall be insulated as per **Section 8, *Crawlspace/Underfloor/Perimeter Insulation***.

The belly board (flexible rodent-barrier) must be complete and intact in areas where insulation is blown-in. The rodent barrier shall be supported as required to avoid of sagging.

Holes in the rodent barrier shall be patched with like or similar materials that are stitch stapled or mechanically fastened and glued to the existing rodent barrier with adhesive, mastic, or caulk.

Stitch staples shall be at a minimum size 9/16, type galvanized or stainless, and gauge 4M. Patches must be sealed with caulk, glue, or adhesive (peel & seal) and have a minimum number of 4 staples per patch.

Holes in the rim joist used to install insulation in the cavity between the belly board and sub-floor shall be plugged with wooden plugs glued in place with an exterior-rated sealant.

26.1.1 Skirting

Repair or replacement is considered a weatherization related repair and must be included in the package of measures and meet an SIR of 1 or greater. If skirting is not present all insulation and ductwork installed by the program must be protected.

26.2 Ceiling insulation

Installation of ceiling insulation in crowned and flat roofs shall be installed to a minimum R-38 or the highest practical R-value, filling the entire attic cavity. Refer to **Energy OutWest Weatherization Field Guide, Section 6.4**.

26.2.1 Ventilation

Attics with pitched roofs where the insulation does not fill the cavity shall be ventilated per **Section 6, *Attic/Ceiling Insulation***.

26.2.2 Patching insulation access holes in roofing

Contractors shall patch all holes created to install attic insulation. Holes shall be patched to prevent intrusion of bulk moisture. Patches on roofs shall be installed in a manner that ensures they are as durable as and last the life of the existing roofing.

Access holes created to install attic insulation shall not compromise the structural integrity of the roof system.

26.3 Exterior roof insulation

Contractors shall determine that the ceiling/roof system is structurally adequate to support the combined weight of all materials imposed on the ceiling/roof system including insulation that may be installed in the attic cavity.

26.3.1 Attic cavity fill

Contractors shall fill the attic cavity between the ceiling and roof with insulation prior to applying exterior ceiling/roof insulation.

26.3.2 Insulation and membrane

Contractors shall install a minimum 2 inches of rigid extruded polystyrene or polyisocyanurate insulation covered with an EPDM or PVC membrane.

26.3.3 Securing insulation boards

Contractors shall secure insulation boards to the roof structure using fender washers with a minimum diameter of 1 inch, and screws long enough to penetrate the roof trusses a minimum of 1 inch.

Screws shall be attached to the roof trusses every 30 inches. The maximum distance between screws is 30 inches.

Screw heads shall not project above the rigid board insulation.

26.3.4 Roof membranes

Roofing membranes shall cover the existing roof and extend down the wall. The membrane shall be secured to the wall in a manner that prevents water intrusion into the wall cavity. The roofing system shall be sufficiently rigid and sloped to prevent "ponding" or "pooling" of water on roof surface after installation.

26.3.5 Roofing projections

All existing exhaust fan terminations, plumbing vent stacks, and combustion appliance vent stacks must extend through the new exterior roof insulation and terminate in an air-tight and water-tight manner.

a. All combustion appliance vent stacks shall be extended, if necessary, to meet applicable HUD code and appliance manufacturers' specifications for minimum height of the vent stack termination above the new roof level.

b. New vent caps for exhaust fans must not be of smaller diameter than the duct or pipe projecting through roof, must allow free flow of air (i.e., not include a damper system), and must supply a net free ventilation area (NFA) not less than 60% of the size of the duct or pipe (Example: A vent cap installed on a 7 inch diameter bathroom fan exhaust duct must have a minimum diameter of no less than 7 inches, and provide an NFA of no less than 23 square inches).

c. Ducts or pipes must be sealed to the inside of the vent cap to prevent the entrance of exhaust air or gases into the ceiling cavity. Where the existing vent duct or fan housing does not adequately project above the roof surface to allow sealing it to the inside of the new vent cap, add a section of not less than 26 gauge galvanized steel duct of the same diameter as the existing duct or fan housing. The rigid duct section must overlap the existing duct or fan housing by a minimum of 1 inch and not extend above the bottom of the vent openings in the vent cap.

d. Fan/duct extensions must be sealed to the outside of the existing duct or fan housing and to the inside of the vent cap with a continuous bead of silicon caulk.

e. Vent caps for all kitchen exhaust fans must be made of metal and sealed to the fan exhaust duct and roof cap with high temperature silicon.

f. All roof penetrations shall be flashed membrane compatible materials.

26.4 Wall insulation

Mobile home wall insulation can be installed on a case by case basis, where the Savings to Investment Ratio (SIR) is 1 or greater, depending on the type and construction of the mobile home. If installing insulation it should be done in a manner that fills the wall cavity.

26.4.1 Installation

Insulation shall be installed between the exterior side of the existing insulation and the exterior wall.

26.4.2 Insulating wall cavities with an existing vapor-retarder

When a vapor-retarder is present on the interior side of the existing insulation, install the new insulation on the exterior side of the existing insulation.

26.4.3 Securing siding

If metal siding panels have been removed or opened to facilitate installation of insulation reinstall panels in a secure manner to prevent panel separation and water intrusion.

Fasteners used for securing wall panels must be gasketed, corrosion resistant, self-tapping screws.

26.5 Exterior water heater closets

Where it is not practical to insulate water heaters the water heater closet exterior door shall be insulated to minimum R-11. The exterior door and interior of the closet shall be air sealed to prevent air infiltration.

26.5.1 Exterior water heater closet with combustion appliance

Exterior water heater closets with a combustion appliance shall have combustion air inlets that meet *International Mechanical Code* standards.

Section 27 Multi-Family....

Under construction

April 2009

Department of Commerce
Innovation is in our nature.

Supporting Documents
For Managing the
Low-Income Weatherization Program

for
United States Department of Energy
United States Department of Health and Human Services
Bonneville Power Administration
and
Matchmakers

Prepared By:
Washington State Department of Commerce
Community Services and Housing Division

April 2009 Edition

(with 2010 revisions)

WEATHERIZATION WORKS

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Managing the Low-Income Weatherization Program

Acronyms

A

AAA	American Arbitration Association
ACEEE	American Council for Energy Efficient Economy
ACF	Administration on Children and Families
ANSI	American National Standards Institute

B

BPA	Bonneville Power Administration
BPC	Building Performance Center
BPI	Building Performance Institute

C

CAA	Community Action Agency
CAP	Community Action Program
CAT	Computerized Audit Tool
CFL	Compact Fluorescent Light Bulb
CFR	Code of Federal Regulations
CIAP	Comprehensive Improvement Assistance Program (under HUD)
CO	Carbon Monoxide
CPA	Certified Public Accountant
CTED	Community, Trade and Economic Development (Washington State Department of) now known as Department of Commerce (Commerce)

D

DAHP	Department of Archaeology and Historic Preservation

DOE	Department of Energy (United States Department of)
DRC	Dispute Resolution Center
DSHS	Department of Social and Health Services (Washington State Department of)

E

EOW	Energy OutWest
EPA	Environmental Protection Agency (United States)

F

G

GA	General Assistance
GAO	General Accounting Office

H

H & S	Health & Safety
HHS	Health and Human Services (United States Department of)
HRRP	Home Repair and Rehabilitation Program
HUD	Housing and Urban Development (United States Department of)

I

IAQ	Indoor Air Quality
IGR	Independent Group Residence
IRS	Internal Revenue Service (United States)

J

K

L

LIHEAP	Low-Income Home Energy Assistance Program
LSW	Lead Safe Weatherization

M

MM	Matchmakers, formerly Energy Matchmakers (EM)
MVL	Minimum Ventilation Level

N

NHPA	National Historic Preservation Act
NPS	National Park Service

O

O & M	Operations & Maintenance (PSE program)
OMB	Office of Management and Budget (Federal)
OSHA	Occupational Safety and Health Administration

P

PCR	Peer Circuit Rider
POI	Pollution Occurrence Insurance
PPM	Part-Per-Million
PSE	Puget Sound Energy

Q

R

RCW	Revised Code of Washington

S

SIR	Savings-To-Investment Ratio
SSI	Supplemental Security Income

T

T & TA	Training & Technical Assistance
TANF	Temporary Assistance for Needy Families
TREAT	Targeted Residential Energy Analysis Tools

U

UCC	Uniform Commercial Code
UL	Underwriters Laboratories
USDA	United States Department of Agriculture

V

W

WAC	Washington Administrative Code
WAP	Weatherization Assistance Program
WAPTAC	Weatherization Assistance Program Technical Assistance Center
WISHA	Washington Industrial Safety and Health Administration
WPN	Weatherization Program Notice
WWW	World Wide Web
Wx	Weatherization

X

Y

Z

Managing the Low-Income Weatherization Program

Definitions

Please see the Department of Energy's 10 CFR Part 440, Final Rule, for additional definitions.

Additional Work

Problems observed during monitoring inspections that need to be corrected, such as a plumbing leak that needs repair to protect the under-floor insulation.

Adequate Heat

Heating facilities are considered adequate if they are capable of maintaining a room temperature of 65 degrees F in all habitable rooms and bathrooms when the outside design temperature is reached.

Administrative Costs

Costs associated with those functions of a general nature not clearly identifiable with a program. These functions included planning, budgeting and accounting, and establishment and direction of local agency policies, goals, and objectives.

Agency

Department of Commerce (Commerce), Housing Improvements and Preservation Unit.

Air Handler

A steel cabinet containing a blower with cooling and heating coils connected to ducts, which transport indoor air to and from the air handler.

Air Sealing

Sealing of the building envelope with materials that stop or prevent air leakage into or through a dwelling unit.

Ambient CO Level

The level of CO measured within the dwelling unit, but not within the exhaust flue.

Arbitration

Submission of a dispute to one or more impartial persons for a final and binding decision. Through contractual provisions, the parties may control the range of issues to be resolved, the scope of relief to be awarded, and many procedural aspects of the process. Under *Chapter 7.04 RCW*, all arbitrations are final and binding unless there is either arbitrator misconduct or the arbitrator obviously disregards the law.

Auditor

The person that identifies health, safety, durability, and energy conservation issues, problems, or opportunities in buildings.

Backdrafting

Continuous spillage of combustion gases from a combustion appliance.

Background CO level

The naturally occurring level of CO measured outside of the dwelling unit.

Baffling

Materials used to maintain ventilation openings and minimum clearance requirements.

Base-load Costs

Those energy costs associated with a building's operation excluding costs associated for heating/cooling.

Bimetal Element

A metal spring, lever, or disc made of two dissimilar metals that expand and contract at different rates as the temperature around them changes. This movement operates a switch in the control circuit of a heating or cooling device.

Blower Door

Building diagnostic equipment used to measure and locate air leaks through windows, doors and other places in a dwelling unit. It consists of a large board or hood that blocks the front door of the dwelling unit, a powerful fan, and gauges.

Blower Door Test

A test to determine the air leakage in a dwelling unit. It uses a variable-speed fan to pressurize or depressurize a dwelling unit. The pressure difference between the inside and outside air at various fan-induced pressures is measured. These readings are used to determine features such as the leakiness or the natural air change rate of the dwelling unit.

British thermal unit (Btu)

The quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit.

Building Airflow Standard (BAS)

The calculation used to determine the target level of airflow in a dwelling unit that should be achieved by mechanical or natural ventilation at the completion of weatherization, measured in CFM50 (i.e., CFM measured at 50 Pascals pressure difference).

Building Permit

An authorization issued by county, city or state officials allowing a specific type of construction at a particular location.

Building Shell

A building's exterior envelope, consisting of the walls, floor, and roof of a building.

Building Tightness Limit (BTL)

See Building Airflow Standard. (BAS)

Burner

A device that facilitates the burning of a fossil fuel like gas or oil.

By passes

Holes, openings, and chase-ways typically found around chimneys, plumbing, and electrical penetrations in attics and crawlspaces that allow conditioned air to escape or unconditioned air to enter a dwelling unit.

Carbon Monoxide (CO)

An odorless and poisonous gas produced by incomplete combustion.

Ceiling Loading

The amount of weight in pounds per square foot a ceiling is designed to support.

Client File

The file that contains documents specific to the work on an individual dwelling unit.

Combat Pay

Special pay while serving in a combat zone.

Combustion Air

Air that chemically combines with a fuel during combustion to produce heat and flue gases, mainly carbon dioxide and water vapor.

Combustion Analyzer

A device used to measure steady-state efficiency of combustion heating units.

Combustion Appliances

Any liquid, gas, or solid-fuel burning appliances, including water heaters, wood stoves, ranges, ovens or stovetops, furnaces, boilers, space heaters, fireplaces, fireplace inserts, and gas logs.

Combustion Appliance Zone (CAZ)

The physical area in which the combustion appliance is located; usually contained by a door or an access closure.

Combustion Safety Diagnostic Testing

Use of a digital and calibrated manometer to read pressure differentials and CO levels under a variety of natural and created conditions to assist in diagnosing airflow and draft dynamics in a combustion appliance.

Compact Fluorescent Light Bulb

A light bulb designed to replace screw-in incandescent light bulbs, they are often found in table lamps, wall sconces, and hall and ceiling fixtures of commercial buildings with residential type lights. They combine the efficiency of fluorescent lighting with the convenience of standard incandescent bulbs. Light is produced the same way as with other fluorescent lamps. Compact fluorescent bulbs have either electronic or magnetic ballasts.

Completed Unit

See **Exhibit 8.9, *"Completed Unit" Definition and Discussion*** from January 26, 2010 Policy Memo.

Computerized Audit Tool

Energy use analysis software approved by the Department of Energy for use in determining cost-effective conservation measures.

Conditioned Basement

An intentionally heated or cooled basement.

Contractor

Any agency administering the weatherization program and its subcontractors.

Cost-effective

A Savings-to-Investment Ratio (SIR) of 1.0 or greater. See *Savings-to Investment Ratio (SIR).*

Damming

Materials used to prevent insulation from spilling or spreading to areas that may cause moisture, combustion, or ventilation problems.

Data Logger

A device that measures energy consumption over a given time period, typically in Kilowatt/hours, and often used to determine the energy consumption of refrigerator and freezer units.

De minimus level

The damaged or deteriorated (i.e.: chipped, peeling, flaking, worn, etc) area of a given painted surface or component that, when exceeded, triggers the use of lead-safe work practices.

Deficiency

Noncompliance issues that are of secondary concern, such as, small file omissions (no date on form), procedural items that can be quickly or easily corrected, or a finding in work quality that is easily correctable and does not significantly impact the overall results of work performed (for example, failure to wrap the first five feet of water pipe from the water heater).

Depressurize

Cause to have a lower pressure or vacuum with respect to a reference of a higher pressure.

Diagnostic Testing

Use of a digital and calibrated manometer to read pressure differentials under a variety of natural and created conditions to assist in diagnosing airflow and ventilation dynamics in a dwelling unit.

Dilution Air

Air that enters through the dilution device; an opening where the chimney joins to an atmospheric-draft combustion appliance.

Dilution Device

A draft diverter or barometric draft control on an atmospheric-draft combustion appliance.

Direct-vented Combustion Appliance

An ANSI Category I appliance. An appliance that operates with a non-positive vent static pressure and with a vent gas temperature that avoids excessive condensate production in the vent. Combustion air is supplied from outdoors directly to combustion chamber.

Disability

A physical or mental condition that substantially limits one or more major life activities. There are several definitions of disability in the law. Each definition emphasizes some aspects of the condition and is specifically tailored to delineate the scope of a legal right under various public programs. See *Persons with Disabilities.*

DOE State Plan

A yearly document prepared for DOE by Commerce that describes the weatherization program and the rules and responsibilities of Commerce and its contractors. The plan is distributed to Contractors and interested parties.

Dominant Duct Leakage Testing

A test performed with the air handler running indicating which is the leakier side of the furnace distribution system (the supply side or the return side).

Draft Diverter

A device located in gas appliance chimneys that moderates draft and diverts down drafts that could extinguish the pilot or interfere with combustion.

Dwelling Unit

A house, including a stationary mobile home; an apartment; or a room in a group residential facility, including a shelter, group home, or transitional facility.

Earned Income

Income from salaries or wages.

Elderly Person

A person who is 60 years of age or older.

Emergency Shelter

A facility that provides temporary or transitional shelter for homeless people.

Energy Audit

On-site evaluation performed by trained auditors of a dwelling unit's physical and operating characteristics, and its energy uses and processes.

EnergyStar

A Department of Energy designation for products and materials that meet certain established energy efficiency requirements.

Exterior Wall Plate

The bottom framing member of a wall system that lies flat on the exterior perimeter of the foundation and to which wall studs are fastened.

Factory-built Housing

Housing designed for human occupancy such as a single-family dwelling. The structure of any room is entirely or substantially prefabricated or assembled at a place other than a building site. It may also include a component. A factory-built house is also referred to as a "modular" structure. Factory-built housing does not include manufactured (mobile) housing. (See RCW 43.22.450(3)).

Fan Control

A bimetal thermostat that turns the furnace blower on and off as it senses the presence of heat.

Flame-spread Rating

The flame spread index and smoke development index obtained by ASTM E-84 test method for surface burning characteristics of building materials.

Flue

A channel for combustion gases.

Gas

Any gaseous fuel.

Hardwired Detector (or Hardwired Fixture)

A detector or fixture that is directly and permanently wired into a dwelling unit's electrical system.

Health & Safety Measures and Repairs

Energy-related measures and repairs necessary to eliminate hazards within a structure, which by their remedy, allow for the installation of weatherization materials. Energy-related health and safety measures and repairs are intended to protect building occupants.

Heat Anticipator

A very small electric heater in a thermostat that causes the thermostat to turn off before room temperature reaches the thermostat setting, so that the house does not overheat from heat remaining in the furnace and ducts after the burner shuts off.

Heat Rise

The number of degrees of temperature increase that air is heated as it is blown over a heat exchanger. (Heat rise equals supply temperature minus return temperature.)

Heating Degree Day

Each degree that the average daily temperature is below the base temperature (usually 65 degree F) constitutes one heating degree day.

Heating System

Any component of a residential space heating system which distributes heat (duct work, air handler, baseboard, pipes, or radiators), generates heat or controls combustion (furnace, boiler, space heater, or safety controls), ventilates products of combustion (flue, vent pipe, and chimney), and stores and supplies fuel for he heating system (tank or fuel line).

High Limit

A bimetal thermostat that turns the heating element of a furnace off if it senses a dangerously high temperature.

House pressure

The difference in pressure between the indoors and outdoors measured by a manometer.

Household

A group of individuals living in a dwelling unit.

IC-Rated Fixture

A fixture that is rated and labeled for coverage with insulation.

Inch of Water

Small air pressure differences caused by wind, blower doors, furnace fans, and chimneys are measured in inches of water (in.-H_20) in the American measurement system.

Incidental Repairs

See *Weatherization-Related Repairs*.

Input Rating

The rate at which an energy-using device consumes electricity or fossil fuel.

Installation

Physical labor to set product in position or adjust for use. Excludes program support activities such as inspecting and auditing.

Installed Measure Cost

The actual cost that will be incurred to completely install a given conservation measure. Formulas for calculating the installed measure costs are found in the Weatherization Specifications Section 2.6.3.

Installer

The person installing a weatherization measure.

Insulation

A material with high resistance (R-value) to heat flow that when placed in the walls, ceiling or floors of a building will reduce the rate of heat flow. In buildings, insulation usually refers to material placed between the interior of a building (in the roof below the waterproofing layer or in the ceiling of the top floor in the building or between the exterior and interior walls of a building) and the outdoor environment to reduce the rate of heat loss to the environment or heat gain from the environment. Some commonly used materials for home insulation are fiberglass, cellulose, rock wool, and styrofoam. The resistance to heat flow is provided by the many small dead air spaces between the fibers or particles. Insulation comes in a variety of forms; blankets, or batts, foam, boards, or small loose pieces. See *R-value*.

Intermittent Ignition Device

A device that lights the pilot light on a gas appliance when the control system calls for heat thus saving the energy wasted by a standing pilot.

Jalousie Windows

A window consisting of several slats of glass that open simultaneously by means of a crank (similar to Venetian blinds).

Knee Wall

A short vertical wall in a story and a half dwelling unit.

Knob and Tube Wiring

A wiring method used primarily from 1900 to 1930, characterized by the use of two parallel wires supported on insulated glass or porcelain knobs and tubes.

Lead Based Paint

Paint that contains 1.0 milligrams per square centimeter or 5000 micrograms per gram or 0.5 percent lead by weight.

Lead Safe Weatherization (LSW)

Work protocols to reduce and control the amount of lead dust and paint chips generated when disturbing surfaces that may have lead-based paint.

Lead Safe Weatherization Worker (Certified)

Worker that has completed the Lead Safe Weatherization and Work Practices based on the Montana State University (MSU) curriculum, and is a Renovation, Repair, and Painting Certified Renovator.

Leveraged Funds

Funds that are not from the following sources: Bonneville Power Administration (BPA), United States Department of Energy (DOE), Matchmakers (MM), or United States Department of Health and Human Services (HHS).

Local Agency

A community-based agency, nonprofit agency, and local government that carries out the objectives of the low-income weatherization program.

Low-cost, No-cost

Program term for relatively inexpensive conservation devices that can be easily installed by the weatherization client, (i.e., compact fluorescent bulbs, low-flow shower heads and aerators and door weather-stripping).

Make-up Air

Air supplied to a space to replace exhausted air.

Manometer

Measuring device for small gas pressures.

Manufactured Home

A single-family dwelling built according to the United States department of housing and urban development manufactured home construction and safety standards act, which is a national preemptive building code. A manufactured home also: (a) Includes plumbing, heating, air conditioning, and electrical systems; (b) is built on a permanent chassis; and (c) can be transported in one or more sections with each section at least eight feet wide and forty feet long when transported, or when installed on the site is three hundred twenty square feet or greater.

Master Control System

A living record that tracks inventories of equipment, materials, and supplies including but not limited to: purchases, installations, transfers, and disposals.

Materials Inventory

All consumable products purchased for installation of weatherization measures and related repairs that are kept on hand for future use. Materials may include insulation, caulk, wood, glass, heating/ventilation components, hardware, and related supplies.

Priority List of Insulation Measures

A State-approved table that establishes levels of insulation that may added to and installed in buildings. *(See Exhibit 5.1A)*

Priority List of Non-insulation Measures

A State-approved table that establishes non-insulation energy conservation measures. *(See Exhibit 5.1A)*

Mechanical Air Changes

The number of air changes per hour occurring in a dwelling unit as a result of air movement that is assisted with mechanically operated fans.

Mediation

A process whereby a neutral person assists disputing parties in reaching a mutually acceptable resolution. Process is outside the court system and not legally binding. See *Arbitration*.

Minimum Ventilation Level (MVL)

See Building Airflow Standard. (BAS)

Mobile Home

A factory-built dwelling built prior to June 15, 1976, to standards other than the United States department of housing and urban development code, and acceptable under applicable state codes in effect at the time of construction or introduction of the home into the state. Mobile homes have not been built since the introduction of the United States department of housing and urban development manufactured home construction and safety act.

Modular Home

See *Factory-built Housing*.

Mortar

A mixture of sand, water, and cement used to bond bricks, stones, or blocks together.

Multi-Family Dwelling

A building with two or more attached dwelling units. For data collection purposes, dwellings with two to four units will be considered "small"; dwellings with five or more units will be considered "large."

Native American

A person who is a member of an Indian Tribe.

Natural Air Changes

The number of air changes per hour occurring in a dwelling unit as a result of natural air movement (i.e., without any assistance from mechanical fans).

Net Free Area

The area of a vent after that area has been adjusted for insect screen, louvers, and weather coverings. The free area is always less than the actual area.

Open-combustion Heater

A heating device that takes its combustion air from the surrounding room air.

Oxygen Depletion Sensor (ODS)

A safety device for unvented combustion heaters that shuts gas off when oxygen is depleted.

Pascal

A unit of measurement of air pressure. (See Inch of water.).

Persons with Disabilities

Persons with any disease, disability, or impairment substantially interfering with their ability to function in society. Any medically determinable physical or mental impairment shall qualify if it has lasted for a continuous period of not less than 12 months, or can be expected to last for 12 months, or result in death.

For further direction, refer to Section 7(6) of the Rehabilitation Act of 1973; Section 1614(a) - Section (3)(A) or 223(d) of the Social Security Act; Section 102(7) of the Developmental Disabilities Services and Facilities Construction Act; or Chapter 11 or 15 of Title 38, United States Code.

Individuals with disabilities are defined as persons with a physical or mental impairment that substantially limits one or more major life activities. People who have a history of, or who are regarded as having a physical or mental impairment that substantially limits one or more major life activities, are also covered. Major life activities include caring for one's self, walking, seeing, hearing, speaking, breathing, working, performing manual tasks, and learning. Some examples of impairments which may substantially limit major life activities, even with the help of medication or aids/devices, are: AIDS, alcoholism, blindness or visual impairment, cancer, deafness or hearing impairment, diabetes, drug addiction, heart disease, and mental illness.

Plenum

The piece of ductwork that connects the air handler to the main supply duct.

Power-vented Combustion Appliance

An ANSI Category IV appliance. An appliance that operates with a positive vent static pressure and with a vent gas temperature that may cause excessive condensate production in the vent.

Pressure

A force encouraging movement by virtue of a difference in some condition between two areas.

Pressure Boundary

An air barrier; usually the primary air barrier, most effective when aligned with a thermal boundary.

Pressure Pan Testing

The process of testing air leakage in duct systems using a device to block a duct register while measuring the static pressure behind the device during a blower door test.

Priority Air Sealing

Air sealing that addresses the major and obvious holes in the pressure boundary, typically visible holes in the walls and ceilings of the building envelope.

Private, Federally Subsidized Housing

Units owned by a private developer who received financial benefits from the government to develop the project.

Privately Owned Subsidized Housing

Units with project-based subsidies.

Program Costs

Costs that can be clearly identifiable with a program. Program costs include, material and labor costs associated with installing weatherization measures, making health and safety or weatherization-related repairs, and other costs necessary to operate a weatherization program (often referred to as "program support").

Program File

The file that contains documents required for the administration of a weatherization program.

Public Housing

Units owned by a public housing authority where tenants pay a percentage of income for rent and utilities.

Recommendations

Suggestions to assist with compliance of program requirements or to enhance or improve service. These are significantly less serious and may be communicated verbally to the agency during the course of monitoring (on-site technical assistance) or the exit conference.

Recreational Vehicle

A travel trailer, motor home, truck camper, or camping trailer that is primarily designed and used as temporary living quarters, is either self-propelled or mounted on or drawn by another vehicle, is transient, is not occupied as a primary residence, and is not immobilized or permanently affixed to a mobile home lot.

Return Air

Air circulating back to the furnace from the house, to be heated by the furnace and supplied to the rooms.

Re-Weatherization

To install or provide materials for a dwelling unit previously weatherized.

R-value

Unit of resistance to heat flow, expressed as temperature difference required to cause heat flow through a unit area of a building component or material at a rate of 1 heat unit per hour. R-value ranges from 1 to 60 that refers to the insulation's ability to resist heat flow, affected by the insulation's coverage, density, and airflow near and through the insulation and water presence within the insulation. See *Insulation*.

Room Heater

A heater located within a room and used to heat that room.

Roomer/Boarder

An individual who lives in an owner-occupied unit or lease-allowed sublet and meets all of the following conditions: makes one fixed monthly payment that includes rent, heat, and other utility costs; can provide a written lease agreement and proof of boarding payment; and is not related to any household member by blood, marriage, or through adoption. Tenants of housing managed by community-based treatment programs and who meet all of the above conditions shall be considered as roomers/boarders. See *Household*.

Savings-to-Investment Ratio (SIR)

The measurement of how many times an energy retrofit pays for itself during an established lifetime. The ratio is the lifetime savings-to-initial investment. SIR of one or greater indicates cost effective investment.

Sealed Combustion Appliance

An appliance that draws all combustion air from outdoors and has a sealed exhaust system.

Sealed Combustion Heater

A heater that draws all combustion air from outdoors and has a sealed exhaust system.

Single-Family Dwelling

A structure containing no more than one dwelling unit.

Site Work

See *Installation.*

Solid Fuel Burning Appliance System

Any appliance that burns solid fuel; for example, coal, pellets, and wood.

Space Heater

A free-standing or self-contained unit that: generates and delivers heat to a local zone; may be permanently installed or portable; and is characterized by a lack of pipes or duct work for distributing heat through the building. Examples of individual space heaters include electric baseboards, electric radiant or quartz heaters, heating panels, gas- or kerosene-fired unit heaters, wood stoves, and infrared radiant heaters.

Space Heating

Heating the living spaces of the home with a room heater or central heating system.

Spillage

The temporary flow of combustion gasses from a dilution device.

Stack Effect

The draft established in a building from air infiltrating low and exfiltrating high.

Steady-state Efficiency

The efficiency of a heating appliance, after an initial start-up period, that measures how much heat crosses the heat exchanger. A combustion analyzer measures the steady-state efficiency.

Steady-state Operating Condition

The typical operating condition of a heating appliance after it has gone through its initial start up period.

Subcontractor

An individual, partnership, corporation, or other similar entity that installs weatherization measures and carries liability insurance and assurance bonding for all work performed for local agencies. All entities acting as subcontractors must possess either a state contractor's or similar license.

Subsidized Housing

Housing for which the monthly shelter costs of the occupants are determined according to income (such as 30 percent of monthly income) and may cover only rent or include some utility costs.

Supply Air

Air that has been heated or cooled and is then moved through the ducts and out the supply registers of a home.

Technical Assistance

Technical information that is exchanged throughout the course of the monitoring visit. TA may be offered in any area being reviewed, however, often times much of this occurs during the course of inspecting the projects.

Thermal Boundary

The plane of a building envelope where insulation is installed to minimize heat flow, most effective when aligned with a pressure boundary.

TREAT: Targeted Residential Energy Analysis Tools

A computerized tool that is used during an energy audit that assists in determining cost-effectiveness of anticipated conservation measures for a dwelling unit.

Unconditioned Basement

A basement that is intentionally not heated or cooled.

Unintentionally Conditioned Basement

A basement that is heated or cooled unintentionally; typically getting residual heat or cooling from a conditioned space or from conditioning equipment located in the basement.

UV Resistant

Materials that are resistant to degradation caused by ultra-violet light rays.

Vapor Retarder

A material that retards the passage of water vapor.

Vent Connector

The vent pipe carrying combustion gases from the appliance to the chimney.

Vent Draft Pressure

The pressure in a vent with reference to either the outside or within combustion appliance zone, measured in Pascals.

Vent Damper

An automatic damper powered by heat or electricity that closes the chimney while a heating device is off.

Venting

The removal of combustion gases by a chimney.

Weatherization Audit

The process of identifying energy conservation opportunities in building.

Weatherization Materials

Those materials listed in Appendix A of the DOE WAP for Low-Income Persons Final Rule, 10 CFR Part 440. Materials for Weatherization-related pairs do not have to be listed in Appendix A, but should be at least equal to or better than industry standard practices.

Weatherization Measures

Building shell and equipment measures determined to be cost-effective by DOE approved Commerce standards.

Weatherization-Related Repairs

Repairs necessary for the effective performance or preservation of weatherization materials. *(See Policy 5.4 and Exhibit 5.4A)*

Weatherized Unit

From WPN 05-1, 2004 (p. 26):

To assist State and local agencies in determining what a DOE weatherized unit is, DOE offers the following definition. A DOE Weatherized unit is: A dwelling unit on which a DOE-approved energy audit or priority list has been performed. As funds allow, the appropriate measures installed on this unit have an SIR of 1.0 or greater, but also may

include any necessary energy-related health and safety measures. *The use of DOE funds on this unit may include but are not limited to auditing, testing, measure installation, inspection, use of DOE equipment, vehicles, or DOE provides the training and/or administration. Therefore, a dwelling unit that meets both the definition of a DOE weatherized unit and has DOE funds used directly on it must be counted as a DOE completed unit.*

Note: The above definition is not intended to impede or otherwise cause difficulties to States and local agencies that have entered into a leveraging partnership where other sources of funds are involved. If there is uncertainty in determining how best to account for the completed weatherized units under such an arrangement, contact your respective Regional Office for guidance.

Weatherization Work Begins

Weatherization work begins on the date of the project's initial energy audit.

Worst-case Depressurization Test

A safety test, performed by specific procedures, designed to assess the probability of chimney back drafting. The specific procedures include a systematic setup of the dwelling unit in a configuration most likely to cause a combustion appliance to back-draft or spill exhaust gasses into the dwelling unit.

Young Children

Children less than six years of age.

Zonal Pressure Testing

The use of pressure measurements to compare relative tightness or hole size of different surfaces and zones of a dwelling unit.

Zone

A room or portion of a building separated from other rooms by an air barrier, not usually an effective air barrier.

Percentage of Native American Low Income Households

Agency	% By County		Federally Recognized Tribe(s)
Benton-Franklin Community Action Council	Benton	1.55%	
	Franklin	0.87%	
Blue Mountain Action Council	Columbia	0%	
	Garfield	2.25%	
	Walla Walla	1.31%	
Chelan-Douglas Community Action Council	Chelan	3.12%	
	Douglas	2.15%	
City of Seattle Office of Housing-HomeWise Program	City of Seattle		
Clark County Department of Community Services	Clark	2.30%	
Coastal Community Action Program	Grays Harbor	9.01%	Chehalis Confederated/Quinault Nation
	Pacific	4.36%	Shoalwater Bay
Community Action Partnership	Asotin	1.94%	
Community Action Center of Whitman County	Whitman	0.64%	
Community Action Council of Lewis, Mason & Thurston Counties	Lewis	2.80%	
	Mason	8.26%	Skokomish/Squaxin Island
	Thurston	4.04%	Chehalis Confederated/Nisqually
Housing Authority of Skagit County	Skagit	3.89%	Samish Nation/Sauk-Suiattle/Swinomish/Upper Skagit
King County Housing Authority	King	1.17%	Muckleshoot/Snoqualmie
Kitsap Community Resources	Kitsap	4.52%	Port Gamble S'Klallam/Suquamish
Kittitas County Action Council	Kittitas	1.70%	
Klickitat-Skamania Development Council	Klickitat	7.62%	Yakama Nation
	Skamania	6.73%	

Percentage of Native American Low Income Households

Agency	% By County		Federally Recognized Tribe(s)
Lower Columbia Community Action Council	Cowlitz	4.49%	Cowlitz
	Wahkiakum	2.31%	
Metropolitan Development Council	City of Tacoma		
North Columbia Community Action Council	Adams	0.90%	
	Grant	3.50%	
	Lincoln	5.12%	
Olympic Community Action Programs	Clallam	9.32%	Jamestown S'Klallam/Lower Elwha Klallam/Makah/Quileute
	Jefferson	5.98%	Hoh
Rural Resources Community Action	Ferry	29.74%	Colville Confederated
	Pend Oreille	4.21%	Kalispel
	Stevens	10.90%	Spokane
Okanogan County Community Action Council	Okanogan	15.30%	Colville Confederated
Pierce County Community Action Programs	Pierce	1.78%	Puyallup
Snohomish County Human Services Department	Snohomish	4.07%	Stillaguamish/Tulalip
Spokane Neighborhood Action Programs	Spokane	3.78%	
The Opportunity Council	Island	1.80%	
	San Juan	2.50%	
	Whatcom	5.05%	Lummi Nation/Nooksack
Yakima Valley Farm Workers Clinic	Yakima County S. of Union Gap	5.25%	Yakama Nation
Opportunities Industrialization Center of Washington	Yakima County N. of Union Gap	0.89%	Yakama Nation

Data compiled from the 2000 Census, Households at 125% Poverty.

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Sample Income Guidelines Comparison

County Name	1 Person	2 Persons	3 persons	4 persons	5 persons	6 persons	7 persons	8 persons[3]
125% federal poverty [1]	11,963	16,038	20,113	24,188	28,263	32,338	36,413	40,488
125% fed. poverty (wage earner) [2]	14,953	20,047	25,141	30,234	35,328	40,422	45,516	50,609
60% State Median Income (HHS)[3]	20,758	27,145	33,532	39,919	46,306	52,693	53,890	55,088
Area Median [4]	(50%) area 1 person	(50%) area 2 persons	(50%) area 3 persons	(50%) area 4 persons	(50%) area 5 persons	(50%) area 6 persons	(50%) area 7 persons	(50%) area 8 persons[5]
Adams County	17,450	19,950	22,450	24,950	26,950	28,950	30,950	32,950
Asotin County	17,450	19,950	22,450	24,950	26,950	28,950	30,950	32,950
Benton County	**21,650**	24,750	27,850	30,950	33,450	35,900	38,400	40,850
Chelan County	18,950	21,650	24,350	27,050	29,200	31,400	33,550	35,700
Clallam County	17,900	20,500	23,050	25,600	27,650	29,700	31,750	33,800
Clark County	**23,750**	**27,150**	30,550	33,950	36,650	39,400	42,100	44,800
Columbia County	18,500	21,100	23,750	26,400	28,500	30,600	32,750	34,850
Cowlitz County	19,250	22,000	24,750	27,500	29,700	31,900	34,100	36,300
Douglas County	18,000	20,500	23,150	25,700	27,750	29,800	31,850	33,900
Ferry County	17,450	19,950	22,450	24,950	26,950	28,950	30,950	32,950
Franklin County	**21,650**	24,750	27,850	30,950	33,450	35,900	38,400	40,850
Garfield County	17,850	20,400	22,950	25,500	27,550	29,600	31,600	33,650
Grant County	17,450	19,950	22,450	24,950	26,950	28,950	30,950	32,950
Grays Harbor County	17,450	19,950	22,450	24,950	26,950	28,950	30,950	32,950
Island County	**27,250**	**31,150**	**35,050**	**38,950**	42,050	45,200	48,300	51,400
Jefferson County	18,650	21,300	24,000	26,650	28,800	30,900	33,050	35,200
King County	**27,250**	**31,150**	**35,050**	**38,950**	42,050	45,200	48,300	51,400
Kitsap County	**22,250**	25,400	28,600	31,750	34,300	36,850	39,350	41,900
Kittitas County	18,850	21,550	24,250	26,950	29,100	31,250	33,400	35,550
Klickitat County	17,450	19,950	22,450	24,950	26,950	28,950	30,950	32,950
Lewis County	17,450	19,950	22,450	24,950	26,950	28,950	30,950	32,950
Lincoln County	17,450	19,950	22,450	24,950	26,950	28,950	30,950	32,950
Mason County	17,600	20,150	22,650	25,200	27,200	29,200	31,200	33,250
Okanogan County	17,450	19,950	22,450	24,950	26,950	28,950	30,950	32,950
Pacific County	17,450	19,950	22,450	24,950	26,950	28,950	30,950	32,950
Pend Oreille County	17,450	19,950	22,450	24,950	26,950	28,950	30,950	32,950
Pierce County	**21,750**	24,850	27,950	31,050	33,550	36,000	38,500	41,000
San Juan County	**21,050**	24,050	27,050	30,050	32,450	34,850	37,250	39,650
Skagit County	19,850	22,700	25,500	28,350	30,600	32,900	35,150	37,400
Skamania County	17,850	20,400	22,950	25,500	27,550	29,600	31,600	33,650
Snohomish County	**27,250**	**31,150**	**35,050**	**38,950**	42,050	45,200	48,300	51,400
Spokane County	19,100	21,850	24,550	27,300	29,500	31,650	33,850	36,050
Stevens County	17,450	19,950	22,450	24,950	26,950	28,950	30,950	32,950
Thurston County	**23,150**	26,450	29,750	33,050	35,700	38,350	41,000	43,650
Wahkiakum County	18,900	21,600	24,300	27,000	29,150	31,300	33,450	35,600
Walla Walla County	17,950	20,500	23,100	25,650	27,700	29,750	31,800	33,850
Whatcom County	20,250	23,150	26,050	28,950	31,250	33,600	35,900	38,200
Whitman County	18,400	21,050	23,650	26,300	28,400	30,500	32,600	34,700
Yakima County	17,450	19,950	22,450	24,950	26,950	28,950	30,950	32,950

Bolded numbers: **50% Area median income exceeds 60% of State Median**

1. The federally-established poverty guidelines effective on February 18, 2005
   For each additional household member beyond household size of 8, add $4,075

2. The allowance for wage earners is obtained by dividing the 125% of federal poverty guidelines figure by .80

3. The 2004 state median income is established by the U.S. Dept. of Health and Human Services - effective March 11, 2004

For family sizes greater than 6 persons, the income limit is figured by multiplying $39,919 (60 %Washington state median income for family of four) by 132% percent plus an additional 3% of the $39,919 per additional person (over 6). Examples:

8 person household (shown above): 39,919 x (1.32 + (3 x .03)) or 39,919 x 141% $ 55,088

Explanation of Different Federal Low-Income Guidelines

Three different federally based income guidelines are used for income standard policies with the Washington State Low-Income Weatherization Program.

1. **125 Percent of Federal Poverty Guidelines**

   These guidelines are often the most stringent (meaning lower income than other federally based income guidelines). They are established by the United States Department of Health and Human Services (HHS) and printed in the Federal Register in late February each year. State weatherization programs (DOE, HHS, BPA, MM) have historically used these guidelines. Commerce provides local agencies with annual updates.

2. **60 Percent of State Median Income**

   This set of income guidelines is generally the highest-level among the three federally based income guidelines governing the state's weatherization program. With income waiver approval, a household will qualify if their income is the **lower** of either the 60 percent state median income or 50 percent of area median income. Sixty percent of state median income is used as the income guideline only when it is lower than the corresponding area median income for the respective household size. HHS develops and updates state median income guidelines. Commerce provides local agencies with annual updates.

3. **50 Percent Area Median Income**

   When local agencies apply for a waiver from the 125 percent poverty guidelines, HUD's area median income is the income amount typically used, unless state median income is lower, or 125 percent of poverty guideline is higher. These guidelines are updated every March by the federal Department of Housing and Urban Development (HUD). Commerce provides local agencies with annual updates.

Note: **Exhibit 1.2A, *Sample Income Guidelines Comparison***, incorporates both the 125 percent federal poverty guidelines and 125 percent annual income for wage earners with the 60 percent of state median and 50 percent of area median income guidelines. Contact Commerce for current comparison information.

Weatherization Program
Property Owner/Agency Agreement

[ ] Single Family
[ ] Duplex
[ ] Triplex
[ ] 4-Plex

I, _____ certify that I am the owner/authorized agent
(Owner/Agent)

for the property located at _____ presently rented by:
(Address)

	Tenant(s)	**Tenant Rent**	**Contract Rent (Subsidized Housing Only)**
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____

I authorize_____
(Agency)

to make the following weatherization repairs and improvements with the understanding that I will make a cash contribution in the amount of $ _____

_____ _____

_____ _____

_____ _____

I hereby release and pledge to hold harmless the above-named agency and its staff from any liability in connection with the work listed above.

In consideration of the weatherization work to be performed, the parties agree:

1. "Rent" is defined as the tenant's monthly payment to the owner (non-subsidized housing) or the contract rent (subsidized housing).

2. That the rent shall not be raised at any time because of increased value of the rental unit(s) due solely to weatherization assistance.

3. That from the effective date of this agreement, and during a period extending through one (1) year following the date of completion of weatherization work, the amount of rent at all rental units being weatherized will not be raised for any reason. That at the end of this period the rent shall not be raised for an additional period of one (1) year, except to reflect tenants' prorated share of the following expenses actually incurred and documented by the owner: (i) actual increases in property taxes; (ii) actual cost of amortizing improvements to the property (other than weatherization), which are accomplished on or after the date of this agreement and which directly benefit tenants; or (iii) actual increases in expenses of maintaining and operating the property.

4. The provisions of paragraph 3 may be waived by the agency in writing if, and only if, the premises are leased under a state or federal rent subsidy program which restricts the amount of rent the owner may charge, in which case the actual contract rent charged by the owner shall conform to the standards of the rent subsidy program.

5. That from the effective date of this agreement, and during a period extending through three (3) years following the date of completion of weatherization work performed, the owner will not evict, terminate, or institute any court action for possession against any tenant or successive tenant, except for good cause pursuant to the *Unlawful Detainer Statute*, RCW 59.12.030(3)-(5) (e.g. nonpayment of rent, committing waste, maintaining a nuisance) (**http://apps.leg.wa.gov/RCW**).

6. That in the event the owner sells the premises within three (3) years after weatherization work is completed, the owner will comply with one of the two following conditions:

    a. The owner shall repay the agency at the date of sale an amount equal to the percentage of the three (3) year/month period remaining, times the full value of the material and labor as documented by the agency work records, except if sold to low-income tenants; or

    b. The owner shall obtain, in writing prior to sale, the purchaser's agreement to assume the owner's obligations under this agreement.

    The owner shall immediately upon entering into a non-contingent agreement of sale of the premises, so inform both the agency and the tenants, by written notice.

7. That the present tenants, or any successor tenants during the term of this agreement, are the intended beneficiaries of this agreement and shall have a right of enforcement.

8. That for breach of this agreement, damages, where not otherwise specified, may be awarded in accordance with applicable law. The prevailing party in any suit to enforce this agreement shall be entitled to recover his costs and a reasonable attorney's fee.

9. That the agency shall provide a copy of this agreement and a synopsis explaining its terms to the tenants. That the owner shall provide a synopsis explaining the terms of this agreement to subsequent tenants of the above rental units, or to the new and subsequent occupants of rental units vacant on the effective date of this agreement.

10. That the terms of this agreement are incorporated into any other lease or agreement between owner and tenants, and between owner and any successor tenants during terms of this agreement, and if there is any conflict between the provisions of this agreement and provisions of such other lease or agreement, the provisions of this agreement shall govern. With the exception of provisions outlined above, all provisions of the *Washington State Landlord/Tenant Act* (RCW 59.18) (**http://apps.leg.wa.gov/RCW**) and the *Washington State Manufactured/Mobile Home Landlord/Tenant Act* (RCW 59.20) (**http://apps.leg.wa.gov/RCW**) shall apply to the owner(s) and tenant(s).

11. That provisions of this agreement are severable. If any provision of this agreement is found invalid, such finding shall not affect the validity of this agreement as a whole, or any part or provision hereof other than the provision so found to be invalid.

12. Failure of the agency to enforce the agreement upon breach by the owner shall not be construed as a waiver of the agency's right to enforce the agreement.

Signed: _____ Date: _____
(Owner/Authorized Agent)

Address: _____ Phone: _____

Approved by: _____ Date: _____
(Agency Representative)

Weatherization Program
Property Owner/Agency Agreement for
Multi-Family Buildings

I, _____, certify that I am the owner/authorized agent
(Owner/Agent)

for the property located at

_____

I authorize the

_____
(Agency)

to make weatherization repairs and improvements as determined by an energy audit of the building. I will make cash contributions in the amount of $ _____ .

I hereby release and pledge to hold harmless the above-named agency and its staff from any liability in connection with the weatherization work.

In consideration of the weatherization work to be performed, parties agree:

1. "Rent" is defined as the tenant's monthly payment to the owner (non-subsidized housing) or the contract rent (subsidized housing).

2. That the rent shall not be raised at any time because of any increase in the value of the rental units due solely to weatherization assistance.

3. That the owner/agent will submit a current rent schedule prior to completion of weatherization work upon request of the agency.

4. That during a period extending through one (1) year beginning on the date of agency certified completion of weatherization work, the amount of rent, as established by the rent schedule submitted, will not be raised for any reason for any building tenant.

   That at the end of this one-year period, rent shall not be raised for an additional period of one (1) year, except to reflect the tenants' prorated share of the following expenses actually incurred and documented by the owner/agent:

   a. Actual increases in property taxes.

b. Actual costs of amortizing improvements to the property (other than weatherization), which are accomplished on or after the date of this agreement and which directly benefit the tenants.

c. Actual increases in expenses of maintaining and operating the property.

5. The provisions of paragraph 4 may be waived by the agency in writing if, and only if, the premises are leased under a state or federal rent subsidy program which restricts the amount of rent the owner may charge, in which case, the actual contract rent charged by the owner shall conform to the standards of the rent subsidy program.

6. That from the effective date of this agreement, and during a period extending through three (3) years following the date of completion of the weatherization work performed, the owner will not evict, terminate, or institute any court action for possession against any tenant or successive tenant, except for good cause pursuant to the *Unlawful Detainer Statute,* RCW 59.12.030(3)-(5) (e.g. nonpayment of rent, committing waste, maintaining a nuisance) **(http://apps.leg.wa.gov/RCW)**.

7. That in the event the agency determines that the owner\agent has violated the terms of this agreement, the owner\agent shall repay the agency the full value of materials and labor as documented by agency work records.

8. That in the event the owner sells the premises within three (3) years after weatherization work is completed, the owner will comply with one of the two following conditions:

   a. The owner shall repay the agency at the date of sale an amount equal to the percentage of the three (3) year/month period remaining, times the full value of the material and labor as documented by agency work records, except if sold to low-income tenants.

   b. The owner shall obtain in writing prior to sale the purchaser's agreement to assume the owner's obligations under this agreement.

   The owner shall immediately upon entering into a non-contingent agreement of sale of premises, so inform both the agency and tenants by written notice.

9. That present tenants, or any successive tenants during the term of this agreement, are the intended beneficiaries of this agreement and shall have a right of enforcement.

10. That for breach of this agreement, damages, where not otherwise specified, may be awarded in accordance with applicable law. The prevailing party in any suit to enforce this agreement shall be entitled to recover costs and a reasonable attorney's fee.

11. That the agency shall provide a copy of this agreement and a synopsis explaining its terms to the tenants. That the owner shall provide a synopsis explaining the terms of this agreement to subsequent tenants of the above rental units, or to the new and subsequent occupants of rental units vacant on the effective date of this agreement.

12. That the terms of this agreement are incorporated into any other lease or agreement between owner and tenants, and between owner and any successor tenants during the terms of this agreement, and if there is any conflict between the provisions of this agreement and the provisions of such other lease or agreement, the provisions of this agreement shall govern. With the exception of the provisions outlined above, all provisions of the *Washington State Landlord/Tenant Act* (RCW 59.18) **(http://apps.leg.wa.gov/RCW)** and the *Washington State Manufactured/Mobile Home Landlord/Tenant Act* (RCW 59.20) **(http://apps.leg.wa.gov/RCW)** shall apply to owner(s) and tenant(s).

13. That the provisions of this agreement are severable. If any provision of this agreement is found invalid, such finding shall not affect the validity of this agreement as a whole, or any part or provision hereof other than the provision so found to be invalid.

14. Failure of the agency to enforce the agreement upon breach by the owner shall not be construed as a waiver of the agency's right to enforce the agreement.

Signed: _____ Date: _____
(Owner/Authorized Agent)

Address: _____ Phone: _____

_____

Approved by: _____ Date: _____
(Agency Representative)

Reason for the Agreement

The Agreement ensures the tenant receives the full benefit of the energy-saving measures installed.

Saving energy is everyone's responsibility!

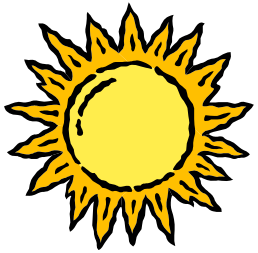
Space and water heating are the two largest residential energy users.

To save energy:

- Water heaters should be set at 120 degrees (120^{o} Fahrenheit).
- Furnaces and other heating systems should be checked annually to ensure efficient operation.
- Trees and vegetation that are touching or hanging over a building can create moisture problems that will damage the structure over time. Be sure to trim trees and shrubs and keep leaves, moss, and other debris off the roof and out of gutters and downspouts.

Everyone is a winner in a weatherization partnership!

To find out more about the Weatherization Assistance Program, contact your local community action agency, housing authority, or local government for information.



Keep this brochure with your lease or rent contract.

Printed by

State of Washington
Department of Commerce
Housing Improvements and Preservation Unit
PO Box 42525
Olympia Washington 98504-2525

Exhibit 1.4.1C

Owner/Agency Agreement & The Weatherization Assistance Program

Owner/Agency Agreement & The Weatherization Assistance Program

Your role as owner in an energy-saving partnership

As the owner of residential rental property, you have an opportunity to weatherize your property by joining a partnership with your local community action agency, housing authority, or local government agency.

By joining a partnership, the cost of completely weatherizing your property will be greatly reduced.

The Weatherization Assistance Program is designed to provide funds for income-eligible tenants. With your assistance, weatherization measures can be installed that will increase the value of your property without raising the property tax.

In addition, your tenants will benefit through greater comfort and reduced utility costs, and your investment will last for years.

About the Weatherization Assistance Program

The Weatherization Assistance Program is a state and federally funded program managed locally by community action agencies, housing authorities, or local government agencies.

The program provides professional energy management through:

- Building energy analysis
- Attic insulation
- Crawl space insulation
- Sidewall insulation
- Furnace repair or replacement
- Heating duct sealing and insulation
- Water heater and water pipe insulation
- Weatherstripping and caulking
- Other draft reduction and energy-saving measures

All rental units are eligible, whether single family homes or apartments, as long as the occupants are income-eligible.

Prior to weatherization, federal law requires that the weatherization agency and the owner of the rental property sign an agreement. The agreement, known as

The Owner/Agency Agreement, has the following provisions:

1. The rent you charge your tenants cannot be increased for any reason for a period of one year following completion of the weatherization work
2. During the second year after the weatherization work is completed, rent can only be increased for the following reasons:
   - To recover costs related to property tax increases
   - To recover the actual cost of improvements to the dwelling, other than weatherization, that are performed after weatherization is completed and which directly benefit the tenants.
   - To recover the cost associated with an increase an in operation and maintenance.
3. For a period of three years after weatherization is completed, your tenant shall not be evicted, except for good cause, such as
   - Failure to pay rent
   - Damaging property
   - Creating a nuisance or violating any terms of the rent agreement
4. If the property is sold within three years from the date weatherization is completed, the seller must:
   - Pay back the cost of weatherization on a pro-rated basis.
   - The new owner must accept full responsibility and obligations for the agreement you signed.

Living in a weatherized home

Now that your home has been weatherized, don't waste energy. Space and water heating are the two largest residential energy users.

To save energy:

Setting your thermostat at 68^{o} Fahrenheit will save energy. If you feel cool, wear a sweater or dress in layers

If you are too warm, turn down the heat. Don't open a door or window to cool down.

At night, cover the windows. This will help keep the heat in.

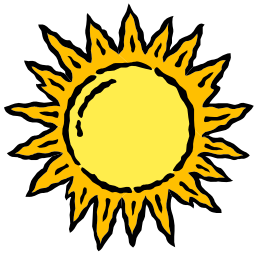
Furnaces and other heating systems should be checked annually to ensure efficient operation.

Storing boxes and things on top of the insulation will reduce its ability to keep you warm. Make sure the insulation stays the way it was put in.

Water heaters should be set at 120 degrees (120^{o} Fahrenheit).

Saving energy is saving money!

For more information on how to save energy, contact your local community action agency.



Keep this brochure with your lease or rent contract.

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State of Washington
Department of Commerce
Housing Improvements and Preservation Unit
PO Box 42525
Olympia Washington 98504-2525

Exhibit 1.4.1D

Tenant Rights
&
The Weatherization Assistance Program

Tenant rights and the Weatherization Assistance Program

Congratulations!

Your home is about to be weatherized. The addition of insulation and other energy-saving measures will make your home more comfortable and save you money!

Know your rights

The Weatherization Assistance Program is designed to benefit you. Most, if not all, of the materials and labor to weatherize your home are being supplied free of charge to the owner. In return for this free service, the owner has agreed to the following items:

No Rent Increase – The owner cannot raise your rent for any reason for a period of one year from the time the weatherization work has been completed.

During the second year after your home has been weatherized, the owner can only raise your rent for the following reasons:

1. Actual increases in property taxes
2. Actual cost of improvements (other than weatherization) to the dwelling that directly benefits you, the tenant; and
3. Actual increases in cost of maintenance and operations of the property.

Evictions – Beginning on the date the owner signs the agreement to weatherize your home, and for three years after, the owner cannot evict you, or attempt to evict you, except for good cause, such as failure to pay rent, violating any provision of the lease or rent agreement, damaging property or creating a nuisance.

Sale of Property - If the owner sells the property within three years after the weatherization work is completed, the owner must either get the new owner to accept the agreement and protect your rights as stated above, or pay back the cost of weatherization.

If you need help

If you feel the owner is not following the agreement as explained, contact your local legal services office, community action agency, or the agency that did the weatherization work. They may be able to help you.

Remember…

The owner has signed an agreement (Property Owner/Agency Agreement) in order to have your home weatherized. The agreement states that:

- Your rent will not be increased for one year for any reason.
- For one additional year, your rent can only be increased for specific reasons.
- For three years, you cannot be evicted except for good cause.
- If the property is sold, your rights will be protected as explained, or you will be notified that the new owner is buying back the weatherization.

Weatherization Assistance Program
Application for Shelters, Group Homes, and Transitional Facilities

Agency Use Only

*Date:*_____ *Agency:* _____ *County:* _____

Name of Facility: _____

Applicant/Operator's Name: _____

Facility Phone Number: _____

Address of Facility:_____

City, State, Zip:_____

Owner(s) or Organization Name: _____

Organization Phone Number: _____

Owner/Organization Address: _____
(If different from above)

City, State, Zip: _____

Name of Designated Official: _____

Title of Official: _____

Housing Type (Check One):

Single Unit ☐ Multi Unit ☐ Total # Eligible Units:_____

Heating Fuel - Main Source of Heat (Check One):

Electric ☐ Oil ☐ Gas ☐ Wood ☐ Other _____

I certify that the information I have provided on this application is accurate to the best of my knowledge. I further certify that the incomes of the persons/families residing in the facility of the organization I represent are at or below 125 percent of federal poverty guidelines. I have submitted a letter attesting to these facts and have included a copy of the organization's income guidelines or a copy of the organization's mission statement in lieu of individual resident income verification. If I have knowingly provided false information that results in receiving assistance for which the organization is not eligible, I may be subject to criminal prosecution.

I further understand that I may file a grievance for either of the following reasons:

1. The application was not acted upon within a reasonable time.
2. The application was denied and I think the facility is eligible to be weatherized under this program.

I also agree that in consideration of weatherization work to be performed, the rent, charges, or fees charged to the occupants of the property being weatherized will not be increased because of any increase in the value of the property due solely to weatherization assistance.

_____ _____
(Applicant/Operator's Signature) (Date Signed)

The current operation of the property as a _____, which serves low-income people, shall continue for a period of __ years. In the event that I sell the property within _ years after weatherization work is completed, or if the property ceases to be used as a , I will comply with one of the two following conditions:

1. I will repay the agency at the date of sale or at the date of discontinuance an amount equal to the percentage of the ____ year/month period remaining, times the full value of material and labor as documented by agency work records; or
2. I will obtain in writing prior to sale the purchaser's agreement to continue operating the property as a _____for the remaining term.

_____ _____
(Property Owner's Signature) (Date Signed)

Historic Preservation Checklist

1. **Does the project include conversion of existing properties or demolition, repair, or rehabilitation of a home 45 years or older?**

   ☐ No: STOP here. Historic preservation regulations do not apply.

   ☐ Yes: PROCEED to #2.

2. **Is the property listed on the National Register of Historic Places (www.dahp.wa.gov/)?**

   ☐ No: Complete **DAHP's *Determination of Eligibility EZ2*** and submit it to DAHP.

   If DAHP responds to you that the property is eligible, complete **DAHP's *Building Rehabilitation Worksheet EZ3*** and submit it to DAHP.

   ☐ Yes: Complete **DAHP's *Building Rehabilitation Worksheet EZ3*** and submit it to DAHP.

3. **If DAHP requests an EZ3 form, make note of submittal date**. DAHP has 30 days to review form submittals. If you have not heard from DAHP in 2 weeks, please call for a status report.

4. **Place a copy of DAHP response letter in client file.**

WASHINGTON STATE LIHEAP HOUSEHOLD INFORMATION FORM

Agency	Primary SSN	❑ EAP **OR** ❑ Emergency EAP ❑ Other Emergency Services (OES)	File # (optional)
_____	___ ___ ___-___ ___-___ ___ ___ ___		
County:	**Secondary SSN**	❑ WAP (interested in WX?) ❑ Tribal Member ❑ Received Food Stamps ❑ Heat with rent ❑ Received EAP last program year	Household Members (voluntary) # of people in household who are: _____ 0 – 2 yrs _____ 60+ yrs _____ 3 – 5 yrs _____ Disabled _____ 6 – 17 yrs _____ MSFW
_____	___ ___ ___-___ ___-___ ___ ___ ___		
Certification Date	**Secondary Applicant:**		
_____	_____ (Last Name) _____ (First Name)		

Section A: MAILING ADDRESS ↓ RESIDENCE ADDRESS ↓ *(if different)*

Primary Applicant: _____ (Last Name) _____ (First Name) _____ (Middle Initial)

Mailing Address: _____ **Residence Addr:** _____

City, State, Zip: _____ **Residence City, Zip:** _____

Phone: (_____) _____ - _____ **Msg. Phone:** (_____) _____ - _____ **Lived at Residence:** _____ yrs _____ mos.

Housing Status:
1 ❑ Own/buy
2 ❑ Subsidized
3 ❑ Rental
4 ❑ Rm/Brdr
5 ❑ Temp Hsg.
$/mo. $_____

Housing Type:
1 ❑ 1 - 3 Fam
2 ❑ 4+ Fam
3 ❑ Hi-Rise
4 ❑ Mobile
5 ❑ RV

Primary Heat Source:
1 ❑ Electric 4 ❑ Oil
2 ❑ Nat Gas 5 ❑ Wood
3 ❑ Propane 6 ❑ Coal

# of Bedrooms: _____

Income/Benefits:
1 ❑ SSI 5 ❑ Social Security
2 ❑ TANF 6 ❑ Unempl. Comp.
3 ❑ GAU 7 ❑ Earned Income
4 ❑ VA 8 ❑ Pension
9 ❑ Other

Total # People in Household: _____

Household's Monthly Income: $_____.00

Voluntary Data:

Annual Heat Cost $_____
❑ Back Up Heat Cost ❑ Used Surrogate Data

Total Energy Use $_____

Female Primary Wage Earner?
❑ Yes ❑ No

_____Male
_____Female

Ethnicity
___Hispanic or Latino
___Not Hisp. or Latino

Race
___ American Indian or Alaskan Native
___ Black or African American
___ Native Hawaiian or Pacific Islander
___ Asian
___ White
___ Multi-Racial

____Target Group #1
____Target Group #2

Section B: EAP

Staff: _____ P.O.# _____

HOUSEHOLD ELIGIBILITY AMOUNT: $ _____ . _____

Payment to Vendor(s) ↓ *Direct Pay to Applicant* →

#1: _____ Acct. # _____ $ _____ . _____

#2: _____ Acct. # _____ $ _____ . _____

TOTAL PAID TO DATE: $ _____ . _____

Section C: OES

Staff: _____ P.O.# _____

Heat system repairs/replacement: Vendor # _____ $ _____ . _____

Vendor # _____ $ _____ . _____

Other repairs/services: Vendor # _____ $ _____ . _____

Vendor # _____ $ _____ . _____

TOTAL SERVICES PROVIDED: $ _____ . _____

I certify that I have provided and reviewed the above information, which is accurate to the best of my knowledge. I understand that I may be subject to criminal prosecution if I have knowingly provided false information. I further understand that I may request a Fair Hearing if the provision of the above information is not acted on to determine my eligibility within a reasonable time or if I do not receive benefits for which I feel I am eligible. I also give my permission for this agency and Washington State Community, Trade and Economic Development (CTED) to request/release necessary information that may result in my receiving benefits from this assistance request. I further give the above listed heating vendor(s) permission to establish a line of credit, and/or to release my account information to this agency or CTED for current and future data analysis and eligibility determination. I understand that provision of my social security number is necessary to avoid duplicate energy assistance benefit payments to the same applicant household and may also be used for income verification (including Employment Security Unemployment Insurance and DSHS Food Stamp benefits). I hereby authorize energy program staff to use my social security number for those purposes only.

Applicant Signature: _____ **Date:** _____

Income and Residence Verification Checklist

I certify that I have seen the following documentation for:

_____

Head of Household

_____

Applicant Address, City, State, Zip

_____ _____

Agency Representative Date

Income Documentation	Source of Verification
Pay stubs for all earned income	
Employer statement and phone number	
Pensions/retirements	
Veteran's benefits	
Educational grants	
Interest	
L & I statement	
Divorce decree(s)	
Child support received/paid	
TANF	
GAU	
SSI	
Social Security	
Bank statement/award letter for months of:	
Other	
Residence Documentation	**Source of Verification**
Deed/title	
Lease/rental agreement	
Subsidized housing lease	
Tax statement	
Other	

Household Member & Income Information Form

List all immediate members of household, their source of income, and gross amount each member received for each month listed:

1. _____ 2._____ 3._____

DSHS income verified? **(Y N)** Date: _____ Reviewer:_____

Household Members	Source of Income	Gross	Amount	Per Month	Minus 10%	Minus 15%	Minus 20%	Gross Amount	Adjusted Gross Amount	Docts.
Name:		$	$	$						
Name:		$	$	$						

Children's Names:	Age	Children's Names:	Age	Children's Names:	Age
1.		3.		5.	
2.		4.		6.	

***** *If client has more than six children please use back of this form.*

Total gross income:_____ = _____ the household's average monthly income.

Number of months documented: _____

I certify that the above information I have provided is a complete and accurate list of all household members and their income for the period, and _____. I understand that I am signing this form under penalty of criminal prosecution if I knowingly give false information resulting in payment to which I am not entitled.

_____ _____

Applicant's Signature Date

Sample Weatherization Program
Utility Information Release Waiver

Section A: Applicant Information

Primary Applicant: _____
(Last Name) (First Name) (Middle Initial)

Mailing Address: _____

Mailing City, State, ZIP: _____

Phone: (_____) _____

Residence Address: _____

Residence City, State, Zip: _____

Name on utility account if different from applicant: _____

Section B: Utility Information

Utility Service Provider (as applicable): _____

Electric: _____ Acct. # _____
Nat Gas: _____ Acct. # _____
Propane: _____ Acct. # _____
Oil: _____ Acct. # _____
Wood: _____ Acct. # _____
Coal: _____ Acct. # _____

Primary Heat Source: _____ **Secondary Heat Source:** _____
(Electric, Nat Gas, Propane, Oil, Wood, Coal)

I certify that the above information is accurate to the best of my knowledge. I give the above listed utility service providers permission to release my account information, including both consumption and expenditure data, to this agency or the Washington State Department of Commerce for current and future data analysis.

Applicant Signature: _____ **Date**:_____

Declaration of No Income

I, _____, do hereby declare that I have not received any income for the month(s) of:

1. _____ 2._____ 3. _____

The reason that I have had no income for the months listed above is as follows:

_____

_____

_____

I have been meeting my basic living needs for food, shelter and utilities in the following way:

Food: _____

Shelter: _____

Utilities: _____

I certify that the information contained above is complete and accurate to the best of my knowledge. I understand that I am signing this statement under penalty of prosecution if I knowingly give false information, which results in assistance received for which I am not eligible.

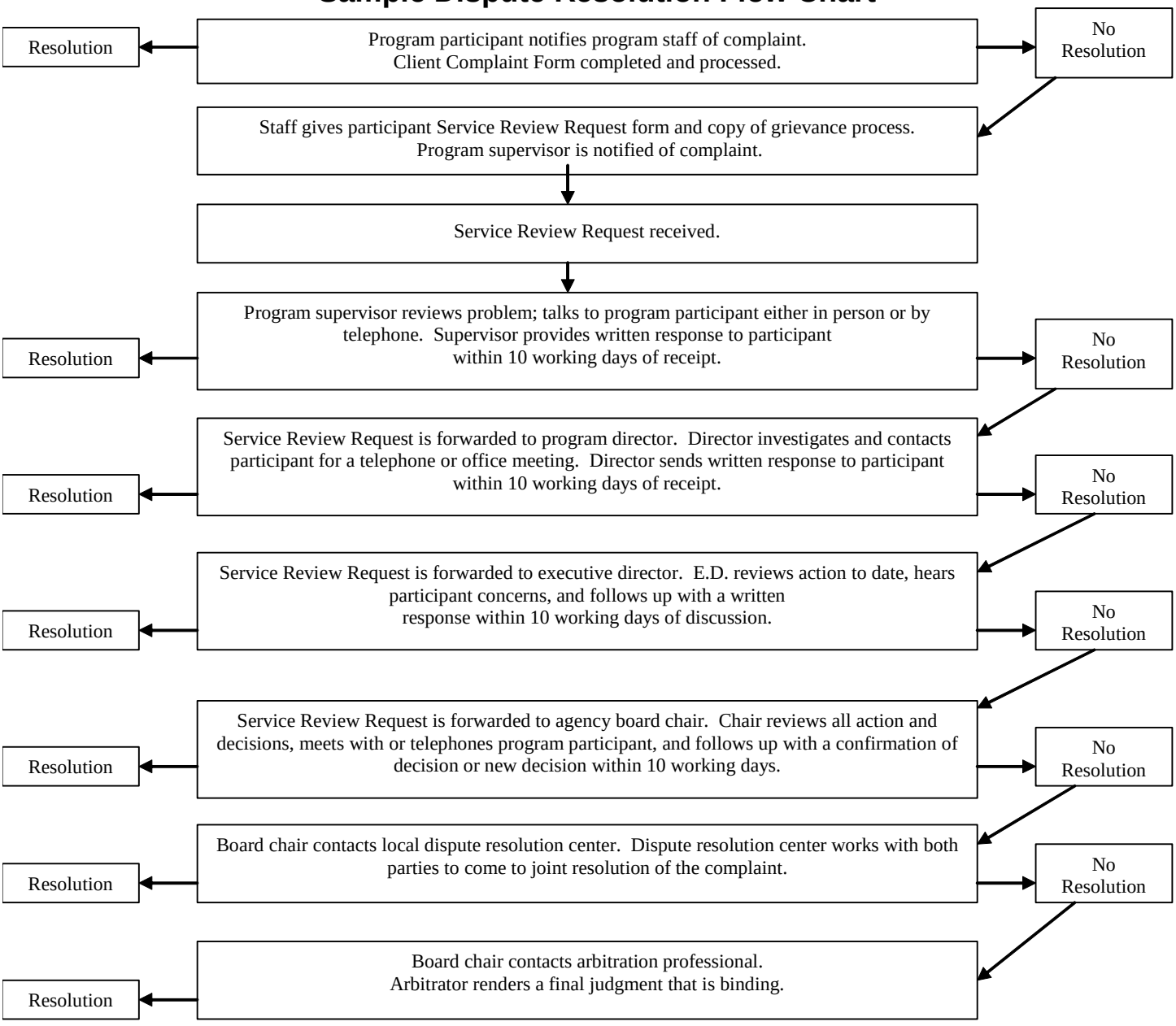
_____ _____

Client Signature/Date Agency Representative/Date

Date to Participant:

_____

Sample Dispute Resolution Flow Chart



**** NOTE: Subject to need, Building Performance Center (BPC), as the State's designated Peer Circuit Rider, will assign a local agency representative with appropriate technical expertise to assist contractors with outside review.**

The sample dispute resolution flow chart above addresses grievances in this order:

1. Program Staff	4. Agency Executive Director	7. Professional Arbitrator
2. Program Manager/Director	5. Chair, Board of Directors	
3. Division Director	6. Dispute Resolution Center	

Client Complaint Form

Client Information

Date	Program	Social Security #	Telephone #
First Name	Middle	Last Name	
Service Address	Apt.	City	Zip Code

Nature of Complaint:

- ☐ Denial of service
- ☐ Ineligible
- ☐ Deferral policy
- ☐ Application not handled in a timely manner
- ☐ Dissatisfaction with work

Details of Complaint:

_____

_____

Action Taken:

- ☐ Client directed to appropriate program staff
- ☐ Client received copy of agency dispute resolution process and Service Review Request
- ☐ Client sent copy of agency dispute resolution process and Service Review Request
- ☐ Other

Details of Action Taken:

_____

_____

Program staff contacted: ☐ **Yes** **Date contacted:** _____

Name of program staff contacted: _____

☐ Copy of Client Complaint Form in client's file ☐ Complaint noted in program database

Complaint Received By:

Date to Client:
_____

Service Review Request

Fill out this form with the information requested. *A written account is required for review to proceed.*

Name: _____

Address: _____

City/State/ZIP: _____

Home or Message Phone: _____ Work Phone:_____

Describe the circumstances for which you are requesting a service review. What happened? When did it happen? Where did it happen? Who is involved or who may have knowledge of the situation? Attach a separate page if needed.

_____

_____

When are you available to meet to discuss this matter?

Date 1: Morning/Afternoon *(circle one or both)*

Date 2: Morning/Afternoon *(circle one or both)*

I certify that the above statements are true and accurate to the best of my knowledge.

Your Signature:_____Date: _____

Give this completed form to any agency staff member or mail in envelope provided. It will be promptly forwarded to the supervisor/director of the program/division involved. You will be contacted within 10 working days of the date received to confirm a meeting time.

Office Use: _____ _____
Received by Date Received

Office Use:

Received by: _____ Title:_____ Date: _____

Reviewed by: _____ Title:_____ Date: _____

Participant contacted, meeting scheduled: ☐ Date: _____

☐ In-office meeting ☐ Telephone meeting ☐ In-home meeting

Notes from meeting: _____

_____

_____

_____

_____

_____

Name/Position: _____ Date:_____

Resolution: _____

_____

_____

_____

_____

_____

Name/Position: _____ Date: _____

To:

_____

Address:

_____

Phone Number:

_____

Project Number:

_____

As a result of reviewing your concerns with you and the details of your file, the following conclusion has been reached:

_____

_____

We will keep a copy of this information in our files for the next 18 months. If you are not satisfied with the above conclusion and would like further review of your complaint, please indicate in the space provided at the bottom of this letter and return. Thank you for participating in this process.

Signed: _____ _____ _____

Name Title Date

Name: _____ Telephone Number:_____

Address: _____ Best time to call:_____

☐ I request further review of this situation. My reasons and comments are in the space below. (*Attach a separate sheet if needed.)*

_____

_____

Your Signature: _____ Date:_____

Dispute Resolution Fact Sheet

Arbitration is the submission of a dispute to one or more impartial persons for a final and binding decision. Through contractual provisions, the parties may control the range of issues to be resolved, the scope of relief to be awarded, and many procedural aspects of the process.

Chapter 7.04 RCW ARBITRATION

Under Chapter 7.04 RCW **(http://apps.leg.wa.gov/rcw/)**, all arbitrations are final and binding unless there is arbitrator misconduct or the arbitrator obviously disregarded the law.

Mediation is a process whereby a neutral person – the mediator – assists the parties in reaching a mutually acceptable resolution to their dispute. The mediator does not have the authority to make a binding decision, unlike arbitration, where the arbitrator renders a decision that is final and binding.

Appropriate Uses Of Mediation

Any civil dispute between two or more individuals or groups is appropriate for mediation. All parties to the dispute must be able to comprehend and be willing to use the third party role of mediation. Thus individuals with impaired mental or emotional functioning often are unable to enter into productive negotiating. Also, individuals who have been part of a violent pattern of victimization usually are not able to negotiate in their best interests if they are the victims or stop intimidating behaviors if they are the persecutors. Such situations usually are not amenable to mediation.

What are Some Advantages of Mediation?

- Parties are directly engaged in negotiating the settlement.
- The mediator, as a neutral third party, can view the dispute objectively and can assist the parties in exploring alternatives that they might not have considered on their own.
- As mediation can be scheduled at an early stage in the dispute, a settlement can be reached much more quickly than with litigation.
- Parties generally save money through reduced legal costs and less staff time.
- Mediators have been carefully chosen for their knowledge and experience.
- Parties enhance the likelihood of continuing their business relationship.
- Creative solutions or accommodations to special needs of the parties can become a part of the settlement.
- Information disclosed during mediation may not be divulged as evidence in any arbitral, judicial, or other proceeding.

How Does Mediation Differ From Arbitration?

Arbitration is less formal than litigation, and mediation is even less formal than arbitration. Unlike an arbitrator, a mediator does not have the power to render a binding decision. A mediator does not hold evidentiary hearings as would an arbitrator but instead conducts informal joint and separate meetings with the parties to understand the issues, facts, and positions of the parties. In contrast, arbitrators hear testimony and receive evidence in a joint hearing, on which they render a final and binding decision known as an award. In joint sessions with each side, a mediator tries to obtain a candid discussion of the issues and priorities of each party. Gaining certain knowledge or facts from these meetings, a mediator can selectively use the information derived from each side to:

- Reduce hostility between parties and help them engage in meaningful dialogue on the issues at hand.
- Open discussions into areas not previously considered or inadequately developed.
- Communicate positions or proposals in understandable or more palatable terms.
- Probe and uncover additional facts and the real interests of parties.
- Help each party to better understand the other parties' views and evaluations of a particular issue without violating confidences.
- Narrow the issues and each party's positions, and deflate extreme demands.
- Gauge the receptiveness for a proposal or suggestion.
- Explore alternatives and search for solutions.
- Identify what is important and what is expendable.
- Prevent regression or raising of surprise issues.
- Structure a settlement to resolve current problems and future parties' needs.

Dispute Resolution Resources

Arbitration

American Arbitration Association (AAA)
http://www.adr.org/

Regional Office
1 Convention Place
701 Pike Street, Suite 950
Seattle, WA 98101-4111
(206) 622-6435
Fax: (206) 343-5679

Mediation

Resolution Washington: An Association of Dispute Resolution Centers
http://www.resolutionwa.org/

Dispute Resolution Center Listings

If a dispute resolution center (DRC) is not available in your immediate area, contact the nearest center to discuss your agency's options.

Bellevue Neighborhood Mediation Program
11511 Main Street, P.O. Box 90012
Bellevue, WA 98009-9012
(425) 452-4091
Web site: **http://www.cityofbellevue.org/**

Benton Franklin Dispute Resolution Center
5219 W. Clearwater, Suite 11
Kennewick, WA 99336
(509) 783-3325
Fax: (509) 783-3449
E-Mail: **bfdrc@bfdrc.org**
Web site: **http://www.bfdrc.org/**

Community Mediation Services
610 Esther St., P.O. Box 1995
Vancouver, WA 98668-1995
(360) 619-1140
Fax: (360) 696-8009
E-Mail: **Community.Mediation@ci.vancouver.wa.us**
Web site: **http://www.ci.vancouver.wa.us/**

Dispute Resolution Center of Kitsap County
9004 Washington Ave. NW
Silverdale, WA 98383
(800) 377-6583 or (360) 698-0968
Web site: **http://www.kitsapdrc.org/**

Dispute Resolution Center of Lewis County
57 W. Main St., #185
Chehalis, WA 98532
(360) 748-0492
Fax: (360) 748-7717
E-Mail: **drclc@quik.com**

DRC of Island and Snohomish Counties
Mailing: PO Box 839
Street: 2801 Lombard Avenue
Everett, WA 90206
(800) 280-4770 or (425) 339-1335
Fax: (425) 259-2110
E-Mail: **drc@voaww.org**
Web site: **http://www.voaww.org/**

Dispute Resolution Center of Thurston County
PO Box 6184
Olympia, WA 98507
(360) 956-1155
Fax: (360) 357-5168
E-Mail: **info@mediatethurston.org**
Web site: **http://mediatethurston.org/**

Dispute Resolution Center of Yakima and Kittitas Counties
1106 B. West Lincoln Ave.
Yakima, WA 98902
(509) 453-8949 or 1 (800) 853-8949
Fax: (509) 453-0910
E-Mail: **drcyakima@nwinfo.net**
Web site: **http://www.drcyakima.org/**
Newsletter: www.resolutionwa.org

Fulcrum Institute Dispute Resolution Center
905 W. Riverside, Suite 304
Spokane, WA 99201
(509) 838-2799
Fax: Same as telephone

King County Dispute Resolution Center
P.O. Box 21148
Seattle, WA 98111
(888) 803-4696 or (206) 443-9603
Fax: (206) 443-9737
Web site: **http://www.kcdrc.org/**

Mediation and Settlement Center
138 1st Street South, Suite 6
Montesano, WA 98563
(360) 249-1925
Fax: (360) 249-1926
E-mail: **coastaldrc@centurytel.net**

Neutral Ground - Walla Walla
P.O. Box 1222
Walla Walla, WA 99362
(509) 522-0399

NW Conflict Management Center
Community Building
35 W. Main, Suite No. 230
Spokane, WA 99202
(509) 456-0103
Fax: (509) 462-0525

Okanogan County Dispute Resolution Center
17 S. Ash St. - PO Box 3567
Omak, WA 98841
(509) 826-1776
E-Mail: **drc@ncidata.com**

Peninsula Dispute Resolution Center
PO Box 1035
Port Angeles, WA 98362
(360) 452-8024
E-Mail: **PDRC@olypen.com**
Web site: **http://www.pdrc.org/**

Pierce County Dispute Resolution Center
917 Pacific Avenue, Suite 206
Tacoma, WA 98402
(253) 572-3657
Fax: (253) 572-3579
E-Mail: **clientservices@pccdr.org**
Web site: **http://www.pccdr.org/**

Skagit County Mediation Services
601 South Second St.
Mount Vernon, WA 98273
(360) 336-9494
Web site: **http://www.skagitcounty.net/**

Whatcom Dispute Resolution Center
13 Prospect St.
Bellingham, WA 98225
(360) 676-0122
Web site: **www.co.whatcom.wa.us/superior/resources/dispute.jsp**

Training Opportunities

Many DRCs offer mediation training throughout the year. Contact individual DRCs for training schedules.

Priority List of Weatherization Measures

Insulation Measures

Priority List of Insulation Measures			
Component	**Existing Condition**	**Recommended Measures**	
		Site-Built Homes	**Mobile Homes**
Ducts	Conditioned space	No measure	No measure
	Unconditioned space R-0 (or effective R-0)	Add up to R-19	Add up to R-19
Ceiling	R-0 to R-11	Add up to R-38	Add up to R-38.0 or maximum allowed by cavity
	R-12 to R-19	Add up to R-38	No measure
	Over R-19	No measure	No measure
Exterior Wall	Closed cavity	Fill cavity if empty	Fill cavity if empty
	Open kneewall	R-11 batt or fill cavity	NA
Underfloor/ Foundation	Conditioned R-0	R-11 foundation	R-11 foundation
	Vented R-0 to R-11	Install maximum insulation based on floor joist cavity depth up to R-30	Install maximum insulation based on floor joist cavity depth up to R-30
	Greater than R-11	No measure	No measure

Priority List of Weatherization Measures

Non Insulation Measures

Priority List of Non-Insulation Measures		
Component	**Existing Condition and/or Location**	**Recommended Measures**
Air Sealing	Pre-Wx blower door reading below target air sealing level	No or very limited air sealing Consider mechanical ventilation
	Pre-Wx blower door reading above target air sealing level	Blower-door guided, priority air sealing
Hot Water Temperature	Above or below 120 degrees Fahrenheit	With client approval, adjust water temperature to 120 degrees Fahrenheit
Water Heater Insulation	No water heater insulation jacket is present AND water heater insulation can be added without voiding warranty	Install a minimum R-10 insulated tank wrap in unconditioned spaces
Water Pipes To and From Water Heater	No insulation or less than R-3 insulation on first six feet of water pipes entering and exiting water heater.	Wrap at least the first six feet of the water pipes with a minimum of R-3 insulation, even in conditioned spaces, if access and space makes installation possible
Showerhead	Showerhead that uses more than 2.5 gallons per minute	With client approval, replace with showerhead that uses 2.5 gallons per minute or less
Faucet Aerators	No water-saving faucet aerators	Optional measure to install water-saving faucet aerators
Lighting	Incandescent light bulbs or halogen or incandescent torchiere lamps	With client approval, replace with Energy Star rated compact fluorescent light bulbs or CFL torchiere lamps
Carbon Monoxide Detector	Homes with a combustion appliance such as gas, propane, or oil furnace, water heater, cook stove, or wood stove or with an attached garage.	Install approved carbon monoxide detector

Solid Fuel Burning Appliance Systems Supplemental Audit Form

Complete this form and place in client file.

1. Is the system the primary heat source? Yes____ No_____

2. What are the existing conditions of the system?

Components	Good	Fair	Poor	Health & Safety Concerns	Inoperable	Inefficient & life span less than one year
Chimney/ flue system						
Wood heating unit						
Surrounding area (hearth, clearances, location)						

3. Describe recommended measure for existing situation: _____

_____

_____

4. What is your recommendation, based on cost and nature of the problem?

☐ Repair ☐ Replace

5. Who is making this recommendation?

☐ Agency Representative ☐ Heating System Subcontractor

I certify that the above information is complete and accurate.

_____

Signature of Agency Representative *Date*

Client Information: I have received information on safe operation, proper maintenance, and clean burning for my new (or repaired) solid fuel burning appliance system.

_____

Client Signature *Date*

Economic Analysis of Refrigerator Replacement

Blue Entries are cells that can be changed by the user
Remember to press Enter after typing each input
Check for updates at: http://www.energytools.com

Main Inputs

Name of Job:	Tim Wilkins, 3362 Freezing Lane, Anchorage, AK	
Monthly Energy Cost of Existing Refrigerator, as read by Power Meter:	$ 10.23	per month
Annual Energy Use of Replacement Refrigerator from Energy Label:	430	kWh per year
Cost of Refrigerator Replacement, including disposal of old fridge:	$ 500	
Electric Rate for the Home with the Refrigerator: (make sure this is entered into the Power Meter)	$ 0.095	per kWh

Economic Assumptions Supplied by DOE

Life of the Refrigerator:	15	years
Economic Discount Rate (real, with inflation removed):	3.50%	per year

Results

Annual Energy Use of Existing Refrigerator:		1,292	kWh per year
Annual Energy Use of Replacement Refrigerator:		430	kWh per year
	Energy Savings:	862	kWh per year
Annual Energy Cost Savings:	**$**	**82**	**per year**
Simple Payback:		**6.1**	**years**
Savings-to-Investment Ratio, SIR:		**1.89**	

CERTIFICATE OF INSULATION

DWELLING INFORMATION	CONTRACTOR INFORMATION
ADDRESS OF RESIDENCE: DATE INSULATION WAS INSTALLED:	NAME: ADDRESS:

Area Insulated / Area Identifier (Insert "area-specific" info in space provided)	Square Footage	Existing R Value	Added R Value	Final R Value	Type of Insulation & Method of Installation (Standard or Dense Pack)	Depth	# of Bags
Attic – Area 1							
Attic – Area 2							
Attic – Area 3							
Floor – Area 1							
Floor – Area 2							
Floor – Area 3							
Wall – Area 1							
Wall – Area 2							
Wall – Area 3							
Other							

I, _____ (print name), certify that this residence was insulated in conformance with all applicable codes, standards, regulations, and specifications of the Low-Income Weatherization Assistance Program, as administered by the State of Washington.

_____ AUTHORIZED SIGNATURE

_____ DATE

REVISED 4/03

Washington State Department of Commerce
MATCHMAKERS PROGRAM
Health and Safety Weatherization-Related Repair Policy Exception Form

Weatherization-related repairs are repairs that are necessary to allow for the installation of major weatherization measures or to protect those measures after they are installed. Health and safety repairs are repairs necessary to protect the residents.

Current Matchmakers (MM) program policy limits the use of MM funds for health and safety and weatherization-related repairs to an average of $200 per home weatherized and a maximum of $550 on a single home. An exception to this policy can be obtained when the applicable MM Sponsor consents. This form is to be used by the Sponsor to acknowledge consent by requesting the policy exception. **Exceptions are limited to $2600 average for the combined costs of health and safety and weatherization-related repairs.**

MATCHMAKERS PROGRAM HEALTH & SAFETY AND WEATHERIZATION-RELATED REPAIR POLICY EXCEPTION REQUEST

Regarding use of 2005-07 Matchmakers funds leveraged with match from _____
Matchmakers Sponsor

the MM Sponsor requests that _____ be allowed to use
Weatherizing Agency

up to an average of $ _____ for health and safety and weatherization-related repairs.

Sponsor Representative:

Signature _____
Date

Title _____

cc: Weatherizing Agency

Mail to: Matchmakers Program Manager
Community Services and Housing Division
Dept. of Commerce
P.O. Box 42525
Olympia, WA 98504-2525

Department of Commerce
Innovation is in our nature.

Combustion Safety Test Report

Client	Date				
Address	Technician				

Combustion Appliance Zone (CAZ)		PRE	POST	PRE	POST
1	**CAZ pressure** with reference to (WRT) outside				
2	Outside wind speed				
3	Outside temperature				
4	Designate appliance(s): Appliance name	1:		2:	
	Appliance location	1:		2:	
	Type of combustion **open / closed**	1:		2:	
	Type of draft **natural / induced / forced**	1:		2:	
	Shared venting **yes / no**	1:		2:	
5	Hazardous or unsafe conditions observed?	Y/N	Y/N	Y/N	Y/N
6	Visible signs of vent pipe leaks or damage observed?	Y/N	Y/N	Y/N	Y/N
7	Smell of gas or indication of fuel leak(s) observed?	Y/N	Y/N	Y/N	Y/N

Set up CAZ in Worst Case Depressurization (see tech support doc)		PRE	POST	PRE	POST
8	**CAZ pressure** WRT outdoors. Door is **open / close** (circle one)				
8a	Subtract line #1 (baseline) from line #8 (worst case)				
8b	Record CAZ Depressurization Limit: See Reference Tables				

Start up combustion appliance		PRE	POST	PRE	POST
9	Flame roll-out observed	Y/N	Y/N	Y/N	Y/N
10	The equipment spilled gasses for more than 1 minute	Y/N	Y/N	Y/N	Y/N
11	Did the flame change when the air handler turned on?	Y/N	Y/N	Y/N	Y/N

After 5 minutes of combustion (steady state)		PRE	POST	PRE	POST
12	**Measure ambient CO** in the living space.				
13	**Measure draft pressure** in the combustion appliance vent WRT CAZ				
13a	Record Minimum Acceptable Draft Pressures: See Reference Tables				
14	**Measure CO** in the exhaust gases of the vented appliance				
15	**Measure draft pressure** in the combustion appliance vent WRT CAZ (From line #8, if door is closed-open it. If door is open-close it) Door is **open / close** (circle one)				
16	**Measure heat rise temperature** across heat exchanger				
16a	Record manufacturer's acceptable heat rise range from label				

Fireplace / Wood Stove Zone (FPWSZ)		PRE	POST	PRE	POST
17	**Measure FPWSZ pressure** WRT outside				
	Vent pipe, chimney, or clearance problems observed (note below)	Y/N	Y/N	Y/N	Y/N

Kitchen Stove								Notes
18	**Measure CO in exhaust gases of kitchen stove**							
	Burner 1	Burner 2	Burner 3	Burner 4	Oven	Ambient 1	Ambient 2	

Return house to pretest conditions		PRE	POST	PRE	POST
19	Check box when done. Add any comments or notes below.	☐	☐	☐	☐

Notes:

Combustion Safety Test Report Reference Tables

Table 4: CAZ Depressurization Limits
(Line 8b Combustion Safety Test Report)

Venting Condition	Limit (Pa)
Stand alone natural draft water heater (including outside chimneys)	-2
Natural draft boiler or furnace vented in combination with water heater	-3
Fireplace	-4
Natural draft boiler or furnace with vent damper commonly vented with water heater	-5
Wood stoves and fireplace inserts, including air tight models with outside combustion air	-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
Chimney-top draft inducer; High static pressure flame retention head oil burner; Direct vented appliances; Sealed combustion appliances;	-50

Minimum Acceptable Draft Pressures.
(Line 13a Combustion Safety Test Report)

Temp (F)	Draft (Pa)	Temp (F)	Draft (Pa)	Temp (F)	Draft (Pa)	Temp (F)	Draft (Pa)
≤15	-2.4	35	-1.9	55	-1.4	75	-.9
20	-2.3	40	-1.8	60	-1.3	80	-.8
25	-2.1	45	-1.6	65	-1.1	85	-.6
30	-2.0	50	-1.5	70	-1.0	≥90	-.5

Table 3: Carbon Monoxide Test Action Levels
(Line 14 Combustion Safety Test Report)

CO Test Result*	Retrofit Action
0 – 25 ppm	Proceed with work
26 – 99 ppm	Recommend cleaning of appliance burner
100 - 400 ppm	Weatherization work may not proceed. Service system.
> 400 ppm	Weatherization work may not proceed. Notify owner and occupant in writing. Owner/Agency must correct before proceeding with work.

*CO measurements for undiluted flue gases and range tops

Exception: Carbon monoxide testing of wood burning appliances flue gases is not required.

Notes:

State of Washington, Weatherization Assistance Program

Technical Support Document

Combustion Safety

This document is intended to support in detail the Combustion Safety Test Report. The Combustion Safety Test Report is a tool to document the condition of two (2) appliances and their performance. Each combustion appliance in homes that are weatherized or repaired must be reported pre- and post- on a combustion safety test report. The added columns allow two (2) combustion appliances per form. Each row of the pre- and post- columns must be addressed.

The Combustion Safety Test Report must be filled out in detail for each completed project. You must document in the comments section of the Combustion Safety Test Report any special circumstances or health and safety related concerns that might help someone understand the condition of the home (pre- and post-), as well as the concerns expressed by the occupants, or the agency concerns for the occupants safety at the time testing was performed.

The testing procedure outlined in this document is intended to be the minimum tests needed to understand the condition and performance of an appliance. It is recommended that more in-depth testing be performed where multiple appliances share a chimney, or where other indications of potential problems exist.

Line #1 Measure existing Combustion Appliance Zone (CAZ) pressure (baseline), CAZ With Respect To (WRT)) outside.

Measure the existing CAZ pressure (baseline), house with reference to outside. You will need this measurement when measuring combustion appliance zone worse case and other procedures that are normally low-pressure measurements (-15pa to 15pa).

Line #2 Outdoor wind speed

Using a Dwyer wind gauge, measure and record the outside wind speed if there is noticeable wind at the time of testing. If the wind speed is consistently in excess of 15 mph or gusting to the point of not being able to get an accurate test, document this condition and return at a later date to get accurate test results. If winds in excess of 15 mph do exist, this condition does not preclude performing Section I and Section II of the diagnostic test report. Under these conditions you will have to come back (when there is wind less than 15 mph) to confirm lines #8, 13, 15 and 17. You may find hazardous conditions before you get to line #8, or other problems not related to pressure and draft.

Line #3 Outdoor temperature

Record the outside ambient temperature. You will need this number to determine if there is adequate minimum draft (line #13 &15).

Line #4 Combustion Appliance Zone(CAZ)*, designate appliance

Record what kind of appliance (furnace, hot water heater, parlor stove, fireplace, woodstove, etc.) is in the CAZ. Write it in on the line provided. Also determine what type of appliance it is in terms of direct vent, sealed combustion, induced draft, etc. This will help determine how and where an appliance should be tested later in this procedure.

***Definition:** Combustion appliance zone (CAZ) is the physical area in which the combustion appliance is located or contained by door or access closure. Examples: A closet with a closing door, an attic with a closing access panel between the living space and attic, a living room that contains a fireplace or wood stove and has doors that isolate this area from bedrooms and other rooms. A combustion appliance zone is any area (zone) which can be physically closed off to another part of the home, and that contains a combustion appliance. If the only combustion source is a fireplace or wood stove go to line #17.

Line #5 Is there a hazardous or unsafe condition?

Is there anything in the CAZ that could be considered a health and safety problem? Indoor Air Quality (IAQ), electrical discrepancies, fire hazards, combustibles, or potential testing problems that should be documented. If yes, you must comment with name and date.

Line #6 Are there visible signs of vent pipe leaks or damage?

Are there any problems with the combustion appliance vent pipe, connecting chimney, chimney liner, or vent termination that need repairs or further inspection?

Line #7 Is there the smell of gas or indication of fuel leak

Do you or the client smell any gas? Did you check with a combustible gas detector or with detection fluid? If there is a leak, indicate by marking yes, and contact the local natural gas company or a contractor and document the location of the leak below in the comments section .

Worst-case* set-up test for Combustion Appliance Zone.

*Definition: Worst-case is any condition that puts the appliance being tested in the most hazardous condition through means of house configuration. These configurations such as opening and shutting bedroom, laundry, garage, closet, basement, doors, etc., may occur during normal use of the home. This may be different for different lifestyles and occupants, but the CAZ should be tested in a manner that would address many clients and lifestyles. All reasonable house configurations should be considered.

Worst-Case Set-Up procedure

Prepare house:

1. Close all interior and exterior doors and windows make sure the furnace air handler is on. Turn on all exhaust fans - bathroom, kitchen, clothes dryers (clean out lint filter).*

2. Start at the room furthest from the combustion appliance and perform a smoke test at each interior door to determine whether to leave it open or closed.

    a. Position yourself in or towards the main body of the house.

    b. Open the door slightly (3/4”). If the smoke goes in, leave the door all the way open. If the smoke comes back toward the main body or towards you, close the door.

3. Smoke test the door to the CAZ. If the smoke comes toward the main body or towards you, open the door. If the smoke goes into the CAZ, close the door.

*** EXCEPTION TO STEP (1.)** If the furnace does not have a manual fan switch you may have to turn on all your fans first (smoke the doors) then turn on the furnace. In this case you must do line #13 a second time, going back and smoking the interior doors again to ensure you had the correct setup. If this is the case, and you go back and find that you had a door in the incorrect position (opened or closed), adjust, retest, document the results, and go back through lines #8 through #13.

Always check rooms that contain mechanical exhaust equipment with chemical smoke as a confirming test. Many times the combination of leaky buildings and supply ducts in a room negate a fans negative effect on the CAZ or main body.

Line #8 Measure the CAZ WRT outdoors. Is the CAZ door Open or closed?

Follow worst-case set -up procedure (above) to determine whether to leave open or shut the CAZ room door(s). Please circle whether you left the CAZ door OPEN or CLOSED. Then record what the pressure is in the CAZ WRT outside using line #1, CAZ baseline pressure to have a better understanding of the contribution the mechanical systems are having on the home versus natural pressures (i.e. stack wind etc.).

****Action Level**

Table 4: CAZ Depressurization Limits

Venting Condition	Limit (Pascals)
Stand alone natural draft water heater (including outside chimneys)	-2
Natural draft boiler or furnace vented in combination with water heater	-3
Fireplace	-4
Natural draft boiler or furnace with vent damper commonly vented with water heater	-5
Wood stoves and fireplace inserts, including air tight models with outside combustion air	-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
Chimney-top draft inducer; High static pressure flame retention head oil burner; Direct vented appliances; Sealed combustion appliances;	-50

Line #9 Was there flame roll-out of combustion equipment?

When the (furnace or hot water heater) combustion appliance starts up, does the flame come out of the appliance. When possible, this test should be done with a cold startup. Many times if the chimney or vent pipe is already heated, the appliance will draft, but it may not be able to start a draft in a cold chimney. Also, check cover panels and the area around the burner for burned or charred spots. If you see flame roll out or signs that it may be happening intermittently then circle **YES** and comment in file.

Line #10 Did the equipment spill gases for more than one minute?

Does the (hot water heater, parlor stove, furnace etc.) appliance spill combustion gases for more than a minute? If **YES**, document length of spill time and related conditions in the

comments section. Check all around the draft hood with chemical smoke, as some appliances will spill combustion gases and draft at the same time.

Table 2: Maximum 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

**** Note:** Generally you will find that if an appliance spills combustion gases for more than one (1) minute, this is an indicator that there will be a draft, chimney configuration, or pressure problems detected at some point between lines 13 and 16.

Line #11 Did the flame change in the furnace when the air handler turned on?

Did the flame change when the fan in the furnace turned on? This can indicate a crack in the heat exchanger. If yes, comment in the file and have it checked by HVAC technician.

**** Note:** If you are working on a furnace without a manual fan switch, you may have to shut down the furnace and start it again to observe this condition because you will have a lot going on when the air handler comes on the first time. Checking for flame change may not detect an existing cracked heat exchanger. Other possible indications of a cracked heat exchanger may be soot in the home, the smell of un-burnt gas or oil, elevated CO levels in the appliance exhaust, and elevated CO levels in the living space when the furnace is running. If you encounter any of these conditions, there are other tests for cracked heat exchangers that you may want to identify and have performed by a qualified professional (check with your HVAC contractor or technician). Caution and a full understanding of the operating performance of all the combustion appliances in the home must be considered when attributing soot, un-burnt gas smells, and elevated CO levels to a cracked heat exchanger.

Line #12 After 5 minutes measure the CO in the ambient air in the living space

Zero the monoxer outside before proceeding. After the combustion appliance has been running for 5 minutes, test the ambient air of the living room or upstairs hallway (if it is a two story) for CO with your monoxer. Record any CO in the living space above zero (0) in parts per million (PPM).

****Action level:** If the ambient CO in the home is above 9 PPM (maximum allowable 9 PPM) and attributable to any combustion appliance in the home, then action must be taken to

mitigate the source of the CO before weatherization or repair work starts, or the ambient CO level must be monitored and the problem(s) resolved as part of the work specified. **No home shall be left with ambient CO greater than 9 PPM (attributable to existing combustion appliances) after 5 minutes of run time for an appliance.**

Line #13 Measure the draft pressure in the vent of the combustion appliance Test the combustion appliance vent WRT CAZ

With your digital manometer, measure the draft pressure in the combustion appliance vent (preferably 18" up the vent pipe from the appliance) with reference to the room and record the number in pascals. Be sure to indicate whether negative or positive. Always check your draft pressure measurements with chemical smoke as a confirming test.

If the appliance does not have adequate draft under worst-case conditions, you can start evaluating the problem by turning off all fans and see if the appliance drafts under any or best case condition.

Refer back to line# 2 and check the wind speed, if the wind speed is consistently in excess of 15 mph or gusting to the point of not being able to get an accurate test, document this condition and return at a later date to get accurate test results. If there is marginal draft or a condition that may cause back drafting or spillage, inform the occupants of this situation and make the appropriate recommendations for use of the appliance until additional testing or repairs can be made. Document the condition in the comments section.

Line #13a Minimum Acceptable Draft Pressure: Calculate the minimum acceptable draft pressure using the ranges in Table 1 and record limit in the box.

Table 1: Minimum Acceptable Draft Test Action Levels

Outside Temperature (degree F)	Draft Pressure Standard (Pa)
<10	-2.5
10-90	(Outside temp / 40) – 2.75*
>90	-0.5

*Calculation is as follows: Divide the outside temp by 40, then subtract 2.75 from this value. The result is the minimum acceptable draft.

Line #14 Measure the CO in the exhaust gases of the vented appliance

With your monoxer, take a measurement in the undiluted flue gases of the combustion appliance. Where practical, this test should be measured in the flue ports of the appliance. If you cannot measure at the appliance, measure at its termination point realizing this is a diluted sample but better than not testing at all.

Table 3: Carbon Monoxide Test Action Levels

CO Test Result*	Retrofit Action
0 – 25 PPM	Proceed with work
26 – 99 PPM	Recommend cleaning of appliance burner
100 - 400 PPM	Weatherization work may not proceed until the system is serviced and the problem is corrected
> 400 PPM	Notify owner and occupant in writing. Work may not proceed until the problem is corrected, either by Local Agency or owner.

**CO measurements for undiluted flue gases and range tops*

Exception: Carbon monoxide testing of wood burning appliances flue gases is not required.

Line #15 If the door of CAZ is closed - open it. If the door is open – close it. Open/closed. Combustion Appliance vent WRT CAZ.

If in the beginning of your worst-case set-up test, you left the CAZ door closed, then open it. If left open in the beginning, then close it. Then record the draft pressure combustion appliance vent WRT CAZ as in line #13. This is a verifying test. This test double checks your measurements and helps confirm the results. Always check your draft pressure measurements with chemical smoke as a confirming test.

****Action Level:** *See action level Table 4*

Line #16 Heat Rises: Measure temperature across heat exchanger: Heat rise = supply plenum temp - return plenum temp

To get the "heat rise", measure the temperature in the supply air plenum and return air plenum. Subtracting the return plenum temperature from the supply air temperature equals the "heat rise". Take these temperature measurements in the plenums as close to the furnace as possible. Record in degrees Fahrenheit. The manufacturer's acceptable range for heat rise for the unit is often on the nameplate of the furnace.

****Action level:** If the heat rise (the difference between return air temp at the plenum and supply air temp at the plenum) is outside the manufacturer's acceptable range the system fails and there must be a referral made for further analysis by a furnace technician. If the heating unit has not been serviced within the last twelve months, a furnace clean and tune is recommended.

Exception: If manufacturer's acceptable heat rise range is unavailable, the default acceptable heat rise range is greater than 40° and less than 70° Fahrenheit.

Line #17 Fireplace/wood stove zone worst case test: FPWSZ zone WRT outdoors

Record the pressure of the zone that the fireplace or wood stove occupies. See *Worst-Case Set-Up Procedure* between lines #7 and #8, this procedure is the same for fireplace/wood-stove zones. Also document any vent pipe, chimney, or clearance problems with the wood-burning appliance in the comments section.

****Action Level:** *See action level Table 4*

Line #18 Measure the CO in exhaust gases of kitchen stove: Range top

burner 1
burner 2
burner 3
burner 4

Measure the CO in the exhaust gases (after 5 minutes of burn time) of the range top burners with your Monoxer. Start with the left front burner (burner #1) and move in a clockwise direction. Record the CO in PPM for each burner, 18" above each burner.

oven

Then take a reading in the undiluted flue gases of the oven (after 5 minutes of burn time) and record in PPM. Look in the oven for anything that may melt or catch fire before performing the test. Make sure the oven burner is actually on during the test.

ambient

Monitor ambient CO levels upon entering the combustion appliance zone and during the test period for all appliances. If ambient levels exceed 9 PPM at any time, turn off the appliance immediately and make appropriate repairs. The maximum allowable ambient CO level in a dwelling where weatherization work has been completed is 9 PPM.

****Action Level:** *See action level Table 3*

If this level cannot be achieved, house-tightening measures cannot proceed unless a ventilation strategy is implemented that keeps ambient CO levels at 5 PPM or less during operation of the appliance. Use caution when installing ventilation systems that will create negative house pressures that could potentially cause back drafting of other combustion appliance.

Line #19 Return house to pre-test condition, circle DONE when complete

Comments: Provide comments in detail when you encounter unsafe conditions. Also document procedures or repairs that were undertaken to resolve or prevent any unsafe conditions. Use both sides of the form or additional paper as needed.

Abbreviations:

CO: Carbon monoxide

CA: Combustion appliance

CAZ: Combustion appliance zone

FPWSZ: Fireplace wood stove zone

HDL: House Depressurization Limit (a standard adopted by Commerce)

HVAC: Heating, ventilation, air conditioning

IAQ: Indoor Air Quality

PPM: Parts per million

Pa: Pascals

WRT: With reference to

Terms:

Air handler – A steel cabinet containing a blower with cooling and/or heating coils connected to ducts, which transport indoor air to and from the air handler.

Backdrafting – Continuous spillage of combustion gases from a combustion appliance.

Bimetal element – A metal spring, lever, or disc made of two dissimilar metals that expand and contract at different rates as the temperature around them changes. This movement operates a switch in the control circuit of a heating or cooling device.

Burner – A device that facilitates the burning of a fossil fuel like gas or oil.

Carbon monoxide – An odorless and poisonous gas produced by incomplete combustion.

Combustion air – Air that chemically combines with a fuel during combustion to produce heat and flue gases, mainly carbon dioxide and water vapor.

Combustion analyzer – A device used to measure steady-state efficiency of combustion heating units.

Depressurize – Cause to have a lower pressure or vacuum with respect to a reference of a higher pressure.

Dilution air – Air that enters through the dilution device --- an opening where the chimney joins to an atmospheric-draft combustion appliance.

Dilution device – A draft diverter or barometric draft control on an atmospheric-draft combustion appliance.

Draft diverter – A device located in gas appliance chimneys that moderates draft and diverts down drafts that could extinguish the pilot or interfere with combustion.

Fan control – A bimetal thermostat that turns the furnace blower on and off as it senses the presence of heat.

Flue – a channel for combustion gases.

Heat anticipator – A very small electric heater in a thermostat that causes the thermostat to turn off before room temperature reaches the thermostat setting, so that the house does not overheat from heat remaining in the furnace and ducts after the burner shuts off.

Heat rise – The number of degrees of temperature increase that air is heated as it is blown over the heat exchanger. Heat rise equals supply temperature minus return temperature.

High limit – A bimetal thermostat that turns the heating element of a furnace off if it senses a dangerously high temperature.

House pressure – The difference in pressure between the indoors and outdoors measured by a manometer.

Inch of water – Small air pressure differences caused by wind, blower doors, furnace fans, and chimneys are measured in inches of water (in.-H_20) in the American measurement system.

Input rating – The rate at which an energy-using device consumes electricity or fossil fuel.

Intermittent ignition device – A device that lights the pilot light on a gas appliance when the control system calls for heat thus saving the energy wasted by a standing pilot.

Make-up air – Air supplied to a space to replace exhausted air.

Manometer –Measuring device for small gas pressures

Mortar – A mixture of sand, water, and cement used to bond bricks, stones, or blocks together.

Net free area – The area of a vent after that area has been adjusted for insect screen, louvers, and weather coverings. The free area is always less than the actual area.

Open-combustion heater – A heating device that takes its combustion air from the surrounding room air.

Oxygen depletion sensor (ODS) – A safety device for unvented combustion heaters that shuts gas off when oxygen is depleted.

Pascal – A unit of measurement of air pressure. (See Inch of water.)

Plenum – The piece of ductwork that connects the air handler to the main supply duct.

Pressure – A force encouraging movement by virtue of a difference in some condition between two areas.

Return air – Air circulating back to the furnace from the house, to be heated by the furnace and supplied to the rooms.

Room heater – A heater located within a room and used to heat that room.

Sealed-combustion heater – A heater that draws combustion air from outdoors and has a sealed exhaust system.

Space heating – Heating the living spaces of the home with a room heater or central heating system.

Spillage – Temporary flow of combustion gases from a dilution device.

Stack effect – The draft established in a building from air infiltrating low and ex filtrating high.

Steady-state efficiency – The efficiency of a heating appliance, after an initial start-up period, that measures how much heat crosses the heat exchanger. A combustion analyzer measures the steady-state efficiency.

Supply air – Air that has been heated or cooled and is then moved through the ducts and out the supply registers of a home.

Vent connector – The vent pipe carrying combustion gases from the appliance to the chimney.

Vent damper – An automatic damper powered by heat or electricity that closes the chimney while a heating device is off.

Venting – The removal of combustion gases by a chimney.

Worst-case depressurization test –A safety test, performed by specific procedures, designed to assess the probability of chimney back drafting.

WRT – "With respect to" used to show that the air pressures between two areas are being compared.

Zone – A room or portion of a building separated from other rooms by an air barrier----not usually an effective air barrier.

Weatherization-Related Repairs

The following are examples of weatherization-related repairs or modifications:

- Electrical safety inspection and down fusing residence.
- Exterminate pests, insects, or rodents from attics, eaves, walls, underfloors, crawl spaces, and basements.
- Fire rated cover required for exposed insulation.
- Install or repair bathroom, kitchen, or laundry exhaust and duct system.
- Lumber used to repair or replace dry rot in underfloor, frame windows, and doors prior to caulking or weather-stripping.
- Move storage items if homeowner is unable to do so.
- Patch or repair roof
- Remove asbestos in order to insulate.
- Remove fire hazards.
- Repair chimney.
- Repair leaking water pipes.
- Repair unsafe electrical wiring.
- Add vents.
- Add a ground cover.
- Cut access holes.
- Extraordinary suspension of underfloor insulation.
- Insulate water pipes in the attic or underfloor areas.
- Replace rot in critical areas.
- Repairs not justified by diagnostic tests, but are necessary to insulate.

Weatherization Deferral Form

Project Number Audit Date

Client Name

Address

City & Zip Code

Home or Message phone Work Phone

Deferral of weatherization work on the above home is based on the following conditions:

Recommended measures for remedying the existing conditions are as follows:

I certify that the above information is complete and accurate.

_____

Signature of Agency Representative Date

Client Information: I understand weatherization work has been deferred on my home for the above reasons. I understand the conditions under which weatherization work may continue. I understand I must contact the weatherization agency within 12 months of original application date if conditions have changed and that these changes may allow work to resume. I understand if I contact the weatherization agency more than 12 months after the original application date I need to reapply for weatherization services.

_____

Client Signature Date

MOLD Assessment and Release Form

Client Label

Mold can be a problem in any home where there is an excessive amount of moisture or humidity present. An assessment of your home included a visual check for mold. This is not a mold inspection and the person making this assessment is not a certified mold inspector. Mold testing and identification of specific molds is beyond the scope of this program.

During the weatherization assessment of your dwelling on _____date, our project coordinator visually inspected the following rooms in your home:

Living room	☐ mold not visibly present	☐ mold visibly present
Kitchen	☐ mold not visibly present	☐ mold visibly present
Bathroom(s)	☐ mold not visibly present	☐ mold visibly present
Bedroom(s)	☐ mold not visibly present	☐ mold visibly present
Water heater closet	☐ mold not visibly present	☐ mold visibly present
Attic	☐ mold not visibly present	☐ mold visibly present
Crawlspace/Basement	☐ mold not visibly present	☐ mold visibly present

Other location _____

Estimate in square feet of existing mold_____

The U.S. Department of Energy generally does not allow Weatherization agencies to mitigate mold problems, however, some actions associated with a cost effective energy saving measure may be taken to reduce moisture problems. Opportunity Council plans to install the following measures that may help resolve existing moisture problems. The work proposed should not promote new mold growth.

1._____

2._____

3._____

Mold/Moisture disclaimer: By signing below, I acknowledge I have received information concerning moisture and mold conditions in my home prior to Weatherization work being done and I will take steps to reduce excessive moisture.

Name of Applicant: _____

_____ _____

Signature of Applicant Date

Name of Landlord: _____

_____ _____

Signature of Opportunity Council Staff Date

White copy–agency file, yellow copy–applicant, pink copy-landlord

Pollution Source Survey

Date: _____
Assesor: _____

High-Risk Household Members

1) Family members less than 4 or more than 60 yrs old Yes ___ No ___
2) Any household members with asthma, respiratory problems or flu like symptoms? Yes ___ No ___
3) Is anyone living in the house pregnant? Yes ___ No ___

Source of Contaminants — Comments:

How old is the house? _____

4) Paint peeling or flaking on floors, walls, ceilins? Yes ___ No ___ _____
5) Has carpet ever been water soaked? Yes ___ No ___ _____
6) Is carpet covering a concrete floor? Yes ___ No ___ _____
7) Any unvented combustion appliances in the home? Yes ___ No ___ _____
8) Do household members smoke inside the home? Yes ___ No ___ _____
9) Do cars park in attached garage? Yes ___ No ___ _____
10) Seasonal water pooling in crawl space? Yes ___ No ___ _____
11) Plumbing leaks in crawlspace? Yes ___ No ___ _____
12) Noticeable leaks or water staining on ceilings or walls Yes ___ No ___ _____
13) Indoor pets? Yes ___ No ___ _____
14) Paints, solvents, thinners, pesticides stored in home? Yes ___ No ___ _____
15) House keeping problems? Cluttter / Unsanitary Yes ___ No ___ _____
16) Has this house been tested for Radon? Yes ___ No ___ _____
17) Are Insecticides or rodenticides used in home or duct Yes ___ No ___ _____
18) Other _____

Strengths of Indoor Contaminants — Comments

19) Unusual odors in the house? Yes ___ No ___ _____
20) Is moisture noticeable on windows? Yes ___ No ___ _____
21) Visible mold anywhere in house? Yes ___ No ___ _____
22) House temp. unusually warm or cold Yes ___ No ___ _____
23) Humidity levels unusually high? Yes ___ No ___ _____

Department of Commerce
Innovation is in our nature.

Diagnostic Test Report

Client Name:	Date		
Address:	Technician		

		Pre	Post
1	Calculate volume of conditioned space		
2	BAS based on number of occupants (#occ__ x 15cfm x __n)		
3	BAS based on number of bedrooms (#bedrooms__ x 15cfm + 15 x __n)		
4	BAS based on volume of conditioned space (volume__ x 0.35 x __n/60)		
5	Calculated BAS = highest number of lines 2,3, and 4		
6	Primary heat source fuel type (example: nat. gas, elec., propane, wood)		
7	Secondary heat source fuel type		
8	Pollution Source Survey completed	Y/N	
9	Combustion Safety Test(s) of all combustion appliance(s) completed	Y/N	Y/N
10	Electric furnace heat rise test (supply°F–return°F) acceptable range:>40°to<70°		
11	Wind speed MPH		
12	Outside temperature, record in degrees Fahrenheit		
13	Blower door location		
14	Baseline without blower door on in pa (stack)		
15	Blower door conf. O=open fan A = ring A B = ring B LF=low flo ring	O A B	O A B
16	Total CFM50		

17	**Zonal Pressures** all test With Reference To (WRT) House					☐ N/A: *explain in notes*
	PRE	**POST**	Other Zone: (write below)	**PRE**	**POST**	Notes:
Attic						
Crawl						
Garage						

18	**Location of existing ducts** A=inside B=outside C=inside/outside	A B C	A B C

19	**Pressure Pan Tests** (clockwise from front door, house WRT duct)						☐ N/A: *explain in notes*	
PRE	**POST**	**PRE**	**POST**	**PRE**	**POST**	**PRE**	**POST**
1		5		9		13	
2		6		10		14	
3		7		11		15	
4		8		12		16	

20	**HVAC Fan and Duct Effect on Building Envelope**: HVAC fan only	☐ N/A: *explain in notes*	
	Dominant Duct Leak Test: Main body WRT outside, all interior doors open		
	All Doors Closed Effect Test: Main body WRT outside, all interior doors closed		

21	**House Pressure Balance**: HVAC fan only						☐ N/A: *explain in notes*	
	Room pressure WRT main body. Doors closed. Clockwise direction.							
Room								
Pressure								
Repair	☐	☐	☐	☐	☐		☐	☐

22	**Return house to pre test condition**.	**PRE**	**POST**
	Check box when done.	☐ Done	☐ Done

Notes:

Diagnostic Test Report Quick Reference

Building Airflow Standard (BAS cfm50)

Volume of conditioned space= Square feet of conditioned space X average ceiling height

Default n=20. To determine a more accurate "n" refer to the procedure outlined in Residential Energy by John Krigger, 2nd edition pages 73 and 252

Based on Occupants: (#of occupants) X 15 X n

Based on Bedrooms: (# of bedrooms) X 15 + 15 X n

Based on Volume:(volume of space) X 0.35 X n/60

Pressure Pan Tests

In typical mobile home duct configurations, pre pressure pan tests help locate areas of significant leakage or disconnected duct work. After belly is filled with insulation, post pressure pan tests results may not be useful.

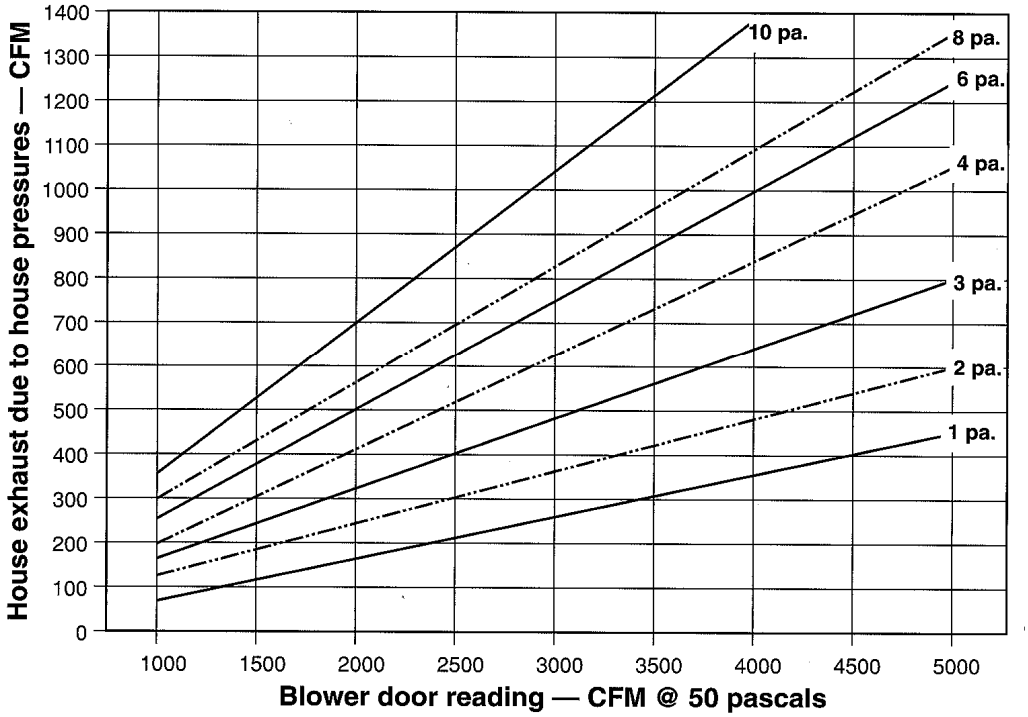
In site built homes with supply and return duct systems enclosed entirely within the thermal and pressure boundaries, pressure pan tests are not required.

Dominant Duct Leak Test

In typical mobile home duct configurations, dominant duct leak tests are especially useful. You can quantify the amount of duct leakage by using the Air Leakage Chart (aka Tooley Chart) if the return is isolated in the conditioned space and the supplies are isolated in the belly. No more than 100CFM of total supply duct leakage is recommended.

In site built homes with supply and return duct systems enclosed entirely within the thermal and pressure boundaries, dominant duct leak tests are not required.

Air Leakage Chart



Building Airflow Standard (BAS)

The BAS is based on ASHRAE ventilation standard 62-89 that requires a minimum of 15 cubic feet per minute (cfm) per person or 0.35 air changes per hour based on the volume of the home. The BAS is calculated using the three formulas listed below and is expressed as a BAS cfm50.

The calculated BAS cfm50 is compared with a blower door measured cfm50 of the house to determine whether mechanical ventilation is required.

The contractor shall calculate the Building Airflow Standard (BAS) using each of the three formulas listed below and select the highest BAS calculated.

Note: Listed below are 3 different names for the same airflow standard.

a. The Building Airflow Standard (BAS)
b. The Building Tightness Limit (BTL)
c. The Minimum Ventilation Level (MVL)

Formula #1

15cfm x ____# of occupants x $\underline{n^1}$ = _____ cfm50 BAS

This is one of three formulas for calculating the Minimum Ventilation Level (MVL) or Building Tightness Limit (BTL) Building Airflow Standard (BAS) for a given home.

Formula #2

15cfm x number of bedrooms___ +15 x $\underline{n^1}$ = ____cfm50 BAS

This equation is based on potential occupants for a given dwelling. This calculation takes into consideration 1 or 2 people living in a 4 bedroom that is likely to be rented or sold to a family much larger. Also a home with a small square footage or volume may have few occupants but the potential occupancy (may have many small bedrooms) may be much higher.

Formula #3

Estimated volume of conditioned living space x .35 x $\underline{n^1}$ / 60 = _____cfm50 BAS

This equation is based solely on the volume of the conditioned living space. Measurements may be the actual interior living space including interior walls or the rough outside measurements of the conditioned living space (not including attics, garages or crawlspaces etc.) subtracting 10% for the exterior walls.

Building Airflow Standard = highest number calculated using formulas 1, 2 and 3

Record the highest cfm50 BAS calculated using formulas 1, 2 or 3.

The number recorded here should be the minimum allowable cfm50 of the conditioned living space unless there are documented factors which result in decision that would indicate a higher or lower BAS be recommended (see line #14 on diagnostic test report).

1. The "n" in each of the formulas above is a conversion factor used to estimate natural air changes from the measured blower door readings, the default number for "n" is 20. To determine a more accurate "n" follow the procedure outlined in Residential Energy by John Krigger, 2nd edition pages 73 and 252

ASTM E 84

Standard test method for surface burning characteristics of building materials.

The flame spread Index and Smoke Developed Index values obtained by the ASTM E 84 test are used by code officials and regulatory agencies in the acceptance of interior finish materials for various applications. The most widely accepted classification system is described in the National Fire Protection Association publication NFPA 101 *Life Safety Code*

1. 2006 International Building Code

    a. Section 803 Wall and Ceiling Finishes, Paragraph 803.1 General states, “Interior wall and ceiling finishes shall be classified in accordance with ASTM E- 84.Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes.

        i. Class A: Flame Spread 0-25; smoke-developed 0-450

        ii. Class B: Flame Spread 26-75; smoke-developed 0-450

        iii. Class C: Flame Spread 76-200; smoke-developed 0-450

        Class A, B, and C correspond to type I, II, and III respectively in other codes such as SBCCI, BOCA, ICBO. They do not preclude a material being otherwise classified by the authority of jurisdiction.

2. NFPA 101®, Life Safety Code®

    a. Chapter 10 Interior Finish, Contents, and Furnishings, Paragraph 10.2.3 Interior Wall or Ceiling Finish Testing and Classification states, “Interior wall or ceiling finish that is required elsewhere in this Code to be Class A, Class B, or Class C shall be classified based on test results from NFPA 255, ASTM E-84, or UL 723.”

Left intentionally blank

Homeowner Name and Address	Agency Name and Address
Phone Number ( )	Phone Number ( )
Job Number	Auditor/Inspector Name

WORK ORDER _____

_____is hereby authorized to complete a clean and tune as prescribed below

Work Order and Procedure for Cleaning and Tuning (Electric) Furnaces

I.CLEAN

A.Air Handling

- ☐ 1. Clean and vacuum heat exchanger if accessible.
- ☐ 2. Clean and vacuum blower, return cabinet, and filter rack so that they are free of dirt, grease, and any foreign matter.
- ☐ 3. Clean and vacuum all supply and return registers and immediate duct openings.
- ☐ 4. Inspect filter. If permanent type, clean as per manufacturer's recommendations. If disposable type, replace with a new filter.
  Filter size: _____ x _____ x _____

II.TUNE

B.Air Handling

- ☐ 1. Check blower and motor bearings. Lubricate as needed.
- ☐ 2. Check belt condition (replace if cracked or worn) and adjust for proper tension.
- ☐ 3. Measure Heat Rise and Adjust blower speed to match manufacturers recommended heat rise.
- ☐ 4. Set fan switch (if possible) so that blower comes on at 110 degrees and goes off at 100 degrees. Set limit no higher than 240 degrees if limit is adjustable.
- ☐ 5. Balance supply distribution for individual homeowners comfort.

CONTRACTOR CERTIFICATION

Are all sequencers operating as designed? yes no

Temperature Rise_____ Signed_____

COMMENTS: _____

_____

AUDITOR/INSPECTOR VERIFICATION

Temperature Rise_____ Signed_____

COMMENTS: _____

_____

_____

Homeowner Name and Address	Agency Name and Address
Phone Number ( )	Phone Number ( )
Job Number	Auditor/Inspector Name

WORK ORDER _____

_____ is hereby authorized to complete a clean and tune as prescribed below.

Work Order and Procedure for Cleaning and Tuning (Gas) Furnaces

I.CLEAN

A. Combustion Area

- ☐ 1. Brush down all dirt, soot and rust from heat exchanger sections.
- ☐ 2. Brush down and vacuum all flue passageways within the furnace.
- ☐ 3. Remove ribbon burners or burner tubes and brush down to remove dirt, soot, loose rust and clean all flame ports. Inspect for cracks in tubes.
- ☐ 4. Clean gas orifices and assure proper size.
- ☐ 5. Brush down and vacuum remainder of combustion chamber so that it is free of dirt, soot and loose dust.
- ☐ 6. Clean pilot orifices and test thermocouple.

B. Flue

- ☐ 1. Inspect flue pipe from furnace to chimney for rust, weak spots and leaks.
- ☐ 2. Clean and vacuum flue pipe and reinstall in a secure manner.

C. Air Handling

- ☐ 1. Clean and vacuum heat exchanger if accessible.
- ☐ 2. Clean and vacuum blower, return cabinet, and filter rack so that they are free of dirt, grease, and any foreign matter.
- ☐ 3. Clean and vacuum all supply and return registers and immediate duct openings.
- ☐ 4. Inspect filter. If permanent type, clean as per manufacturer's recommendations. If disposable type, replace with a new filter.
  Filter size: _____ x _____ x _____

COMMENTS: _____

_____

II.TUNE

A.Combustion

- ☐ 1. Adjust gas output to 3.5" natural or 10.5" L.P.W.C. in the manifold and then clock meter (if possible) to assure the input is within 2% of rated input. NOTE: If gas pressure is correct, and clocked input is more than 2% lower than rated input, check orifices for proper size unless derating is desired. If furnace is over firing and gas pressure is correct, then change to lower orifice size.
- ☐ 2. Adjust primary air shutter to obtain highest CO2 or lowest O2 in the flue (before diverter) without making CO and still maintaining a steady blue flame with slight yellow tips. There must not be any lifting, floating, or jumping flames, or adjust primary air shutter to obtain best flame with lowest possible stack temp without making CO.
- ☐ 3. Adjust pilot flame just high enough to activate the thermocouple and ignite burner without delay.

- ☐ 4. Furnaces with electronic pilot should ignite without delay.
- ☐ 5. Check igniter to assure that it will lock out after first or second attempt to ignite pilot (LP only).
- ☐ 6. Measure amperage of the gas valve and any other low voltage equipment on the circuit and set thermostat heat anticipator to match.
- ☐ 7. Calibrate thermostat and thermostat thermometer to within 1 degree at 72 degree setting.

B. Air Handling

- ☐ 1. Check blower and motor bearings. Lubricate as needed.
- ☐ 2. Check belt condition (replace if cracked or worn) and adjust for proper tension.
- ☐ 3. If stack temperature is above 450 degrees net, increase blower speed to deliver more heat and lower stack temperature. NOTE: Stack temperatures should not be below 350 degrees net. If so, decrease blower speed slightly (NOTE: This may not work on all furnaces) or adjust blower to obtain greatest rise at the supply plenum.
- ☐ 4. Set fan switch (if possible) so that blower comes on at 110 degrees and goes off at 100 degrees. Set limit at no higher than 240 degrees if limit is adjustable.
- ☐ 5. Balance supply distribution for individual homeowners comfort.

COMMENTS: _____
_____

CONTRACTOR CERTIFICATION

Final Stack Temp_____ CO2 or O2_____

Clocked Input (Where Applicable)_____ CO_____ PPM

Anticipator Setting_____ SSE_____ %

Temperature Rise_____ Signed_____

COMMENTS: _____
_____

AUDITOR/INSPECTOR VERIFICATION

Final Stack Temp_____ CO2 or O2_____

Clocked Input (Where Applicable)_____ CO_____ PPM

Anticipator Setting_____ SSE_____ %

Temperature Rise_____ Signed_____

COMMENTS: _____
_____

Homeowner Name and Address	Agency Name and Address
Phone Number ( )	Phone Number ( )
Job Number	Auditor/Inspector Name

WORK ORDER _____

_____ is hereby authorized to complete a clean and tune as prescribed below.

Work Order and Procedure for Cleaning and Tuning (Oil) Furnaces

I. CLEAN

A. Combustion Area

- ☐ 1. Brush down all dirt, soot and rust from heat exchanger sections.
- ☐ 2. Brush down and vacuum all flue passageways within the furnace.
- ☐ 3. Remove draw assembly clean and align ignition electrodes..
- ☐ 4. Clean blast tube and flame head.
- ☐ 5. Replace nozzle with same size or lower size if derating is possible or desirable.
- ☐ 6. Brush down and vacuum remainder of combustion chamber so that it is free of dirt, soot and loose rust.
- ☐ 7. Replace oil line filter cartridge.

B. Flue

- ☐ 1. Inspect flue pipe from furnace to chimney for rust, weak spots and leaks.
- ☐ 2. Clean and vacuum flue pipe and reinstall in a secure manner.
- ☐ 3. Clean and check barometric damper for proper operation.

C. Air Handling

- ☐ 1. Clean and vacuum heat exchanger if accessible.
- ☐ 2. Clean and vacuum blower, return cabinet, and filter rack so that they are free of dirt, grease, and any foreign matter.
- ☐ 3. Clean and vacuum all supply and return registers and immediate duct openings.
- ☐ 4. Inspect filter. If permanent type, clean as per manufacturer's recommendations. If disposable type, replace with a new filter.

COMMENTS: _____

_____

_____

_____

II.TUNE

A. Combustion

- ☐ 1. Seal all joints, cracks and openings that would allow air to infiltrate into the combustion area of the furnace.
- ☐ 2. Adjust barometric damper so that a reading of .02-.09" W.C. at the breech is obtained.
- ☐ 3. Adjust primary air shutter to obtain highest CO2 the flue (before barometric damper) with a smoke of 0 to 2 while still maintaining a steady flame. (0-1 on the flame retention burners)
- ☐ 4. Measure amperage of primary control and set thermostat heat anticipator to match.
- ☐ 5. Calibrate thermostat thermometer to within 1 degree at 72 degree setting.

B. Air Handling

- ☐ 1. Check blower and motor bearings. Lubricate as needed.

- ☐ 2. Check belt condition (replace if cracked or worn) and adjust for proper tension.
- ☐ 3. If stack temperature is above 550 degrees, increase blower speed to deliver more heat and lower stack temperature. NOTE: Stack temperatures should not be below 350 degrees net. If so, decrease blower speed slightly (NOTE: This may not work on all furnaces) or adjust blower to obtain greatest rise at the supply plenum.
- ☐ 4. Set fan switch (if possible) so that blower comes on at 120 degrees and goes off at 100 degrees. Set limit at no higher than 240 degrees if limit is adjustable.
- ☐ 5. Test fan and limit control for proper operation.
- ☐ 6. Adjust supply register on plenum (if so equipped) to supply between 100 and 125 CFM.
- ☐ 7. Balance supply distribution for individual homeowners comfort.

COMMENTS: _____
_____
_____
_____

CONTRACTOR CERTIFICATION

I certify that the work specified above (see items checked in Clean and Tune sections) has been completed and that all requirements have been met.

A post-clean and tune efficiency rating of _____% has been achieved.

Net Stack Temp _____ CO2 _____ or O2 _____ Smoke _____

Signed_____

COMMENTS: _____
_____
_____
_____

AUDITOR/INSPECTOR VERIFICATION

I certify that the work specified above (see items checked in Clean and Tune sections) has been completed and that all requirements have been met.

A post-clean and tune efficiency rating of _____% has been achieved.

Net Stack Temp _____ CO2 _____ or O2 _____ Smoke _____

Signed

COMMENTS: _____
_____
_____
_____

Homeowner Name and Address	Agency Name and Address
Phone Number ( )	Phone Number ( )
Job Number	Auditor/Inspector Name

WORK ORDER _____

_____ is hereby authorized to complete a clean and tune as prescribed below.

Work Order and Procedure for Oil Retrofit

I.CLEAN

A. Combustion Area

- ☐ 1. Remove existing burner unit.
- ☐ 2. Brush down all dirt, soot and rust from heat exchanger sections.
- ☐ 3. Brush down and vacuum all flue passageways within the boiler or fireplace.
- ☐ 4. Brush down and vacuum remainder of combustion chamber so that it is free of dirt, soot and loose rust.

B. Flue

- ☐ 1. Inspect flue pipe from furnace to chimney for rust, weak spots and leaks.
- ☐ 2. Clean and vacuum flue pipe and reinstall in a secure manner. NOTE: Depending on the size of the original flue pipe, it might be desirable to install a new flue pipe of smaller diameter.
- ☐ 3. Inspect, repair and/or replace barometric damper to operate as designed..

C. Air Sealing

- ☐ 1. Seal all joints and seams that would allow air from the room or surrounding area to enter any part of the combustion side of the heating unit.
- ☐ 2. Seal any and all doors or access covers between the combustion areas and the outside of the heating unit.

D. Distribution (Boilers)

- ☐ 1. Inspect and test pressure relief valve.
- ☐ 2. Inspect circulator pump for safe and effective operation paying close attention to couplings and motor condition.
- ☐ 3. Purge expansion tank.
- ☐ 4. Check condition of water. If it is rusty or has a high level of sludge, then drain, flush and refill the system adding proper treatment.
- ☐ 5. Check operation of radiator valves.

OR

D. Distribution (Air Furnaces)

- ☐ 1. Clean and vacuum blower, return cabinet, and filter rack so that they are free of dirt, grease, and any foreign matter.
- ☐ 2. Clean out (if needed) supply and return registers and grilles.
- ☐ 3. Seal up any large openings or damage to duct work.

COMMENTS: _____

_____

_____

_____

II.INSTALLATION AND TUNING

A. Installation

☐ 1. Install a power oil flame retention burner, which is capable of hot gas recirculation.
☐ 2. Seal around blast tube, flange and adaptor plate. NOTE: Pay close attention to resizing new burner for correct post weatherization heat loss.

B. Combustion

☐ 1. Minimum S.S.E. of 80%.
☐ 2. Adjust primary air shutter to obtain a minimum CO2 of 11%, but not higher than 12.5%, or O2 lowest not more than 7% in the flue without making smoke. NOTE: Net stack temp must not be less than 375 degrees F.
☐ 3. Measure amperage of primary control combined with any other load that may be on the low voltage control circuit and set thermostat heat anticipator to match.
☐ 4. Calibrate thermostat and thermostat thermometer to within 1 degree at 72 degree setting.

C. Distribution Boilers

☐ 1. Bleed all radiators to insure no air is in the system on hot water systems.
☐ 2. Lubricate circulator pump as needed.
☐ 3. Check operation of zone control valves if any. Lubricate as needed.
☐ 4. Check each radiator for output.

D. Air Handling

☐ 1. Check blower and motor bearings. Lubricate as needed.
☐ 2. Check belt condition (replace if cracked or worn) and adjust for proper tension.
☐ 3. If stack temperature is above 450 degrees net, increase blower speed to deliver more heat and lower stack temperature. NOTE: Stack temperatures should not be below 350 degrees net. If so, decrease blower speed slightly (NOTE: This may not work on all furnaces) or adjust blower to obtain greatest temp rise at the supply plenum.
☐ 4. Set fan switch (if possible) so that blower comes on at 120 degrees and goes off at 100 degrees. Set limit at no higher than 240 degrees if limit is adjustable.
☐ 5. Balance supply distribution for individual homeowners comfort.

COMMENTS: _____
_____

CONTRACTOR CERTIFICATION

Final Stack Temp _____ (Before Barometer Damper) Anticipator Setting
CO2 _____ or O2 Smoke _____Draft cy/c
SSE _____

Signed_____

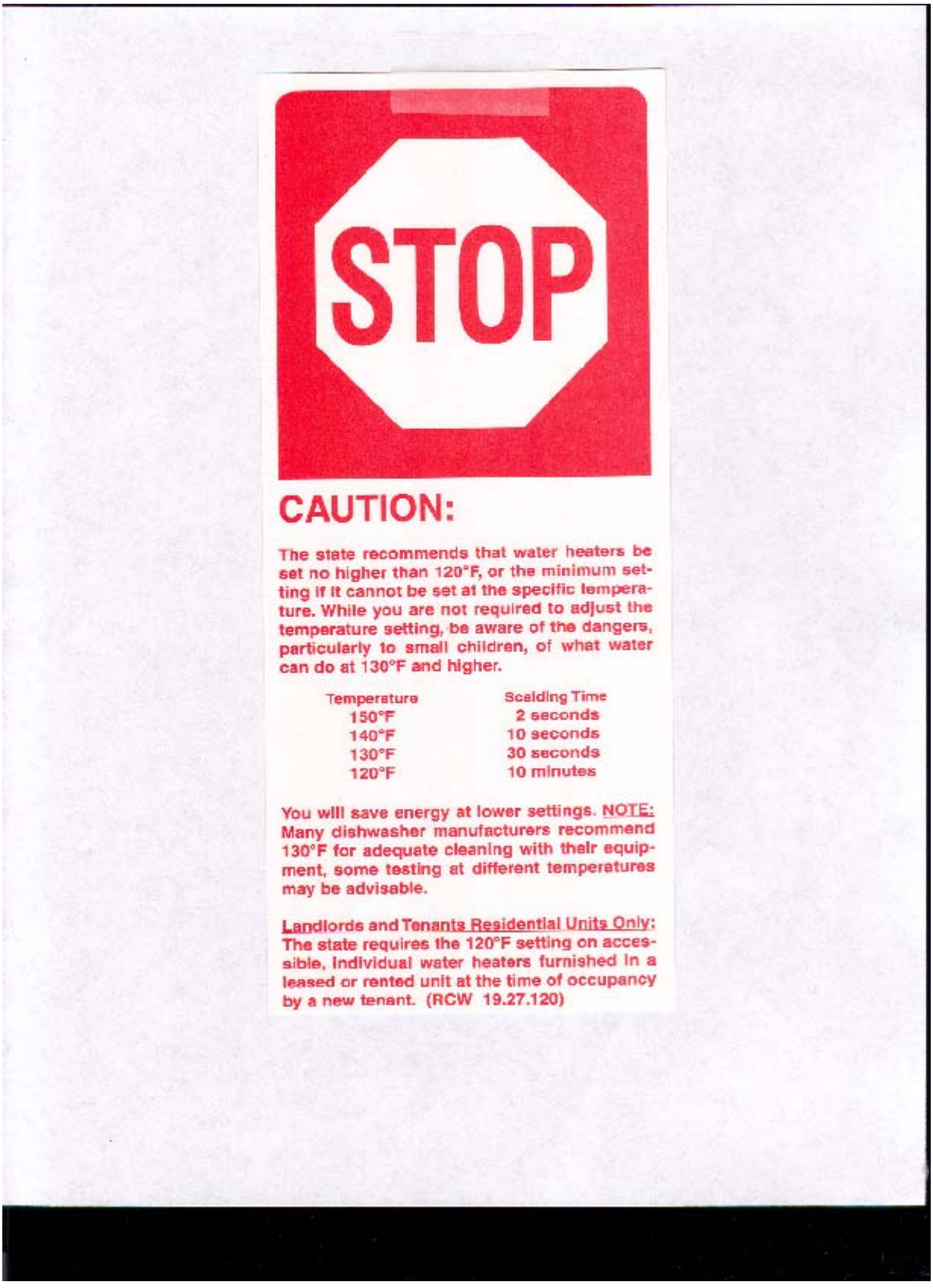
COMMENTS: _____
_____

AUDITOR/INSPECTOR VERIFICATION

Stack Temp _____ CO2 _____ or O2 Smoke _____

Signed_____

COMMENTS: _____
_____


STOP
CAUTION:
The state recommends that water heaters be set no higher than 120°F, or the minimum setting if it cannot be set at the specific temperature. While you are not required to adjust the temperature setting, be aware of the dangers, particularly to small children, of what water can do at 130°F and higher.
Temperature
Scalding Time
150°F
2 seconds
140°F
10 seconds
130°F
30 seconds
120°F
10 minutes
You will save energy at lower settings. NOTE: Many dishwasher manufacturers recommend 130°F for adequate cleaning with their equipment, some testing at different temperatures may be advisable.
Landlords and Tenants Residential Units Only: The state requires the 120°F setting on accessible, individual water heaters furnished in a leased or rented unit at the time of occupancy by a new tenant. (RCW 19.27.120)

Cost Effective Guidelines example –

Under Construction – Please check back after July 15, 2006

STANDARDS FOR WEATHERIZATION MATERIALS

If the standards listed in this appendix conflict with those required by current local codes, the local code shall have precedence and a copy of the applicable section will be retained with procurement records.

The following Government standards are produced by the Consumer Product Safety Commission and are published in title 16, Code of Federal Regulations:

Thermal Insulating Materials for Building Elements Including Walls, Floors, Ceilings, Attics, and Roofs Insulation—organic fiber—conformance to Interim Safety Standard in 16 CFR part 1209;

Fire Safety Requirements for Thermal Insulating Materials According to Insulation Use—Attic Floor—insulation materials intended for exposed use in attic floors shall be capable of meeting the same flammability requirements given for cellulose insulation in 16 CFR part 1209;

Enclosed spaces—insulation materials intended for use within enclosed stud or joist spaces shall be capable of meeting smoldering combustion requirements in 16 CFR part 1209.

The following standards which are not otherwise set forth in part 440 are incorporated by reference and made part of part 440. The following standards have been approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. These materials are incorporated as they exist on January 3, 2002 and a notice of any change in these materials will be published in the FEDERAL REGISTER. The standards incorporated by reference are available for inspection at the Office of the Federal Register Information Center, 800 North Capitol Street, Suite 700, Washington, DC 20001.

The standards incorporated by reference in part 440 can be obtained from the following sources:

Air Conditioning and Refrigeration Institute, 4301 N. Fairfax Drive, Suite 425, Arlington, VA 22203; (703) 524-8800; www.ari.org.

American Architectural Manufacturers Association, 1827 Walden Office Square, Suite 104, Schaumburg, Illinois 60173-4268; (847) 303-5664; www.aamanet.org.

American Gas Association, 400 N. Capitol Street, NW, Washington, DC 20001; (202) 824-7000; www.aga.org.

American National Standards Institute, Inc., 11 West 42nd Street, New York, NY 10036; (212) 642-4900; www.ansi.org.

American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990; (212) 591-7722; www.asme.org.

American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959; (610) 832-9585; www.astm.org.

Association of Home Appliance Manufacturers, 1111 19th Street, NW, Suite 402, Washington DC, 20036; (202) 872-5955; www.aham.org.

Federal Specifications, General Services Administration, General Services Administration, Federal Supply Service, Office of the CIO and Marketing Division, Room 800, 1941 Jefferson Davis Hwy., Arlington, VA 22202; (703) 305-6288; www.gsa.gov.

Gas Appliance Manufacturers Association, 2107 Wilson Boulevard, Suite 600, Arlington, Virginia 22201; (703) 525-7060 www.gamanet.org.

National Electrical Manufacturers Association, 1300 North 17th Street, Suite 1847, Rosslyn, VA 22209; (703) 841-3200; www.nema.org.

National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101; (617) 770-3000; www.nfpa.org.

Sheet Metal and Air Conditioning Contractors Association, 4201 Lafayette Center Drive, Chantilly, Virginia 20151-1209; (703) 803-2980; www.smacna.org.

Solar Rating and Certification Corporation, c/o FSEC, 1679 Clearlake Road, Cocoa, FL 32922-5703; (321) 638-1537; www.solar-rating.org.

Steel Door Institute, 30200 Detroit Road, Cleveland, OH 44145-1967; (440) 899-0010; www.steeldoor.org.

Steel Window Institute, 1300 Sumner Avenue, Cleveland, OH 44115-2851; (216) 241-7333; www.steelwindows.com.

Tubular Exchanger Manufacturers Association, 25 North Broadway, Tarrytown, NY 10591; (914) 322-0040; www.tema.org.

Underwriters Laboratories, Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096; (847) 272-8800; www.ul.com.

Window & Door Manufacturers Association, 1400 East Touhy Avenue, Suite 470, Des Plaines, IL 60018; (800) 223-2301; www.nwwda.org.

More information regarding the standards in this reference can be obtained from the following sources:

Environmental Protection Agency, 401 M Street, NW, Washington, DC 20006; (202) 554-1080; www.epa.gov.

National Institute of Standards and Technology, U.S. Department of Commerce, Gaithersburg, MD 20899; (301) 975-2000; www.nist.gov.

Weatherization Assistance Program, Office of Building Technology Assistance, Energy Efficiency and Renewable Energy, 1000 Independence Avenue, SW, EE-42, Washington, DC 20585-0121; (202) 586-4074; www.eere.energy.gov/weatherization.

THERMAL INSULATING MATERIALS FOR BUILDING ELEMENTS INCLUDING WALLS, FLOORS, CEILINGS, ATTICS, AND ROOFS

[Standards for conformance]

Insulation--mineral fiber:	
Blanket insulation	ASTM[1] C665-01e1.
Roof insulation board	ASTM C726-05.
Loose-fill insulation	ASTM C764-04.
Insulation--mineral cellular:	
Vermiculite loose-fill insulation	ASTM C516-02.
Perlite loose-fill insulation	ASTM C549-02.
Cellular glass insulation block	ASTM C552-03.
Perlite insulation board	ASTM C728-05.
Insulation–organic fiber:	
Cellulosic fiber insulating board	ASTM C208-95 (2001).
Cellulose loose-fill insulation	ASTM C739-03e1.
Cellulose wet-spray insulation	ASTM C1149-02 or ASTM C1497-04.
Insulation–organic cellular:	
Preformed block-type polystyrene insulation	ASTM C578-05.
Rigid preformed polyurethane insulation board	ASTM C591-01.
Faced rigid cellular polyurethane or polyisocyanurate insulation board	ASTM C1289-05.
Spray-applied rigid cellular polyurethane insulation	ASTM C1029-05.
Spray-applied bio-based polyurethane semi-open celled insulation	ASTM C1029-05, as amended by Table 2 of ICC[2] AC12.
Insulation–composite boards:	
Mineral fiber insulation board	ASTM C726-05.
Perlite board	ASTM C728-05.
Gypsum board and polyurethane or polisocyanurate composite board	ASTM C1289-05.
Materials used as a patch to reduce infiltration through the building envelope	Commercially available.

[1] ASTM indicates American Society for Testing and Materials.
[2] ICC indicates International Code Council.

THERMAL INSULATING MATERIALS FOR PIPES, DUCTS, AND EQUIPMENT SUCH AS BOILERS AND FURNACES

[Standards for conformance]

Insulation–mineral fiber:	
Preformed pipe insulation	ASTM[1] C547-03.
Blanket and felt insulation (industrial type)	ASTM C553-02.
Glass fiber felt insulation	ASTM C1086-96 (2004).
Blanket insulation and blanket type pipe insulation (metal-mesh covered, industrial type)	ASTM C592-04.
Block and board insulation	ASTM C612-04.
Spray applied mineral fiber thermal and sound absorbing insulation	ASTM C1014-03.
High-temperature fiber blanket insulation	ASTM C892-00.
Duct work insulation	ASTM C1290-00.
Insulation–mineral cellular:	
Calcium silicate block and pipe insulation	ASTM C533-95.
Cellular glass insulation	ASTM C552-00.
Expanded perlite block and pipe insulation	ASTM C610-99.
Insulation–organic cellular:	
Preformed flexible elastomeric cellular insulation in sheet and tubular form	ASTM C534-99.
Unfaced preformed rigid cellular polyurethane insulation	ASTM C591-00.
Foil-faced flexible polyethylene sheet insulation	ASTM C1224-03.
Insulation skirting	Commercially available.

[1] ASTM indicates American Society for Testing and Materials.

FIRE SAFETY REQUIREMENTS FOR INSULATING MATERIALS ACCORDING TO INSULATION USE

[Standards for conformance]

Attic floor	Insulation materials intended for exposed use in attic floors shall be capable of meeting the same smoldering combustion requirements given for cellulose insulation in ASTM[1] C739-03e1.

[1] ASTM indicates American Society for Testing and Materials.

FIRE SAFETY REQUIREMENTS FOR INSULATING MATERIALS ACCORDING TO INSULATION USE Continued

[Standards for conformance]

Enclosed space	Insulation materials intended for use within enclosed stud or joist spaces shall be capable of meeting the same smoldering combustion requirements given for cellulose insulation in ASTM[1] C739-03e1.
Exposed interior walls and ceilings	Insulation materials, including those with combustible facings, which remain exposed and serve as wall or ceiling interior finish, shall have a flame spread classification not to exceed 150 (per ASTM E84-05).
Exterior envelope walls and roofs	Exterior envelope walls and roofs containing thermal insulation shall meet applicable local government building code requirements for the complete wall or roof assembly.
Pipes, ducts, and equipment	Insulation materials intended for use on pipes, ducts, and equipment shall be capable of meeting a flame spread classification not to exceed 150 (per ASTM E84-05).

[1] ASTM indicates American Society for Testing and Materials.

STORM WINDOWS

[Standards for conformance]

Storm windows:	
All storm windows.....	AAMA/NWWDA[1] 101/I.S. 2-97.
Aluminum frame storm windows.....	AAMA[2] 1002.10-93.
Rigid vinyl frame storm windows.....	ASTM[3] D4726-02.
Frameless plastic glazing storm.....	Required minimum thickness for windows is 6 mil (0.006 inches).
Movable insulation systems for windows...	Commercially available.

[1] AAMA/NWWDA indicates American Architectural Manufacturers Association/National Wood Window & Door Association (now the Window & Door Manufacturers Association).
[2] AAMA indicates American Architectural Manufacturers Association.
[3] ASTM indicates American Society for Testing and Materials.

REPLACEMENT WINDOWS

[Standards for conformance]

Replacement windows:	
All windows.....	AAMA/NWWDA[1] 101/I.S. 2-97.
Steel frame windows	Steel Window Institute recommended specifications for steel windows, Dec 2002.
Rigid vinyl frame windows	ASTM[2] D4726-02

[1] AAMA/NWWDA indicates American Architectural Manufacturers Association/National Wood Window & Door Association (now the Window & Door Manufacturers Association).
[2] ASTM indicates American Society for Testing and Materials.

STORM DOORS

[Standards for conformance]

Storm doors:	
All storm (glass) doors....	AAMA/NWWDA[1] 101/I.S. 2-97.
Aluminum frame storm doors	AAMA[2] 1102.7-89.
Sliding glass storm doors	AAMA 1002.10-93.
Rigid vinyl storm doors.....	ASTM[3] D3678-97 (2001) and D4726-02.
Vestibules:	
Materials to construct vestibules	Commercially available.

[1] AAMA/NWWDA indicates American Architectural Manufacturers Association/National Wood Window & Door Association (now the Window & Door Manufacturers Association).
[2] AAMA indicates American Architectural Manufacturers Association.
[3] ASTM indicates American Society for Testing and Materials.

REPLACEMENT DOORS

[Standards for conformance]	
Replacement doors:	
All replacement doors	AAMA/NWWDA[1] 101/I.S. 2-97.
Steel doors	ANSI[2] A250.8-03.
Wood doors:	
Flush doors	ANSI/NWWDA[3] I.S. 1-97 (Amendment, exterior door provisions).
Stile and rail doors	NWWDA[4] I.S. 6-97.

[1] AAMA/NWWDA indicates American Architectural Manufacturers Association/National Wood Window & Door Association (now the Window & Door Manufacturers Association).
[2] ANSI indicates American National Standards Institute.
[3] ANSI/NWWDA indicates American National Standards Institute/National Wood Window & Door Association (now the Window & Door Manufacturers Association).
[4] NWWDA indicates National Wood Window & Door Association (now the Window & Door Manufacturers Association).

CAULKS AND SEALANTS

[Standards for conformance]	
Caulks and sealants:	
Glazing compounds for metal sash	Commercially available.
Oil and resin base caulks	Commercially available.
Acrylic (solvent type) sealants	ASTM C920-05.
Butyl rubber sealants	FS[2] Commercial Item Description A-A-272 (10/19/99).
Chlorosulfonated poly-ethylene sealants	ASTM C920-05.
Latex sealing compounds	ASTM C834-05.
Elastomeric joint sealants (normally considered to include polysulfide, poly-urethane, and silicone)	ASTM C920-05.
Preformed gaskets and sealing materials	ASTM C509-00.
Duct sealing mastic	UL[3] 181A, Third Edition, 2005 and UL 181B, Second Edition, 2005.

[1] ASTM indicates American Society for Testing and Materials.
[2] FS indicates Federal Specifications.
[3] UL indicates Underwriters Laboratories.

WEATHERSTRIPPING

[Standards for conformance]	
Weatherstripping	Commercially available.
Door sweeps	Commercially available.
Vapor retarders	Selected according to the provisions cited in ASTM[1]C755-03. Permeance not greater than 1 perm when determined according to the desiccant method described in ASTM E96-00e1.
Items to improve attic ventilation	Commercially available.

[1] ASTM indicates American Society for Testing and Materials.

HEAT EXCHANGERS

[Standards for conformance]	
Heat exchangers, water-to-water and steam-to-water	ASME[1] Boiler and Pressure Vessel Code, 2004, Sections II, V, VIII, IX, and X, as applicable to pressure vessels. Standards of Tubular Exchanger Manufacturers Association, Eighth Edition, 1999.
Heat exchangers with gas-fired appliances[2]	ANSI/UL[3] 462, Second Edition, 1993.

[1] ASME indicates American Society for Mechanical Engineers.
[2] The heat reclaimer is for installation in a section of the vent connector from appliances equipped with draft hoods or appliances equipped with powered burners or induced draft and not equipped with a draft hood.
[3] ANSI/UL indicates American National Standards Institute/Underwriters Laboratories.

BOILER/FURNACE CONTROL SYSTEMS

[Standards for conformance]

Automatic set back thermostats	Listed by UL[1]. Conformance to NEMA[2] DC3-2003.
Line voltage or low voltage room thermostats	Listed by UL. Conformance to NEMA DC3-2003.
Clock thermostats	Listed by UL. Conformance to NEMA DC3-2003.
Automatic gas ignition systems	ANSI[3] Z21.21-2001. AGA[4] Laboratories Certification Seal.
Energy management systems	Listed by UL.
Hydronic boiler controls	Listed by UL.
Other burner controls	Listed by UL.

[1] UL indicates Underwriters Laboratories.
[2] NEMA indicates National Electrical Manufacturers Association.
[3] ANSI indicates American National Standards Institute.
[4] AGA indicates American Gas Association.

WATER HEATER MODIFICATIONS

[Standards for conformance]

Insulate tank and distribution piping	(See insulation section of this appendix)
Install heat traps on inlet and outlet piping	Applicable local plumbing code.
Install/replace water heater heating elements	Listed by UL[1].
Electric, freeze-prevention tape for pipes	Listed by UL.
Install stack damper, gas-fueled	ANSI[2] Z21.66-1996, including Exhibits A & B, and ANSI Z223.1-2003 (same as NFPA[3] 54-2002 and International Fuel Gas Code -2003).

[1] UL indicates Underwriters Laboratories.
[2] ANSI indicates American National Standards Institute.
[3] NFPA indicates National Fire Prevention Association.

WATER HEATER MODIFICATIONS
Continued

[Standards for conformance]

Install stack damper, oil-fueled	UL[1] 17, Third Edition, 1994, NFPA[2] 31-2001, NFPA 211-2003 (same as ANSI[3] A52.1), and ANSI/ NFPA 70-2005 (same as IEEE[4] National Electrical Code).
Install water flow modifiers	Commercially available.

[1] UL indicates Underwriters Laboratories.
[2] NFPA indicates National Fire Prevention Association.
[3] ANSI indicates American National Standards Institute.
[4] IEEE indicates Institute of Electrical and Electronics Engineers.

REPLACEMENT WATER HEATERS

[Standards for conformance]

Electric (resistance) water heaters	10 CFR[1] 430 and UL[3] 174.
Heat pump water heaters	UL 1995, Third Edition, 2005. Electrical components to be listed by UL.
Gas water heaters:	
Rated #75 kBtu/hr	10 CFR 430 and ANSI[4] Z21.10.1-2005.
Rated >75 kBtu/hr	ANSI Z21.10.3-2004.
Oil water heaters	UL 732, Fifth Edition, 1995.

[1] CFR indicates Code of Federal Regulations.
[2] UL indicates Underwriters Laboratories.
[3] ANSI indicates American National Standards Institute.

SOLAR WATER HEATING SYSTEMS[1]

[Standards for conformance]

Solar water heating systems including forced circulation, integral collector storage, thermo-syphon, and self-pumping systems	System must be certified per SRCC[2] OG 300, May 2002.

[1] Solar water heating systems for weatherization-eligible households should be hybrid systems with a back-up source of hot water.
[2] SRCC indicates Solar Rating and Certification Corporation.

WASTE HEAT RECOVERY DEVICES

[Standards for conformance]	
Desuperheater/water heaters	ARI[1] 470-2001 and UL 1995, Third Edition, 2005.
Condensing heat exchangers	Commercially available components installed per manufacturers' specifications. NFPA[2] 211-2003 (same as ANSI A52.1) may apply in certain instances. See also the Heat Exchangers section of this appendix.
Heat pump water heating heat recovery systems	UL 1995, Third Edition, 2005. Electrical components to be listed by UL.
Energy recovery equipment	Energy Systems Analysis and Management, 1997 (SMACNA[3]).

[1] ARI indicates Air Conditioning and Refrigeration Institute.
[2] NFPA indicates National Fire Prevention Association.
[3] SMACNA denotes Sheet Metal and Air Conditioning Contractors' National Association.

BOILER REPAIR AND MODIFICATIONS/ EFFICIENCY IMPROVEMENTS

[Standards for conformance]	
Install gas conversation burners	ANSI[1] Z21.8-1994 (for gas- or oil-fired systems), ANSI Z21.17-1998, and ANSI Z223.1-2003 (same as NFPA[2] 54-2002 and International Fuel Gas Code). AGA[3] Laboratories Certification Seal.
Replace oil burner	UL[4] 296, Tenth Edition, 2003 and NFPA 31-2001.
Install burners (oil/gas)	ANSI Z223.1-2003 for gas equipment and NFPA 31-2001 for oil equipment.

[1] ANSI indicates American National Standards Institute.
[3] NFPA indicates National Fire Prevention Association.
[3] AGA indicates American Gas Association.
[4] UL indicates Underwriters Laboratories.

BOILER REPAIR AND MODIFICATIONS/ EFFICIENCY IMPROVEMENTS—Continued

[Standards for conformance]	
Re-adjust boiler water temperature or install automatic boiler temperature reset control	ASME[1] CSD-1-2004, ANSI[2] Z223.1-2003, and NFPA[3] 31-2001.
Replace/modify boilers	ASME Boiler and Pressure Vessel Code, 2004, Section II, IV, V, VI, VIII, IX, and X. Boilers must be Hydronics Institute Division of GAMA[4] equipment.
Clean heat exchanger, adjust burner air shutter(s), check smoke no. on oil-fueled equipment. Check operation of pump(s) and replacement filters	Per manufacturers' instructions.
Replace combustion chambers	Refractory linings may be required for conversions.
Replace heat exchangers, tubes	Protection from flame contact with conversion burners by refractory shield.
Install/replace thermostatic radiator valves	Commercially available. One-pipe steam systems require air vents on each radiator; see manufacturers' requirements.
Install boiler duty cycle control system	Commercially available. ANSI/NFPA 70-2005 (same as IEEE[5] National Electrical Code) and local electrical code provisions for wiring.

[1] ASME indicates American Society for Mechanical Engineers
[2] ANSI indicates American National Standards Institute.
[3] NFPA indicates National Fire Prevention Association.
[4] GAMA indicates Gas Appliance Manufacturers Association.
[3] IEEE indicates Institute of Electrical and Electronics Engineers.

HEATING AND COOLING SYSTEM REPAIRS AND TUNE-UPS/EFFICIENCY IMPROVEMENTS

[Standards for conformance]	
Install duct insulation	ASTM[1] C612-04 (see insulation sections of this appendix).
Reduce Input of burner; derate gas-fueled equipment	Local utility company and procedures if applicable for gas-fueled furnaces and ANSI[2] Z223.1-2003 (same as NFPA[3] 54-2002) including Appendix H.
Repair/replace oil-fired equipment	NFPA 31-2001.
Replace combustion chamber in oil-fired furnaces or boilers	NFPA 31-2001.
Clean heat exchanger and adjust burner; adjust air shutter and check CO_2 and stack temperature. Clean or replace air filter on forced air furnace	ANSI Z223.1-2003 (same as NFPA 54-2002) including Appendix H.
Install vent dampers for gas-fueled heating systems	Applicable sections of ANSI Z223.1-20039 (same as NFPA 54-2002) including Appendix H, I, J, and K. ANSI Z21.66-1996 and Exhibits A&B for electrically operated dampers.
Install vent dampers for oil-fueled heating systems	Applicable sections of NFPA 31-2001 for installation and in conformance with UL[4] 17, Third Edition, 1994.

[1] ASTM indicates American Society for Testing and Materials.
[2] ANSI indicates American National Standards Institute.
[3] NFPA indicates National Fire Prevention Association.
[4] UL indicates Underwriters Laboratories.

HEATING AND COOLING SYSTEM REPAIRS AND TUNE-UPS/EFFICIENCY IMPROVEMENTS—Continued

[Standards for conformance]	
Reduce excess combustion air: A: Reduce vent connector size of gas-fueled appliances	ANSI[1] Z223.1-2003 (same as NFPA[2] 54-2002) Part 9 and Appendices G&H.
B: Adjust barometric draft regulator for oil fuels	NFPA 31-2001 and per furnace and boiler manufacturers' instructions.
Replace constant burning pilot with electronic ignition device on gas-fueled furnaces or boilers	ANSI Z21.71-2005.
Readjust fan switch on forced air gas- or oil-fueled furnaces	Applicable sections on Appendix H of ANSI Z223.1-2003 (same as NFPA 31-2002) for gas furnaces and NFPA 31-2001 for oil furnaces.
Replace burners	See install burners (oil/gas).
Install/replace duct furnaces (gas)	ANSI Z223.1-2003 (same as NFPA 31-2002).
Install/replace heat pumps	ARI[3] 210/240-2003. UL[4] 1995 Third Edition, 2005.
Replace air diffusers, intakes, registers, and grilles	Commercially available.
Install/replace warm air heating metal ducts	UL 181, Tenth Edition 2005, including UL 181A, Third Edition 2005 and 181B, Second Edition, 2005.
Filter alarm unit	Commercially available.

[1] ANSI indicates American National Standards Institute.
[2] NFPA indicates National Fire Prevention Association.
[3] ARI indicates Air-Conditioning and Refrigeration Institute.
[4] UL indicates Underwriters Laboratories.

REPLACEMENT FURNACES, BOILERS, AND WOOD STOVES

[Standards for conformance]	
Chimneys, fireplaces, vents and solid fuel burning appliances	NFPA[1] 211-2003 (same as ANSI[2] A52.1).
Gas-fired furnaces	ANSI Z21.47-2004 and ANSI Z223.1-2003 (same as NFPA 54-2002).
Oil-fired furnaces	UL[3] 727, Eighth Edition, 1994 and NFPA 31-2001.
Liquefied petroleum gas storage	NFPA 58-2004.
Ventilation fans:	
Including electric attic, ceiling, and whole-house fans	UL 507, Ninth Edition, 1999.

[1] NFPA indicates National Fire Prevention Association.
[2] ANSI indicates American National Standards Institute.
[3] UL indicates Underwriters Laboratories.

ELECTRIC MOTORS AND MOTOR CONTROLS

[Standards for conformance]	
All electric motors	UL[1] 1004, Fifth Edition, 1994.
Variable-speed drives	Listed by UL.

[1] UL indicates Underwriters Laboratories.

AIR CONDITIONERS AND COOLING EQUIPMENT

[Standards for conformance]	
Air conditioners:	
Central air conditioners	ARI[1] 210/240-2003.
Room size units	ANSI/AHAM[2] RAC 1-2003.
Other cooling equipment:	
Including evaporative coolers, heat pumps, and other equipment	UL[3] 1995, Third Edition, 2005.

[1] ARI indicates Air Conditioning and Refrigeration Institute.
[2] ANSI/AHAM indicates American National Standards Institute/Association of Home Appliance Manufacturers.
[3] UL indicates Underwriters Laboratories.

SCREENS, WINDOW FILMS, AND REFLECTIVE MATERIALS

[Standards for conformance]	
Insect screens	Commercially available.
Window films	Commercially available.
Shade screens:	
Fiberglass shade screens	Commercially available.
Polyester shade screens.	Commercially available.
Rigid awnings:	
Wood rigid awnings	Commercially available.
Metal rigid awnings	Commercially available.
Louver systems:	
Wood louver awnings	Commercially available.
Metal louver awnings	Commercially available.
Reflective roof coating	Energy Star criteria for reflective roof products.

REFRIGERATORS

[Standards for conformance]	
Refrigerator/freezers (does not include freezer-only units)	UL[1] 250. Replaced units must be disposed of properly per Clean Air Act 1990, Section 608, as amended by 40 CFR[2] 82, May 14, 1993.

[1] UL indicates Underwriters Laboratories.
[2] CFR indicates Code of Federal Regulations.

FLUORESCENT LAMPS AND FIXTURES

[Standards for conformance]	
Compact fluorescent lamps	ANSI/UL[1] 542, Eighth Edition, 1999, and UL 1993, First Edition, 1993.
Fluorescent lighting fixtures	UL 1598, Second Edition, 2004.

[1] ANSI/UL indicates American National Standards Institute/Underwriters Laboratories.

Weatherization (Wx) Assistance Program Tier Model

Tier Level & Purpose	Measures (as Commerce Policy allows)
Tier 1: Unit Served Provide quick, focused, and limited cost-effective Wx services	• Client Intake • Wx Screening checklist • Digital photographs • Energy Bill Analysis • Identify Immediate H&S Concerns • Provide consumer conservation education materials (at intake, classroom, and in-field materials) • Efficient lighting (CFL, other) • CO detector (homes w/ comb app) • Smoke detector • Energy efficient lighting fixtures • Thermostats • Water heater pipe insulation (6 ft - hot & cold) • Water pipe insulation • Showerheads and faucets • Refrigerator • Window air conditioner • Heating system (gas, electric inc. heat pumps, oil, propane, solid fuel) • Clean & Tune • Water heater • Emergency repair to house • Health and safety repair • Weatherization Related Repair • Determine Tier 2 referral • Mold assessment • Pollution source survey • Takeoffs (area, volume, insulation) • Infrared scan
Tier 2: Unit Completed Provide all cost-effective Wx services (BPI Certified Auditor)	• Mechanical Ventilation • Duct sealing or replacement • Priority Air Sealing • Room pressures • Combustion Safety Test Report (Worst case depressurization test) • Diagnostic Test Report • Scope of Work • Building Envelope Measures • Working Lead Safe • QA Inspections
Tier 3: Renewable Provide cost-effective Wx services considering long-term investment and modern renewable technologies	• Solar water heater • Solar space heating • Solar electric (photovoltaic) • Other renewable technology • Net-Zero pilot program • Renewable Energy Special Projects

Training and Technical Assistance Expense Form

Training Received	**Dates Attended**
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____

Total Cost

$ _____

Name and Title of Individual(s) Attending:

Name	**Title**	**Training Attended**
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Peer Exchange Proposal Form

Name of Agency: _____ Date: _____

Contact: _____ Phone: _____

Email: _____

Describe training need: _____

Who will provide the training? _____

Where will the training be provided? _____

Describe why this person was selected: _____

When would you like the training? _____

Who will receive the training? (Provide names and titles)

_____ _____

_____ _____

_____ _____

Are the people listed above assigned only to the weatherization program? ☐ Yes ☐ No

If no, how much will be contributed by other programs? $ _____

Who will travel? (Check one) ☐ Trainer ☐ Trainee

What is the cost?

	Trainer	**Trainee**
Salary:	_____	_____
Fringe:	_____	_____

			Trainer	**Trainee**
Travel:	_____	_____		
Lodging:	_____	_____	# of Nights? _____	_____
Per Diem:	_____	_____		
Other:	_____	_____	Describe:_____	
Total:	_____	_____		

Documentation

Is a written, signed agreement attached? ☐ Yes ☐ No

If not, when will it be available?_____

.....

Commerce ONLY

Training Coordinator:

Will the proposal meet a local agency need?	☐ Yes	☐ No
Is the letter of agreement complete?	☐ Yes	☐ No
Is cost share required?	☐ Yes	☐ No
Recommendation	☐ Yes	☐ No

_____

Signature Date

Approval by HIP Unit Manager: ☐ Yes ☐ No

_____

Signature Date

Equipment Purchase Request/Approval Form

USE A SEPARATE FORM FOR EACH CONTRACT

Contract: _____ Field Representative:_____

(If request is for a vehicle, allow 90 days for DOE approval)

Local Agency:_____

Address: _____

_____

Contact Person: _____ Phone Number:_____

Email: _____

Equipment Requested

Description (List each item)	Quantity (Number)	Max Price $ each (Include sales tax)	Budget Category	Total Cost

Reason for purchase (Attach additional sheets if necessary):

_____

_____

_____

_____

Will other programs use equipment? ☐ Yes ☐ No

If yes, shared purchase, use, maintenance, or rental fee? List other programs and percent of time used. *(A rental fee or proportionate time use is required if a program does not share in the purchase.)*

_____

_____

_____

_____

_____

Local agency certifies that procurement records will be on file and available for review. Local agency further certifies that this purchase will be in accordance will all applicable rules, procedures, and guidelines per contract referenced above.

***** Authorized person must sign request*****

Local Agency

_____ _____
Authorized Signature Date

_____
Title

Commerce Approvals *(DOE approval attached for vehicles/DOE contract)*

_____ _____
Field Representative Date

_____ _____
Unit Manager Date

Equipment Reserve Fund Application

Agency: _____

Address: _____

_____

Contact Person: _____

Phone Number: _____ Email: _____

Equipment Requested

Equipment Description: Justification – Use criteria in Policies, Section 6.6. Criteria include need, condition of equipment, availability of other funds, and existence of recent similar purchases.	Quantity	Estimated Price ($ each, include sales tax)	Total Funds Requested Per Item
1. *Justification:*			
2. *Justification:*			
3. *Justification:*			
		Total funds requested:	

Attach additional sheets for further items or explanation if necessary.

Will non-weatherization programs use this equipment? ☐ Yes ☐ No

If yes, indicate shared purchase, use, maintenance, or rental fee. List other programs and percent of time used. *Note: A rental fee for proportionate time use is required if a program does not share in the purchase.*

Submit this form to your agency's field representative.

Community, Trade, and Economic Development
Office of Community Development
Housing Division

SAMPLE Weatherization
Contract Face Sheet

Contractor Name and Address:

Community Action Agency
123 Main Street
Olympia, WA 98502

Contract No: 123

Contract Period:
April 1 - March 31

Funding Authority:

U.S. Department of Energy (Federal Catalog No. 81.042)

Contract Amount: $53,963

Purpose: To provide funding for low-income weatherization services

Requests for Reimbursement are Subject to the Following Budget:

Administration	$6,703
Program Operation	$31,273
T&TA Passthru	$1,769
Liability Insurance	$2,885
Audit	$1,000
Health & Safety	$6,753
Wx-Related Repairs	$3,580
Project #1	$0

Service Area By County:

THE RIGHTS AND OBLIGATIONS OF BOTH PARTIES ARE GOVERNED BY THE DOCUMENTS LISTED IN WHICH ARE INCORPORATED HEREIN AS THOUGH SET FORTH IN FULL.

APPROVAL: THE LOCAL AGENCY AND THE DEPARTMENT OF COMMUNITY, TRADE AND ECONOMIC DEVELOPMENT ACKNOWLEDGE AND ACCEPT THE TERMS OF THIS CONTRACT. SIGNATURE FOR BOTH PARTIES ARE REQUIRED BELOW. IN ADDITION, THE LOCAL AGENCY CERTIFIES THAT THE DOCUMENTS LISTED IN "EXHIBIT A" ARE ON FILE WITH THE LOCAL AGENCY AND HAVE BEEN REVIEWED.

For the Department

Stephen H. Buxbaum, Assistant Director **Date**
Housing Services Division

For the Local Agency

Signature **Date**

Title

Approved as to form by Colleen B. Evans, A.A.G. 26-June-98

EXAMPLE EXHIBIT A

APPLICABLE TERMS AND CONDITIONS
Low Income Home Energy Assistance Program (LIHEAP)
Weatherization Program

The Contractor shall comply with the terms and conditions contained within the following documents provided to the Contractor by the Department of Commerce:

- General Terms and Conditions, September 1, 2006 issued by Commerce for all of its weatherization programs, as applicable.
- Specific Terms and Conditions, issued by Commerce for each of its weatherization programs, as applicable.
- Washington State Low-Income Weatherization Assistance Plan for the current year, as applicable.
- Washington State Policies and Procedures for Managing the Low-Income Weatherization Program, 2006, as amended, as applicable.
- Washington State Specifications for the Low-Income Weatherization Program, 2006, as amended, as applicable.
- Commerce Policy Memoranda, as applicable.

State of Washington Department of Community, Trade and Economic Development Office of Community Development Housing Division

SAMPLE Weatherization Contract Amendment Face Sheet

Contractor Name and Address:

Community Action Agency
123 Main Street
Olympia, WA 98502

Contract No: 123
Amendment Code: A

Contract Period:
April 1 - March 31

Funding Authority:
U.S. Department of Energy (Federal Catalog No. 81.042)

Contract Amount: $59,663

Change: $5,700
Old Amount: $53,963

Purpose: To increase contract amount, adding T&TA funding for Energy OutWest and Weatherization Workgroup.

Requests for Reimbursement are Subject to the Following Budget:

Administration	$6,703
Program Operation	$31,273
T&TA Passthru	$7,469
Liability Insurance	$2,885
Audit	$1,000
Health & Safety	$6,753
Wx-Related Repairs	$3,580
Project #1	$0

Service Area By County:

THIS FACE SHEET AMENDS THE PRIOR FACE SHEET. THIS AMENDMENT SHALL BE READ IN CONJUNCTION WITH THE ORIGINAL CONTRACT AND ANY PRIOR AMENDMENTS. ALL OTHER TERMS REMAIN IN EFFECT EXCEPT AS AMENDED.

APPROVAL: THE LOCAL AGENCY AND THE DEPARTMENT OF COMMUNITY, TRADE AND ECONOMIC DEVELOPMENT ACKNOWLEDGE AND ACCEPT THE TERMS OF THIS CONTRACT. SIGNATURE FOR BOTH PARTIES ARE REQUIRED BELOW. IN ADDITION, THE LOCAL AGENCY CERTIFIES THAT THE DOCUMENTS LISTED IN "EXHIBIT A" ARE ON FILE WITH THE LOCAL AGENCY AND HAVE BEEN REVIEWED.

For the Department

Stephen H. Buxbaum, Assistant Director **Date**
Housing Services Division

For the Local Agency

Signature **Date**

Title

Approved as to form by Colleen B. Evans, A.A.G. 26-June-98

SIGNATURE AUTHORITY

This form must be completed electronically and a hard copy with original signatures must be submitted to Commerce.

Please provide signature, typed name, and title for each of the following. Use blocks A and B to authorize signatures other than those provided in block C, who are authorized to sign all documents, unless indicated otherwise. Use additional sheets if needed.

A. AUTHORIZED TO SIGN CONTRACTS/CONTRACT MODIFICATIONS	All*	HHS	DOE	BPA	EM	HOME HRRP
1)	☐	☐	☐	☐	☐	☐
Signature Name (typed)						
2)	☐	☐	☐	☐	☐	☐
Signature Name (typed)						
B. AUTHORIZED TO SIGN VOUCHERS						
1)	☒	☐	☐	☐	☐	☐
Signature Name (typed)						
2)	☐	☐	☐	☐	☐	☐
Signature Name (typed)						

***Refers to all programs.**

C. AUTHORIZING AUTHORITIES

Signature	**Name (typed)**	**Signature**	**Name (typed)**
Title	**Date**	**Title**	**Date**

STATE OF WASHINGTON
Department of Commerce

Commerce Weatherization Program
Certification Regarding Debarment, Suspension, or Ineligibility and Voluntary Exclusion – Primary Tier Covered Transactions

FORM 1
Page 1

Certification Regarding Debarment, Suspension, or Ineligibility and Voluntary Exclusion – Primary Tier Covered Transactions

Period: Year 0000 (January 1 to December 31)

The terms covered transaction, debarred, suspended, ineligible, lower tier covered transaction, person, primary covered transaction, principal, and voluntarily excluded, as used in this section, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. You may contact the Department of Commerce for assistance in obtaining a copy of these regulations.

The Contractor certifies by signing this form that to the best of its knowledge and belief that its principals:

Are not presently debarred, suspended, proposed for debarment, and declared ineligible or voluntarily excluded from covered transactions by any Federal department or agency.

Have not within a three-year period preceding this contract, been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification, or destruction of records, making false statements, or receiving stolen property.

Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated above in this section; and

Have not within a three-year period preceding the signing of this contract had one or more public transactions (Federal, State, or local) terminated for cause of default.

Where the Contractor is unable to certify to any of the statements in this contract, the Contractor shall attach an explanation to this contract.

STATE OF WASHINGTON
Department of Commerce

Commerce Weatherization Program
Certification Regarding Debarment, Suspension, or Ineligibility and Voluntary Exclusion – Primary Tier Covered Transactions

FORM 1
Page 2

The Contractor agrees by signing this contract that it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the Commerce.

The Contractor further agrees by signing this contract that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," as follows, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

"Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions

a. The lower tier contractor certifies, by signing this contract that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

b. Where the lower tier contractor is unable to certify to any of the statements in this contract, such contractor shall attach an explanation to this contract."

NAME OF AGENCY COVERED BY THIS CERTIFICATION:

(STREET ADDRESS, CITY, STATE, ZIP CODE)

CERTIFYING OFFICIAL

TYPED NAME AND TITLE:

SIGNATURE (ORIGINAL): _____

DATE:

Property Owner Release Form

I, _____ certify that I am the owner of the property located at:
(Property Owner)

_____

I authorize _____ to make the following repairs and
(Weatherization Agency)

improvements with the understanding that no charges will be made for labor or materials.

_____ _____

_____ _____

_____ _____

_____ _____

I hereby release and pledge to hold harmless the above named agency and its staff from any liability in connection with the work listed above or any act or eventuality arising from this work.

Property Owner Signature: _____

Date: _____

Address: _____ Phone:_____

_____

Approved by: _____ Date:_____
(Signature of Agency Representative)

Affidavit and Waiver of Lien

_____ ,
(Name)

being first duly sworn, says that he/she is the_____ of
(Officer – Title)

_____
(Company Name)

(Hereinafter referred to as the "Company") and is familiar with the facts herein stated that the project's common address is _____ and is legally owned by _____ .

That said Company performed work and labor and/or furnished materials for use in the construction or renovation of the above listed home.

That said Company has paid in full all labor, materials, construction fees, rental fees, subcontractors, and all other costs connected with the completion of the scope of work dated _____ between the legal owner of the above listed property and the agency supplying funding for the project.

That upon the payment of the balance due for services and goods from invoice number _____, it hereby waives all liens and claims against the subject property listed above and further represents that no other person or parties have any right to a lien on the above listed common address.

For all things considered and listed above, the total and balance due to meet the above listed criteria is $. _____

Officer Signature: _____

SUBSCRIBED AND SWORN TO before me this _____ day of_____ , 20_____ .

Notary Seal

_____

Notary Public

This form must be submitted annually with original signature.

Department of Commerce
Housing Division
Housing Improvements and Preservation Programs

Certification Regarding

Federal Certification Regarding Lobbying

Period: Year 0000 (January 1 to December 31)

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.
2. If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
3. The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was or will be placed when this transaction was/is made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U. S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

_____
Name and Title of Authorized Representative

_____ _____
Signature Date

_____
Name of Organization

_____
Address of Organization

Washington State Department of Commerce
HOUSING DIVISION

SAMPLE WEATHERIZATION PROGRAM
REQUEST FOR REIMBURSEMENT

Working Capital Advance Example ONE

Contractor Name and Address

Weatherization Guys and Gals
PO Box 999
Anywhere, WA

Contract Number 04-431-XXX
Report Period Whenever
Report No. **Final? (Yes/No)**

EXPENDITURE DETAIL

Total Expenditures Previously Reported:	$ 10,000.00
Expended This Period:	
Administration	$ 1,000.00
Program Operation	$ 7,000.00
Health & Safety	$ -
Wx-Related Repairs	$ -
T & TA	$ -
Total This Period:	**$ 8,000.00**

RECEIPTS - EXPENDITURE RECONCILIATION

Receipts:	
Advance	$ 10,000.00
Materials Inventory	$ -
Warrants Received	$ 10,000.00
Total Receipts	**$ 20,000.00**
Less Cumulative Expenditures To-Date:	$ 18,000.00
Cash on Hand at End of Reporting Period:	$ 2,000.00

WEATHERIZED UNITS REPORT

Completed This Period	3
Total Completed to Date	6
In-Progress Units:	5

Total Cumulative Expenditures To-Date **$ 18,000.00**

Advance Request **$ 10,000.00**

CERTIFICATION: I certify that the information on this form is a true and accurate report of the cash status and that all reported expenditures are properly chargeable to the above referenced grant.

Title: **Date:**

Allowable Costs : **$8,000.00**
Advance : **$8,000.00**

Reimbursement : **8000**
Apply to Advance : **<8000>**

FED TAX ID #			PROGRAM APPROVAL				DATE
DOC INPUT DATE		CURRENT DOC. NO.	REFERENCE DOC NO.		VENDOR NUMBER		SUFFIX
ACCOUNT NO.			ASD NUMBER		VENDOR MESSAGE		

TRANS CODE	MOD	MASTER INDEX	FUND	APPN INDEX	PROGRAM INDEX	SUB OBJ	SUB SUB OBJ	PROJECT	SUB PROJ	GL ACCT	SUBSID ACCOUNT	AMOUNT	INVOICE NUMBER
			001	020	43104							$8,000	
												($8,000)	
												$8,000	

SIGNATURE OF ACCOUNTING PREPARER FOR PAYMENT	DATE	WARRANT TOTAL	INVOICE DATE
ACCOUNTING APPROVAL FOR PAYMENT	DATE	$8,000	

Washington State Department of Commerce
HOUSING DIVISION

SAMPLE WEATHERIZATION PROGRAM
REQUEST FOR REIMBURSEMENT

Working Capital Advance Example TWO

Contractor Name and Address

Weatherization Guys and Gals
PO Box 999
Anywhere, WA

Contract Number 04-431-XXX
Report Period Whenever
Report No. **Final? (Yes/No)**

EXPENDITURE DETAIL

Total Expenditures Previously Reported:	$ 10,000.00
Expended This Period:	
Administration	$ 2,000.00
Program Operation	$ 5,000.00
Health & Safety	$ 2,500.00
Wx-Related Repairs	$ 2,500.00
T & TA	$ -
Total This Period:	**$ 12,000.00**

RECEIPTS - EXPENDITURE RECONCILIATION

Receipts:	
Advance	$ 10,000.00
Materials Inventory	$ -
Warrants Received	$ 10,000.00
Total Receipts	**$ 20,000.00**
Less Cumulative Expenditures To-Date:	$ 22,000.00
Cash on Hand at End of Reporting Period:	$ (2,000.00)

WEATHERIZED UNITS REPORT

Completed This Period:	3
Total Completed to Date	6
In-Progress Units:	5

Total Cumulative Expenditures To-Date **$ 22,000.00**

Advance Request **$ 10,000.00**

CERTIFICATION: I certify that the information on this form is a true and accurate report of the cash status and that all reported expenditures are properly chargeable to the above referenced grant.

Title: **Date:**

Allowable Costs : **$12,000.00**
Advance : **$10,000.00**
Reimbursement : **$12,000**
Apply to Advance : **($10,000)**

FED TAX ID #	PROGRAM APPROVAL	DATE

DOC INPUT DATE	CURRENT DOC. NO.	REFERENCE DOC NO.	VENDOR NUMBER	SUFFIX

ACCOUNT NO.	ASD NUMBER	VENDOR MESSAGE

TRANS CODE	MOD	MASTER INDEX	FUND	APPN INDEX	PROGRAM INDEX	SUB OBJ	SUB SUB OBJ	PROJECT	SUB PROJ	GL ACCT	SUBSID ACCOUNT	AMOUNT	INVOICE NUMBER
			001	020	43104							$12,000	
												($10,000)	
												$10,000	

SIGNATURE OF ACCOUNTING PREPARER FOR PAYMENT	DATE	WARRANT TOTAL	INVOICE DATE
ACCOUNTING APPROVAL FOR PAYMENT	DATE	$12,000	

Washington State Department of Commerce,

Housing Department

SAMPLE WEATHERIZATION PROGRAM
REQUEST FOR REIMBURSEMENT

Working Capital Advance Example THREE

Contractor Name and Address

Weatherization Guys and Gals
PO Box 999
Anywhere, WA

Contract Number 04-431-XXX
Report Period Whenever
Report No. **Final? (Yes/No)**

EXPENDITURE DETAIL

Total Expenditures Previously Reported:	$ 10,000.00
Expended This Period:	
Administration	$ 1,000.00
Program Operation	$ 3,000.00
Health & Safety	$ 3,000.00
Wx-Related Repairs	$ 3,000.00
T & TA	$ -
Total This Period:	**$ 10,000.00**

RECEIPTS - EXPENDITURE RECONCILIATION

Receipts:	
Advance	$ 10,000.00
Materials Inventory	$ -
Warrants Received	$ 10,000.00
Total Receipts	**$ 20,000.00**
Less Cumulative Expenditures To-Date:	$ 20,000.00
Cash on Hand at End of Reporting Period:	$ -

WEATHERIZED UNITS REPORT

Completed This Period	3
Total Completed to Date	6
In-Progress Units:	5

Total Cumulative Expenditures To-Date **$ 20,000.00**

Advance Request $ 5,000.00

CERTIFICATION: I certify that the information on this form is a true and accurate report of the cash status and that all reported expenditures are properly chargeable to the above referenced grant.

Title: **Date:**

Allowable Costs : **$10,000.00**
Advance : **$5,000.00**

Reimbursement : **$5,000**
Apply to Advance : **($10,000)**

FED TAX ID # | **PROGRAM APPROVAL** | **DATE**

DOC INPUT DATE | CURRENT DOC. NO. | REFERENCE DOC NO. | VENDOR NUMBER | **SUFFIX**

ACCOUNT NO. | ASD NUMBER | **VENDOR MESSAGE**

TRANS CODE	MOD	MASTER INDEX	FUND	APPN INDEX	PROGRAM INDEX	SUB OBJ	SUB SUB OBJ	PROJECT	SUB PROJ	GL ACCT	SUBSID ACCOUNT	AMOUNT	INVOICE NUMBER
			001	020	43104							$10,000	
												($10,000)	
												$5,000	

SIGNATURE OF ACCOUNTING PREPARER FOR PAYMENT | DATE | WARRANT TOTAL | INVOICE DATE

ACCOUNTING APPROVAL FOR PAYMENT | DATE | $5,000

Washington State Department of Commerce
HOUSING DIVISION

SAMPLE WEATHERIZATION PROGRAM
REQUEST FOR REIMBURSEMENT

Working Capital Advance Example FOUR

Contractor Name and Address

Weatherization Guys and Gals
PO Box 999
Anywhere, WA

Contract Number 04-431-XXX
Report Period Whenever
Report No. **Final? (Yes/No)**

EXPENDITURE DETAIL

Total Expenditures Previously Reported:	$ 2,000.00
Expended This Period:	
Administration	$ 200.00
Program Operation	$ 1,300.00
Health & Safety	$ -
Wx-Related Repairs	$ 500.00
T & TA	$ -
Total This Period:	**$ 2,000.00**

RECEIPTS - EXPENDITURE RECONCILIATION

Receipts:	
Advance	$ 10,000.00
Materials Inventory	$ -
Warrants Received	$ 2,000.00
Total Receipts	**$ 12,000.00**
Less Cumulative Expenditures To-Date:	$ 4,000.00
Cash on Hand at End of Reporting Period:	$ 8,000.00

WEATHERIZED UNITS REPORT

Completed This Period:	1
Total Completed to Date	1
In-Progress Units:	1

Total Cumulative Expenditures To-Date **$ 4,000.00**

Advance Request **$ 2,000.00**

CERTIFICATION: I certify that the information on this form is a true and accurate report of the cash status and that all reported expenditures are properly chargeable to the above referenced grant.

Title: **Date:**

Allowable Costs : $2,000.00
Advance : $0.00

Reimbursement : $0
Apply to Advance : ($2,000)

FED TAX ID #	PROGRAM APPROVAL	DATE

DOC INPUT DATE	CURRENT DOC. NO.	REFERENCE DOC NO.	VENDOR NUMBER	SUFFIX

ACCOUNT NO.	ASD NUMBER	VENDOR MESSAGE

TRANS CODE	MOD	MASTER INDEX	FUND	APPN INDEX	PROGRAM INDEX	SUB OBJ	SUB SUB OBJ	PROJECT	SUB PROJ	GL ACCT	SUBSID ACCOUNT	AMOUNT	INVOICE NUMBER
			001	020	43104							$2,000	
												($2,000)	
												$0.00	

SIGNATURE OF ACCOUNTING PREPARER FOR PAYMENT	DATE	WARRANT TOTAL	INVOICE DATE
ACCOUNTING APPROVAL FOR PAYMENT	DATE	$0.00	

Washington State Department of Commerce
HOUSING DIVISION

SAMPLE WEATHERIZATION PROGRAM
REQUEST FOR REIMBURSEMENT

Contractor Name and Address
Weatherization Guys and Gals
PO Box 999
Anywhere, WA

Contract Number 04-431-XXX
Report Period Whenever
Report No. **Final? (Yes/No)**

EXPENDITURE DETAIL

Total Expenditures Previously Reported:	
Expended This Period:	
Administration	
Program Operation	
Health & Safety	$ -
Wx-Related Repairs	$ -
T & TA	$ -
Total This Period:	**$ -**

RECEIPTS - EXPENDITURE RECONCILIATION

Receipts:	
Advance	
Materials Inventory	$ -
Warrants Received	
Total Receipts	**$ -**
Less Cumulative Expenditures To-Date:	$ -
Cash on Hand at End of Reporting Period:	$ -

WEATHERIZED UNITS REPORT

Completed This Period	
Total Completed to Date	
In-Progress Units:	

Total Cumulative Expenditures To-Date **$ -**

Advance Request

CERTIFICATION: I certify that the information on this form is a true and accurate report of the cash status and that all reported expenditures are properly chargeable to the above referenced grant.

Title: **Date:**

Allowable Costs :
Advance :
Reimbursement :
Apply to Advance :

FED TAX ID #	PROGRAM APPROVAL	DATE

DOC INPUT DATE	CURRENT DOC. NO.	REFERENCE DOC NO.	VENDOR NUMBER	SUFFIX

ACCOUNT NO.	ASD NUMBER	VENDOR MESSAGE

TRANS CODE	MOD	MASTER INDEX	FUND	APPN INDEX	PROGRAM INDEX	SUB OBJ	SUB SUB OBJ	PROJECT	SUB PROJ	GL ACCT	SUBSID ACCOUNT	AMOUNT	INVOICE NUMBER

SIGNATURE OF ACCOUNTING PREPARER FOR PAYMENT	DATE	WARRANT TOTAL	INVOICE DATE
ACCOUNTING APPROVAL FOR PAYMENT	DATE		

MONTHLY WEATHERIZATION REPORT FOR COMPLETED UNITS

AGENCY | Month | Year | County:

Contact: | *Phone:* | *Agency #*

	DOE	ALL FUNDS**
Structure Type - Units		
Owner Occupied:		
Single family sitebuilt		
Mobile/manufactured		
Renter:		
Single family sitebuilt		
Multi-Family (2+ units)*		
Mobile/manufactured		
Number of Shelters:		
TOTALS:	0	0
***Report number of all units in multi-family bldgs.**		
Units re-weatherized		
Primary Heat - Units:		
Electricity		
Natural Gas		
Oil		
Wood /Pellet		
Propane/LPG		
Coal, Kerosene, Other		
TOTALS:	0	0
Number Households by Income Group:		
Under 75% of Poverty Level		
75% - 100% of Poverty Level		
101% - 125% of Poverty Level		
Over 125% of Poverty Level		
TOTALS:	0	0

[Shaded boxes automatically calculate]

DEMOGRAPHIC DATA

Demographics	DOE		ALL FUNDS**	
	People	Units	People	Units
Total People Served		N/A		N/A
Age 60+				
Handicapped				
Children Under Six				
Native American				

**** Unduplicated count of homes weatherized with all funds (including DOE)**

NOTE: Do not add or delete any lines, categories, or information on this form.

07/01/02

Monthly Weatherization Report for Completed Units - Instructions

A Monthly Weatherization Report for Completed Unites for each county is to be completed in this Excel format and submitted monthly, by e-mail, to Commerce. It is due the 15th of each month for the previous month's activities. The report is required even if no units have been completed during any given month.

Complete general information (agency name, month, year, etc.) on each sheet completed. The "Agency #" is the 3 digit number that appears as the last 3 digits of each of your contract #s. A report needs to be completed for each county served. *You'll want to complete a worksheet in this file for each county in your service territory. Three copies of the form--each in a separate worksheet--are provided for that purpose (see worksheets with the titles "County 1", "County 2", and "County 3"). You might also want to change the names of the worksheets to the applicable county name.*

COMPLETED UNITS means all weatherization work has been completed and inspected.

DOE & ALL FUNDS Columns

Under the **"DOE"** column, report data on units completed that are being charged--in part or entirely--to your DOE contract; under the **"ALL FUNDS"** column report data for all the units completed during the month, regardless of fund source (including DOE).

If an agency changes the funding source for a completed unit that impacts the number previously reported for DOE, adjustments must be made in the next report submitted.

The cumulative number of **DOE units reported** as completed on this form during the DOE contract period **must agree with** the units reported on the agency's **DOE contract closeout report.**

Structure Type

Multi-family: count each unit benefiting from weatherization within a multi-family building, even units where income verification of residents is not required (the other 40%).

Count emergency **shelters, group homes, and transitional homes** as **Shelters** and count each "**Shelter" as a single unit.** Do not report the actual number of units within each structure.

Number Households By Income Group

Identify the percent of poverty category the residents of completed units fall into. For multi-family units where verification of income is not required (the other 40%), include those households in the **Over 125% of Poverty Level** category.

TOTALS

Under each column (DOE & ALL FUNDS), totals for **Structure Types, Primary Heat** types and **Number of Households by Income Group** should all be equal amounts.

DEMOGRAPHIC DATA

Total People Served: Report all members of each household in the completed units.

Under the **Unit** column, report the number of units that include occupants of the specific demographic description.

Error Messages

The form has built in error messages that will alert you to inconsistencies in the data you've entered. If after you've completed the form, some or all of the error message remain, please do not submit the form until you've resolved any of the indicated inconsistencies and the error messages disappear.

At this time we are not asking you to report additional household income data and square footage of units you need to be weatherized. However, DOE plans to collect this information by sampling local agencies so prepared to supply that data quickly.

State of Washington
Dept. of Commerce
Housing Division

SAMPLE
Final Contract Closeout Report
Form 1, Budget & Actual Costs Statement

AGENCY NAME & ADDRESS

Contract #:
Contract Period:

BUDGET & ACTUAL COSTS STATEMENT

Final Spending Limit

Final Spending Limit must be entered and cannot exceed value of match accomplished by 6/30/05

LINE ITEM	FINAL BUDGET	ACTUAL COSTS*	BALANCE
Administration	$0.00	$0.00	$0.00
Program Operations	$0.00	$0.00	$0.00
T & TA	$0.00	$0.00	$0.00
Liability Insurance	$0.00	$0.00	$0.00
Financial Audit	$0.00	$0.00	$0.00
Health & Safety	$0.00	$0.00	$0.00
WX-Related Repair	$0.00	$0.00	$0.00
Other (Name):	$0.00	$0.00	$0.00
GRAND TOTALS	**$0.00**	**$0.00**	**$0.00**

**Total actual costs must not exceed the final spending limit*

FUND STATEMENT

FUNDS RECEIVED:	
Value of Weatherization Materials Transferred from Other Contracts (if any)	$0.00
Advance Funds Transferred from Prior Contract (if any)	$0.00
Warrants Received	$0.00
TOTAL FUNDS RECEIVED	**$0.00**

ACTUAL COSTS (from "Budget & Actual Costs Statement" above)	$0.00

AMOUNT DUE GRANTEE (if E minus D equals more than $0) or	$0.00
EXCESS FUNDS RECEIVED (if D minus E equals more than $0)	$0.00

Certification: I certify this statement reflects the contract budget, actual costs, budget balance, & fund status for contract # and that the final expenditure report has been submitted.

SIGNATURE DATE

TITLE

State of Washington
Dept. of Commerce
Housing Division

SAMPLE

Final Contract Closeout Report

Form 2, Grant Generated Program Income Report

Agency: - **Contract #** -

GRANT GENERATED PROGRAM INCOME REPORT

INCOME REPORT:

A. Balance Brought Forward from Previous Contract		$0.00
B. Amount Earned during the Contract Period		
Interest	$0.00	
Fees	$0.00	
Rent	$0.00	
Other (Specify)		
	$0.00	
	$0.00	
Total Earned Income During the Contract Period		$0.00
C. Total Grant Generated Program Income Available for the Contract Period		$0.00

EXPENDITURE REPORT:

D. Amount Expended on Grant Activities during the current Contract Period:*		
Administration	$0.00	
Materials	$0.00	
Program Support	$0.00	
Conservation Education	$0.00	
Wx-Related Repairs	$0.00	
Total Income Expended		$0.00

Balance to be carried over into the next contract: $0.00

*This amount must be documented costs OVER AND ABOVE those reported on the monthly Grant Expenditure Report and Request for Reimbursement reports.

SIGNATURE DATE

TITLE PHONE NUMBER

State of Washington
Dept. of Commerce
Housing Division

SAMPLE
Final Contract Closeout Report
Form 3, Inventory (Equipment)
Page 1 of 2

Agency: -

Contract # -

INSTRUCTIONS:

A physical inventory must be taken of all equipment with a useful life of more than one year and an acquisition cost of $5000 or more per unit, purchased under this contract or previous contracts.

EQUIPMENT INVENTORY

Funding Source:
Program: **Weatherization Assistance for Low Income Persons**

FOR Commerce USE ONLY
Fund Code:

PURCHASE DATE	ITEM & DESCRIPTION	IDENTIFICATION NUMBER	CONDITION	QUANTITY	UNIT COST	TOTAL COST
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
TOTAL COST OF ITEMS						$ -

TRANSFER OF INTEREST:

The Department's interest in property purchased under the 2005 contract or prior contracts is automatically transferred to the 2006 contract at the end of the contract period.

CERTIFICATION:

I certify that a physical inventory has been taken and the information provided is accurate and complete. I understand that the Department's interest in property purchased under this contract or prior contracts is automatically transferred to the agency's subsequent contract.

-

SIGNATURE **DATE** **AGENCY NAME**

TITLE **PHONE NUMBER** **Name of Person who Prepared this Report**

State of Washington	**SAMPLE**
Dept. of Commerce	**Final Contract Closeout Report**
Housing Division	**Form 3, Inventory (Equipment - Vehicle Record)**
	Page 2 of 2

Agency: - **Contract #** -

EQUIPMENT INVENTORY - VEHICLE RECORD

(Submit one form for each vehicle purchased with funds from this contract)

DESCRIPTION

Make and Body Style _____

Year and Model _____

Gross Weight/Empty Weight _____

IDENTIFICATION

Manufacturer's Serial No. _____

License Number _____

Tag Number _____

Title/Registration _____

ACQUISITION

Date of Purchase _____

Purchase Price _____

Mileage at Purchase Date _____

Current Mileage _____

LOCATION ASSIGNED

Garage _____
Other _____

-

SIGNATURE	**DATE**	**AGENCY NAME**
TITLE	**PHONE NUMBER**	**Name of Person who Prepared this Report**

State of Washington
Dept. of Commerce
Housing Division

SAMPLE
Final Contract Closeout Report
Form 4, Final Expenditure Report & Request for Reimbursement

AGENCY NAME & ADDRESS

-
-
-

Contract #: -
Contract Period: -

FINAL EXPENDITURE REPORT and REQUEST FOR REIMBURSEMENT

LINE ITEM	FINAL BUDGET	EXPENDITURES PREV. REPORTED	EXPENDITURE ADJUSTMENTS	TOTAL EXPENDITURES
Administration	$ -	$ -	$ -	$ -
Program Operations	$ -	$ -	$ -	$ -
T & TA	$ -	$ -	$ -	$ -
Liability Insurance	$ -	$ -	$ -	$ -
Financial Audit	$ -	$ -	$ -	$ -
Health & Safety	$ -	$ -	$ -	$ -
Wx-Related Repairs	$ -	$ -	$ -	$ -
Other (Name):	$ -	$ -	$ -	$ -
GRAND TOTALS	$0.00	$0.00	$0.00	$0.00

Total Receipts for the Grant Period:
Less Total Expenditures for the Grant Period:
Balance on Hand at End of Grant Period: $0.00
Amount of Refund Enclosed to CLOSEOUT Grant
OR Final Reimbursement Requested to CLOSEOUT Grant

***TOTAL NUMBER OF UNITS WEATHERIZED DURING THE ENTIRE CONTRACT PERIOD:**

CERTIFICATION: I certify that the information on this form is a true and accurate report of the cash status and that all reported expenditures are properly chargeable to the above referenced grant.

BY: **Title:** **Date:**

Allowable Costs :
Advance : $

Commerce Approval :
Reimbursement : $
Apply to Advance : $

PREPARED BY	DATE	AGENCY APPROVAL	DATE

DOC DATE	CURRENT DOC NO	REF DOC NO	VENDOR NUMBER	VENDOR MESSAGE

TRANS CODE	MOD	FUND	APPN INDEX	MASTER INDEX	SUB OBJ	SUB SUB OBJ	CNTY	CITY	PROJ	AMOUNT	INVOICE NUMBER	GENERAL LEDGER
		001	020	4D5B0120	NB				4D5B			
		001	020	4D5P0120	NB				4D5P			
		001	020	4D5T0120	NB				4D5T			
		001	020	4D5P0120	NB				4D5P			1319

APPROVED FOR PAYMENT BY	DATE	WARRANT TOTAL

State of Washington
Dept. of Commerce
Housing Division

SAMPLE
Final Contract Closeout Report
Form 5, Materials Inventory Transfer Voucher

AGENCY NAME & ADDRESS

-
-
-

Contract #: -

MATERIALS INVENTORY TRANSFER VOUCHER

TRANSFER FROM: _____ (Contract Number) $ - (Value)

TRANSFER TO: _____ (Contract Number) $ - (Value)

CERTIFICATION:

I hereby certify under penalty of perjury that the items and totals listed herein are proper charges for materials purchased for the Low-Income Weatherization Program.

SIGNATURE _____ TITLE _____ DATE _____

Commerce Approval _____

SAMPLE Final Contract Closeout Report Form 6

State of Washington
Department of Commerce
Housing Division

OWNER REFUNDS RECEIVED AND EXPENDED

DOE allows contractors to receive and re-spend refunds from property owners whose units have been weatherized with funds awarded under prior year contracts. These funds are to be used first to reweatherize units in the current contract period. Units weatherized with refunds are to be included in the total unit count for the contract period in which they are spent. The funds, however, are not to be included in the accounting for the current contract period, but reported in the close-out.

The total amount of refunds received during the 2005 contract period is:
$_____

SAMPLE WEATHERIZATION CONTRACT CLOSEOUT CHECKLIST

INSTRUCTIONS:

Prepare and submit one copy of each of the forms on the accompanying EXCEL sheets by the specified deadline.

	FORM NO.
BUDGET & ACTUAL COSTS STATEMENT	Sheet #1
GRANT GENERATED PROGRAM INCOME AND EXPENDITURE REPORT	Sheet #2
EQUIPMENT INVENTORY	Sheet #3
FINAL EXPENDITURE REPORT AND REQUEST FOR REIMBURSEMENT	Sheet #4
MATERIALS INVENTORY TRANSFER VOUCHER	Sheet #5
OWNER REFUNDS	Sheet #6

The forms submitted will be reviewed by Commerce. Please identify the name, position, and phone number of a contact person who will be available to answer any questions.

Name **Position** **Telephone**

CERTIFICATION: I certify that the information provided is accurate and complete and that there are no outstanding requests for reimbursement under the Weatherization Contract.

Signature **Typed Name and Position**

Date of Certification

Agency Name **Contract Number**

"Completed Unit" Definition and Discussion

Department of Energy (DOE) weatherization program is comprehensive. Although an ideal Weatherization (Wx) Project is one that has all eligible measures completed, there are exceptions that still meet the definition of "Weatherized unit" and must be counted as a "completed unit."

DOE guidance regarding measures and cost effectiveness (Excerpt from WPN 10-1, Section 6.2):

> ***A DOE Weatherized unit is: A dwelling on which a DOE-approved energy audit or priority list has been applied and weatherization work has been completed. As funds allow, the DOE measures installed on this unit have a Savings-to-Investment Ratio (SIR) of 1.0 or greater, but also may include any necessary energy-related health and safety measures. The use of DOE funds on this unit may include, but are not limited to auditing, testing, measure installation, inspection, or use of DOE equipment and/or vehicles, or if DOE provides the training and/or administrative funds. Therefore, a dwelling unit that meets both the definition of a DOE weatherized unit and has DOE funds used directly on it must be counted as a DOE completed unit.***

Apply these guidelines for all Wx fund sources (DOE, ARRA, LIHEAP, BPA, and MM), to determine a "completed unit." Remember: document any measures you decide not to install in case a return for re-weatherization is an option another time

- A Weatherized Unit = Energy Audit (Diagnostic Test Report) + Priority List (or TREAT) applied + All weatherization work that can be performed is completed
- A DOE Completed Unit = A Weatherized Unit + DOE investment (DOE)
- An ARRA Completed Unit = A Weatherized Unit + DOE investment (ARRA)
- Other Funds Completed Unit = A Weatherized Unit + Other Funds investment, (LIHEAP, BPA and MM)

Discussion:

"Completed unit" scenario examples:

1. **Ideal Project:** Energy audit is performed (Diagnostic Test Report filled out), Priority List (or TREAT run) is applied, all applicable Tier 1 and Tier 2 measures are installed as funds permit, and a DOE investment was made. This "Tier 1-Tier 2 combo" scenario meets the Weatherized unit definition. This example counts as a "DOE completed unit."

2. **Measure Deferred:** Energy audit is performed (Diagnostic Test Report filled out), Priority List (or TREAT run) is applied, all applicable Tier 1 and Tier 2 measures are installed except floor insulation must be deferred as there is a wet crawlspace and insulating could create damage, and an ARRA investment was made. This scenario meets the Weatherized unit definition as "all weatherization work that can be performed is completed." This example counts as an "ARRA completed unit."

3. **No Eligible Tier 2:** Energy audit is performed (Diagnostic Test Report filled out), Priority List (or TREAT run) is applied, applicable Tier 1 measures complete, no eligible Tier 2 measures to install (already insulated to the Wx specs or unable to install insulation), and DOE investment was made. This scenario still meets the Weatherized unit definition. This example would count as a "DOE completed unit," even though the agency only performed measures listed under Tier 1 and did not perform any Tier 2 measures.

4. **Average Unit Cost:** DOE's definition states: "As funds allow…" so if Weatherization funding sources are not blended (DOE with LIHEAP, BPA, and MM) the DOE defined "$6500 maximum average per dwelling unit" spending limit also defines when a job is complete. Projects that have an energy audit performed (Diagnostic Test Report filled out), Priority List (or TREAT run) is applied, all weatherization work is completed (in priority order) up to the $6500 limit of ARRA funding (even if this means there are still measures left undone) would count as an "ARRA completed unit."

5. **Low-rise Multifamily (MF) Project:** A multifamily scattered site project (multiple buildings) comprised of four 6-unit 3 story buildings and two 20-unit 4 story buildings in different configurations of 3 and 4 story buildings. A low-rise MF (4 stories and less) is in line with the "Residential" definitions in both Davis Bacon and State Prevailing Wage rules. Energy audit is performed (Diagnostic Test Report filled out – use NA for areas that do not apply to MF), Priority List (or TREAT run) is applied, Lighting and lighting fixture replacement is also considered, all weatherization work is completed (in priority order), and a DOE investment was made. *(As DOE funds are Grants, ensure that if the project is a "tax credit" property, the property owner is aware a Grant might affect the tax credit status and that they are in agreement to proceed with the Weatherization project.)* This scenario results in 64 "DOE completed units."

Discussion on Average Unit Costs:

If local decisions limit the measures installed to meet average cost targets, document in the client file the justification why the measure was not performed. The agency should also track lost opportunities for future reference and possible return.

Strategies to manage unit costs:

1. Have a balance of MF and SF that brings down the average cost per unit.
2. Eliminate borderline energy measures whose benefit are not currently justified fully and could allow limited funds to be used on other houses.

Discussion on Washington State's Tier Structure:

In Washington state's Tier structure a typical weatherized unit is a "combo Tier 1 and Tier 2" project (see Scenario #1 above). To complete a project, the expectation is to perform all eligible measures listed under both Tier 1 and Tier 2 categories.

As a rule, DOE is not interested in funding "Tier 1 only" projects. If an agency is planning a "Tier 1 only" project, with no intent of performing a full energy audit or installing any Tier 2 measures, it is recommended that they use other than DOE or ARRA funding sources. However, for a MF complex where you have performed an energy audit and determined that the tenants would benefit from only Tier 1, on a limited basis, DOE or ARRA funds can be used.

Department of Energy

MEMORANDUM

Date: August 4, 1988

Subject: Approval to Include Wood Stoves As a Weatherization Assistance Program Material

To: Support Office Directors

INTRODUCTION

The Department of Energy's (DOE) Weatherization Assistance Program (WAP) has had under consideration for the past several years the inclusion of wood stoves as an allowable measure in the Weatherization Program. DOE funded an independent analysis of wood stoves through the Boston Support Office and Argonne National Laboratory. The analysis was contracted to address the following concerns:

1)Safety
2)Cost-effectiveness
3)Technical specifications
4)Environmental factors

In addition to the above concerns, the inclusion analysis addressed specific areas relating to liability, fuel quality, insurance, and certification and bonding of installers and inspectors. As a result of this analysis and comments received from the DOE support offices as well as many States, DOE approves the use of replacement wood stoves as an allowable measure under the Weatherization Program.

BACKGROUND

DOE has received requests from many states to allow the replacement of wood stoves under the DOE program. Currently, states are using the Department of Health and Human Services' Low Income Home Energy Assistance Program or other funds to replace these units. The program regulations allow DOE to approve new measures to the program without going through a lengthy rulemaking process. Since there was limited information at DOE upon which to base a decision on whether to include wood stoves in the program, WAP contracted the analysis to assist in making a final decision. This report along with other data supplied by states, national laboratories, utilities, and others was used in making the decision to include replacement wood stoves as an allowable measure. Because wood stoves are considered quite different from replacement furnaces and boilers already allowed under the DOE program, DOE requires states to meet the following criteria prior to receiving approval from the DOE support office to include this measure in their program.

IMPLEMENTATION

DOE considers wood stoves to be a unique measure. Therefore, any state that wishes to include wood stoves must submit an alternative energy audit if there is not one presently approved which addresses heating system (including wood heating systems) replacements as part of the priority list. It is the energy audit, which is the driving force for determining whether a wood stove should be replaced. Additionally, as a part of or as an amendment to the annual plan, states must include the methodology for implementing the following criteria with their local agencies or service providers:

1) Ensure wood stove installations, maintenance, and inspections are performed by qualified personnel only.

2) Ensure that only wood stoves which are certified and labeled by the National Fire Protection Association under 86M-1986 and 211-1984, the International Conference of Building officials, or other equivalent listing organization may be purchased with DOE funds and that electrical parts are certified and labeled by Underwriters Laboratory. These organizations require the manufacturer to test the heater and include detailed instructions for safe installation. After July 1990, stoves must be certified to meet the Environmental Protection Agency emission standards or local standards if they are stricter.

3) Ensure that local agencies obtain appropriate liability insurance.

4) Ensure that only a wood stove certified and labeled for mobile homes may be installed in a mobile home. The label should reference the Department of Housing and Urban Development's Mobile Home Standard and name the independent testing laboratory. Installation must be done in accordance with the manufacturers' recommendations.

5) Ensure that before a state includes wood stove work as a part of its weatherization program, it coordinates with state and county fire marshals (or equivalent) to ensure that restrictions and codes are met. All applicable permits must be obtained, and all work must receive approval from subsequent inspections.

6) Ensure that each agency performs consumer conservation education for every recipient of a new stove which outlines the safe operation and proper maintenance of the unit.

Mary E. Fowler, Chief
Weatherization Assistance Programs Branch
Office of State and Local Assistance Programs
Conservation and Renewable Energy

Department of Energy

MEMORANDUM

Date: October 21, 1988

Subject: Knob-and-Tube Wiring: Revised Policy Superseding Guidance of 7/25/83 and 7/13/88

To: Support Office Directors

This correspondence is a follow-up to my September 7, 1988 memorandum which requested input from the support offices on the subject of insulating in homes that contain knob-and-tube wiring (KTW). The input received has been most useful and has provided practical information that may enable state grantees to continue to safely install thermal insulation in situations where KTW exists.

In light of the responses from the support offices and the further review we conducted, two important points need to be emphasized: (1) the National Electrical Code (NEC) and changes to it do not apply until adopted by state and/or local electrical code authorities; and (2) these bodies incorporate NEC guidance or changes to it into their electrical codes on a highly individual basis. In practice, this means that the NEC can be adopted exactly as promulgated or modified by state and/or local electrical code authorities.

In the KTW matter with which we are now concerned, a number of states including Massachusetts, Nebraska and Washington, have looked at the issue and decided not to adopt the specific recommendations of the NEC on KTW. Instead, these states have adopted modified approaches, which permit the continued installation of thermal insulation over KTW when certain inspection and safety procedures are followed.

In both the states of Washington and Massachusetts, for example, those procedures include an initial survey of the wiring system by a licensed electrician, repair as required, the use of Class I thermal insulation only and overcurrent protection in compliance with the ampacity tables developed by the NEC. These examples are cited because the approach taken by these states conforms to the general WAP policy that jurisdiction in health and safety matters related to program-funded work resides with state and/or local authorities. Attached, for informational purposes, is Washington State’s electrical code material dealing with KTW that was sent by the Richland Support Office (RSO). That material consists of the following: (1) the August 15, 1988, Richland response to DOE-WAP on KTW issues and (2) an August 4, 1988, letter from the Washington State Department of Commerce to the RSO which describes the recently-revised Washington state electrical code procedures that must be followed in the installation of thermal insulation in structures containing KTW.

In light of the above, the revised DOE-WAP policy on installation of thermal insulation around KTW is that it is the state's responsibility to ensure that such work is in conformance with the applicable codes in the jurisdiction where the work is being performed. Therefore, the KTW guidance issued on July 25, 1983 and on July 13, 1988, is superseded by this memo.

Please convey to your WAP grantees: (1) the revised DOE-WAP policy on installing thermal insulation around KTW, as stated in the previous paragraph; (2) the attached information on the 1987 National Electrical Code change related to KTW; (3) the Washington state material if you think it will be helpful in understanding how other states are handling KTW; (4) that those homes which were completed without insulation since July 13, 1988 may now be insulated under the revised policy. The prohibition against re-weatherization found in Section 44013(e)(2)(i) will not apply to such insulation work and those homes may not be reported as new completions. In addition, each grantee should be advised to check with the appropriate electrical code authorities in its state to determine whether the NEC KTW change has been adopted as is, has been adopted with modifications, or has not been adopted and, therefore, whether any modification in KTW work performed under the WAP is required within the state.

Thank you for your assistance in this matter.

Mary E. Fowler, Chief
Weatherization Assistance Programs Branch Office of State and Local Assistance Programs
Conservation and Renewable Energy

Note - Attachments unavailable at this time

Retrofitting Insulation in Cavities with Knob-and- Tube Wiring: An Investigation into Codes, Safety, and Current Practices

Submitted to:
Illinois Department of Commerce and Community Affairs
June 5, 2000

Prepared by:
Building Research Council School of Architecture
University of Illinois at Urbana/Champaign

Principal Investigator: Jeffrey R. Gordon

Model Development: William B. Rose

A. Introduction

In 1987, an amendment to the National Electric Code (NEC) prohibited the placement of insulation in contact with knob-and-tube wiring. This amendment had significant ramifications for low-income weatherization programs around the country. By their nature, these programs deal with older homes where retrofitting sidewalls and attics with insulation often provide the most return in energy savings for dollars spent. In the 12 years since the amendment, weatherization agencies have adopted numerous approaches and protocols for dealing with this issue.

This report examines the code change, the safety issues that prompted the code change, and the range of actions taken by state code bodies and weatherization agencies in response to the code change. In an attempt to ease the narrative flow of the report, it was determined to place the most technical discussion in the appendix. The first two appendices are of critical importance and are referenced at several points in the main text. Appendix 1 examines the issues of voltage drop, resistance, heat generation, and circuit analysis. Appendix 2 contains spreadsheets showing the calculations of a simplified model whose results are reported in Section D.

B. Overview of Knob-and-Tube Wiring

Knob-and-tube wiring was the predominant wiring system through the 1920s and 1930s. Some installations of knob-and-tube wiring continued in houses up until 1950. There are several distinguishing characteristics of knob-and-tube wiring in comparison to current wiring methods:

- When running perpendicular to structural components (such as floor joists), modern wiring runs directly through holes in the components. Knob and tube wiring used protective ceramic tubes placed in the holes to prevent the wire from chafing against the structure.

- Modern wiring uses staples to hold the wiring against structural components when the wire is running parallel to the component. Knob-and-tube wiring used ceramic knobs to clamp the wire to the structural member.
- Connections between modern wires are completed within enclosed electrical junction boxes. Knob-and-tube wiring had visible connections. The wires were spliced and soldered together and then wrapped with electrical tape. These connections are called "pig-tail" connections because one wire is wrapped several times around the other wire before the two are soldered together. Ceramic knobs were strategically placed to protect the splice ensuring that inadvertent tugging on the wire would not stress the electrical connection.
- In modern wiring, the hot wire (black) and neutral wire (white), along with a ground wire, are insulated separately and bundled in a single plastic sheathing. In knob-and-tube wiring, the hot and neutral were insulated and run through a house separately, usually several inches apart. (three inches is the minimum separation prescribed by the NEC). Knob-and-tube wiring did not include a ground wire.
- In a modern system, many branch circuits use 14-gauge conductors protected by a 15-amp circuit breaker. Larger, 12-gauge conductors are required for 20-amp circuits. Knob-and-tube wiring typically consists of 12-gauge conductors.

While the differences are considerable, there is nothing inherent in knob-and-tube wiring that makes it dangerous. Knob-and-tube wire, properly installed, is not inherently a problem. While opinions regarding the safety of knob-and-tube wiring vary widely, the concerns are not with the original wiring, but rather with what has happened after the fact.

Older homes with knob-and-tube wiring were often supplied with 60-amp service at the main electrical panel. They were also subject to limited distribution in two forms: (1) limited number of circuits and (2) limited number of electrical outlets per room. Both of these factors opened knob-and-tube wiring to potential abuses of the electrical system after the initial installation.

Over the years, the demand for household electrical capacity has grown dramatically. Most knob-and-tube systems predate television, computers, and dozens of other appliances that are today taken for granted. As the need for electrical capacity grew, older wiring systems were modified for the convenience of the occupants. In some cases, these modifications put undue stress on the wiring system.

In response to the limited number of outlets per room, additional outlets were added on to the existing circuits. In many cases, the quality of the connections was not up to the standards of the original system. For instance, a portion of an existing wire conductor would be stripped of its insulation, and new wire taped on to service a new outlet. The connection may not have been soldered, and the new wire may have been of a lighter gauge. Stress protection for the new connection was rarely considered.

With additional outlets and increased electrical consumption, problems also arose with circuit protection. If circuits became overtaxed and 15-amp fuses were constantly blowing, some ill-informed homeowners would put in 25- or 30-amp fuses to rid themselves of the annoyance.

Allowing excessive current to flow through the conductors could lead to overheating, which, in turn, could lead to degradation and embrittlement of the wire insulation and the wire itself. The problem of overfusing can be difficult to determine. A home that has been upgraded to 100-amp service, and is currently properly fused, may have experienced a decade of past overfusing on the knob-and-tube circuitry that is still in use.

Finally, the wiring could suffer from physical abuse over time. Rather than hugging structural components, knob-and-tube wiring was suspended (a minimum of one-inch prescribed by the NEC) away from surrounding surfaces. Bumping the wiring could place stresses and cause resultant damage on a portion of the wire. This could be particularly true in accessible attics.

The conditions outlined above can be categorized as an abuse of a home's electrical system. These abuses (improperly added connections, overfusing and wire embrittlement, physical damage) can result in point sources of high resistance. It is at these points that fire potential is greatest (See Appendix 1). Ultimately, it is wiring that has been abused that is potentially dangerous.

C. Building Code Issues – History

1. National Electric Code (NFPA -70): 1987 amendment Section 324 of the NEC deals with "Concealed Knob-And-Tube Wiring." Prior to 1987, article 324-4 stated:

> "Concealed knob-and-tube wiring shall not be used in commercial garages, theaters and similar locations, motion picture studios, hazardous (classified) locations.

In 1987 article 324-4 was amended to read (additional wording in italics):

> "Concealed knob-and-tube wiring shall not be used in commercial garages, theaters and similar locations, motion picture studios, hazardous (classified) locations *or in the hollow spaces of walls, ceilings and attics when such spaces are insulated by loose or rolled insulating material."*

The amendment was submitted to Panel NO.7 by Jarrell B. Blair, building inspector for the City of Augusta, Kansas, at the May, 1986 NFPA annual meeting in Atlanta, Georgia. The substantiation for the additional wording was as follows:

> “SUBSTANTIATION:
>
> a. Concealed knob-and-tube wiring is designed for the hollow spaces of walls, ceilings and attics, utilizing the free air in such spaces for the dissipation of heat.
>
> b. Weatherization of the hollow spaces by blown-in insulation or roll insulation prevents the dissipation of heat into the free air space; resulting in higher (dangerous) conductor heat buildup, conductor insulation breakdown resulting in a probable or possible fire situation."

Clearly, heat dissipation, overheating, and fire potential was the sole concern that prompted the amendment.

There was some public comment on the amendment at the meeting. Mr. David C. Roberts, a panel member representing the American Electric Power Service Corp., stated for the record:

> "The substantiation to support this proposal does not contain the necessary factual data to support this restriction on concealed knob-and-tube wiring. There are a large number of installations of concealed knob-and-tube wiring. I have neither heard of any problems with this wiring method nor have I seen any studies on actual in-service installations that will support this restriction on concealed knob-and-tube wiring."

Larry Seekon of the Minneapolis Electrical Inspections Department submitted a public comment (7-16):

> "No factual substantiation of dangerous overheating has been submitted to justify prohibiting loose or rolled insulation material in contact with concealed knob and tube wiring. I am not aware of fires due ONLY to insulation touching knob and tube wiring. However fires do occur because of overfusing and improper splicing or tapping of these circuits. These hazardous conditions are already code violations.
>
> In the colder regions of the United States there are many thousands of homes now existing with loose or rolled insulation in contact with concealed knob-and-tube wiring. Most current building codes require the insulation to be fire retardant.
>
> To comply with such a restriction would result in a substantial increase in the cost of rewiring existing homes. New wiring would have to be fished in or surface raceway would have to be installed to replace existing knob and tube wiring. Both of these methods are very labor extensive and would substantially increase the cost of rewiring. Many people also object to the installation of surface raceway in the nicely decorated homes.
>
> In many circumstances, it would be very difficult, if not impossible, without damaging the walls or ceilings for an electrical inspector to determine if insulation material had been installed.
>
> I am very apprehensive of what a judge would think about an inspector issuing an elderly widow on Social Security an order to eliminate all concealed knob-and-tube wiring in contact with loose or rolled insulation, especially when the home was reinsulated ten years ago and there have been no electrical problems."

The panel rejected this comment and informed the submitter that it was not the intent to make this change retroactive.

In response to the rejection of comment 7-16, panel member Roberts went on record:

> "The Panel Action to reject this comment will require that concealed knob-and-tube wiring installations in older homes be replaced if, in the process of insulating the home, the wiring becomes embedded in insulation. The panel has no substantiating evidence to reject this comment. The substantiation stated in Comment 7-16 is correct. Concealed knob-and-tube wiring systems in thousands of residences are now embedded in insulation and no overheating problems have been reported."

The panel approved the amendment by a vote of ten to one, with panel member Roberts the lone dissenting vote.

Thomas Guida of Underwriters Laboratory was a member of Panel NO.7 at the time of the 324-4 amendment, and is the only panel member who is still serving. In a telephone interview, Mr. Guida did not recall that the code change caused much controversy on the panel. He described the change as an "obvious" fire safety improvement. When asked about substantiating evidence, Mr. Guida recalled UL reports on the issue, but thought that these were unpublished.

During the course of this study, the amendment was discussed with Jeff Sargent of the electrical engineering section of the National Fire Protection Agency (NFPA). NFPA is the sponsoring agency of the NEC. Mr. Sargent had no knowledge of fire loss data pertaining to this amendment, and suggested that the code change may have been a "preemptive" move based on the original design of knob-and-tube wiring. In this view, knob-and-tube wiring was designed to function in "free air," and thus encasement in an insulating material represents a practice contrary to the original design.

There is no evidence that there is any sentiment to rescind the amendment. Since the adoption of the amendment in 1987, only one minor change has been made to article 324-4 of the NEC. The recent NEC versions include a prohibition of "foamed in-place" insulation in addition to "loose or rolled insulating materials."

2. Local/State Amendments to NEC: While the NEC is a national code, it is not administered and enforced nationally. Building codes are administered on the state, county or local level. Some states have developed statewide building codes, while in other states it is up to local jurisdictions to adopt and enforce a building code. In most cases, one of the national model codes (BOCA, CABO, UBC) forms the basis of the state or local code. Since the national model codes reference the NEC for electrical requirements, it is almost certain that the NEC applies wherever a building code is in use. For instance, in Illinois, the BOCA National Building Code is the most prevalent model code. The first article in Chapter 27 Electrical Wiring, states, "...installations shall conform to the provision of NFPA 70 (NEC) listed in Chapter 35."

State or local jurisdictions can amend or augment the model code they have adopted to meet specific local concerns. In the course of the investigation, two Ohio cities were identified that developed specific rewiring codes. For instance, the City of Massilon, Ohio rewiring code states:

> "(10) Knob-and-tube wiring. All original knob and tube branch circuit wiring shall be reconnected on 15-ampere circuits, and any tampered wire shall have its original

> insulation integrity replaced. (11) Fuse. If Edison-Base fuse holders are used they shall be fitted with type "s" fuse adapters and fuse stats."

Wadsworth City, Ohio adapted similar language. This language does not appear in the NEC.

Given the potential impact of NEC 324-4 on weatherization activities, successful campaigns were initiated in several states to amend 324-4 locally, and allow for insulation around knob-and-tube wiring under certain conditions. These campaigns were possible in states that operated statewide building codes as compared to "home rule" states where building code administration was scattered throughout numerous local jurisdictions.

On 10/11/90, the state of Washington amended NEC 324-4 as follows:

> "The provision of Section 324-4 of the National Electrical Code shall not be construed to prohibit the installation of loose or rolled thermal insulating material in spaces containing existing knob-and-tube wiring provided that all the following conditions are met:
>
> (1) The wiring shall be surveyed by an appropriately licensed electrical contractor who shall certify that the wiring is in good condition with no evidence of improper overcurrent protection, conductor insulation failure or deterioration, and with no improper connections or splices. Repairs, alterations, or extensions of or to the electrical system shall be inspected by an electrical inspector as defined in RCW 19.28.070.
>
> (2) The insulation shall meet class I specifications as identified in the Uniform Building Code, with a flame spread factor of 25 or less as tested using ASTM E8481a. Foam insulation shall not be used with knob-and-tube wiring.
>
> (3) All knob-and-tube circuits shall have overcurrent protection in compliance with the 60 degree C column of Table 310-16 of the National Electrical Code. Overcurrent protection shall be either circuit breakers or Type S fuses. The Type S fuse adapters shall not accept a fuse of an ampacity greater than that permitted in this chapter."

Following on the heels of Washington State's success, the state of Oregon amended the state code in a similar manner:

> "The provisions of Section 324-4 shall not be construed to prohibit the installation of loose or rolled thermal insulating material in spaces containing existing knob-and tube wiring provided that all the following conditions are met:
>
> 1) The visible wiring shall be inspected by a certified electrical inspector.
>
> 2) All defects found during the inspection shall be repaired prior to the installation of insulation.
>
> 3) Repairs, alterations or extensions of or to the electrical systems shall be inspected by a certified electrical inspector.

4) The insulation shall have a flame spread rating not to exceed 25 and a smoke density not to exceed 450 when tested in accordance with ASTM E84-87. Foamed in place insulation shall no be used with knob-and-tube wiring.

5) Exposed splices or connections shall be protected from insulation by installing flame resistant, non-conducting, open top enclosures which provide at least 3 inches, but not more than 4 inches side clearance, and a vertical clearance of at least 4 inches above the final level of the insulation.

6) All knob-and-tube circuits shall have overcurrent protection in compliance with the 60 degree C column of Table 310-16 of NFPA 70-1990. Overcurrent protection shall be either circuit breakers or Type S fuses. The Type S fuse adapters shall not accept a fuse of an ampacity greater than that permitted in this chapter."

The states of Nebraska, Massachusetts, and California also amended state codes to allow for insulation around knob-and-tube wiring under specific protocols. With these amendments in hand, it was possible for state weatherization agencies to develop insulation programs that did not violate ruling building codes, and that provided specific documentation of safety procedures when insulating older homes. "Home rule" states (such as Illinois) did not have this course of action available. In these states, ensuring compliance with building codes would require amendments to all local building codes served by weatherization programs, implying dozens, if not hundreds, of local code amendment campaigns.

3. Department Of Energy Policy - Prior to the NEC code change in 1987, the U.S. Department of Energy (DOE) policy on the knob-and-tube issue was stated in a memorandum from Joseph Flynn, director of the Weatherization Assistance Programs. The memorandum, dated July 25, 1983, stated:

"It is believed that insulation can be safely placed over knob-and-tube wiring provided that:

- The wiring is in good condition and
- The circuits do not carry an amperage greater than the ratf3d current for that size wiring.

In all cases, before insulating over knob-and-tube wiring is approved, personnel authorizing work orders or contracts will conduct a thorough inspection of the areas to be insulated and ensure that:

1) All wiring to be covered is examined and pronounced safe and in good condition;

2) The electrical system has protective devices matched to the wire sizes which discontinue the flow of electrical current when the circuits are overloaded."

The inspector should check to determine if there is evidence of cracked or frayed electrical insulation or exposed conductors. Installers of the insulation should be cautioned to use care not to damage the old wiring as the new insulation is applied.

Installation of type "S" fuses is required infuse boxes in homes where knob-and-tube wiring systems are used. Type "S" fuses ensure against overloading by making it impossible to put in a larger rated fuse. Permission must be obtained from the client to modify the fuse box. If the client does not consent, the insulation cannot be installed.

Subgrantee personnel who authorize work should be aware that in some cases, when older homes have been re-wired, the knob-and-tube system has been left in place. An inspector may see only the abandoned wiring and take appropriate action. Inspectors will verify that knob and tube systems are, in fact, in service before disqualifying homes.

A word of caution: Since this condition is potentially dangerous, states and their subgrantees must continue to exercise uncompromising caution when insulating homes with knob-and-tube wiring. The responsibility for safety and the use of good judgment rests with the person authorizing performance of the work. When in doubt, they should ask a local building inspector or fire marshal to inspect the wiring and issue a certification. Advise the subgrantees not to insulate over knob-and-tube wiring unless they are satisfied that it is safe and has met the above conditions."

While expressing clear concern and emphasizing caution, DOE gave the ultimate responsibility to the states and subgrantees for determining the safety of insulation retrofits on a case-by-case basis. Visual inspection and type "S" fuses were required.

In 1988, following the NEC code change, DOE went through a period of reconsideration of this policy. The policy was formally changed in a memorandum dated July 13, 1988 from Andre W. Van Rest, chief of the Weatherization Assistance Programs Branch. Following acknowledgement of the NEC code change regarding knob-and-tube wiring (KTW), the memorandum states:

> "DOE has allowed installation of insulation over KTW as a weatherization measure only when precautions outlined in our attached memorandum dated July 25, 1983, are taken. These precautions included an examination of the condition of the wiring and the installation of proper electrical protective devices (typically, properly sized type "S" fuses). Although the application of insulation over KTW may raise the operating temperature of the wire, we are unaware of any problems with homes that contain KTW and have been insulated under the Weatherization Assistance Program.
>
> However, we feel that the most prudent course of action is to comply with the requirements of the 1987 NEC. Therefore, effective immediately, all support offices should notify their states that installation of thermal insulation over KTW is no longer permitted. This action does not affect homes already weatherized."

The memorandum placed a clear ban on the installation of insulation around knob-and -tube wiring. The policy, however, was short-lived. Prior to September 1988, Mary E. Fowler became the chief of the Weatherization Assistance Programs Branch. In a memorandum of September 7, 1988, she requested input from the support offices regarding this question. In the responses to this request, DOE became aware of the states that were preparing building code modifications to NEC 324-4. In a memorandum of October 21, 1988, examples of these modifications were distributed. As stated in this memorandum:

> "These examples are cited because the approach taken by these states conforms to the general WAP policy that jurisdiction in health and safety matters related to program-funded work resides with state and/or local authorities."

The memorandum acknowledged the state and local administration of the NEC, and went on to officially change DOE policy once more:

> "In light of the above, the revised DOE-WAP policy on installation of thermal insulation around KTW is that it is the state's responsibility to ensure that such work be in conformance with the applicable codes in the jurisdiction where the work is being performed. Therefore, the KTW guidance issued on July 25, 1983, and on July 13,1988, is superseded by this memo.
>
> Please convey to your WAP grantees: (1) the revised DOE-WAP policy on installing thermal insulation around KTW, as stated in the previous paragraph; (2) the attached information on the 1987 National Electrical Code change related to KTW; (3) the Washington state material if you think it will be helpful in understanding how other States are handling KTW; (4) that those homes which were completed without insulation since July 13, 1988 may now be insulated under the revised policy. The prohibition against re-weatherization found in section 440.18 (e) (2) (i) will not apply to such insulation work and those homes may not be reported as new completions. In addition, each grantee should be advised to check with the appropriate electrical code authorities in its state to determine whether the NEC KTW change has been adopted as is, has been adopted with modifications, or has not been adopted and, therefore, whether any modification in KTW work performed under the WAP is required within the state."

According to DOE's Greg Reamy, this memorandum of October 21, 1988 remains the stated policy of DOE. Once again, responsibility is placed on the state programs rather than a DOE mandate. The state's responsibility, however, is redirected specifically toward code compliance as the assurance of safety. To reiterate, "...it is the state's responsibility to ensure that such work be in conformance with the applicable codes in the jurisdiction where the work is being performed." In states with local "home rule" building codes, this would require each subgrantee to examine the local code to identify whether NEC 324-4 "has been adopted as is, has been adopted with modifications, or has not been adopted."

Department of Energy

MEMORANDUM

Date:March 18, 1992

Subject: Weatherization Assistance Program (WAP) Space Heater Policy

To:Support Office Directors, WAP Program Managers

BACKGROUND

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 two million low-income households use space heaters as a secondary method of heating. Many states have requested that they be allowed to repair or replace space heaters on an as needed basis, the same treatment for furnaces are given.

Potential health and safety risks associated with the use of space heaters, especially portable and unvented devices, coupled with the limited base of technical knowledge on space heaters, made it imperative that space heater operation be carefully understood prior to the development of Department of Energy (DOE) policy. Therefore, the Weatherization Assistance Programs Division commissioned a study, a copy of which was previously distributed, to provide us with information on the issue of whether to include space heaters as an allowable measure in the WAP and under what conditions and circumstances. The WAP also conducted a survey of states to collect additional information on space heater programs that already exist, which was previously provided as well.

INTRODUCTION

A draft space heater policy was transmitted to the support offices and the states for comment on October 18, 1991. We received many comments for which we thank everyone. These comments were taken into consideration, where possible, in determining the policy contained herein. The major concerns from states that weatherize space heater homes fall into two categories: (1) That there may be some homes occupied by WAP eligible clients where unsafe conditions exist prior to weatherization work, and (2) that weatherization air tightening techniques have improved to the point that they can create indoor air quality concerns if used in homes with space heaters when replacement or repair of such equipment is not allowed.

The space heater report that was completed for WAP pointed out a variety of areas of concern but was not able to obtain air quality data or standards that could be used to formulate a final space heater policy. The North Carolina IAQ testing, admittedly limited, provides further concerns and actual readings in the 120 homes measured in the study. The resulting policy, therefore, attempts to take a common sense approach to the treatment of space heaters, taking into consideration the limited information and experience we have to date

APPLICABILITY

This policy applies to gas and liquid fueled space heaters only. Wood burning stoves were treated earlier; coal-burning stoves are still under consideration. This policy applies to gas and liquid fueled space heaters whether the appliance is the primary or secondary heat source.

INCIDENTAL REPAIRS

Incidental repairs under the WAP are not affected by the policy contained herein. Local agencies may continue making incidental repairs necessary to allow weatherization work to proceed safely, including to space heaters.

SPACE HEATER POLICY

Any space heater replacement or repair procedure should include inspection to ensure that a working smoke detector is installed on the same floor as the space heater. In instances where a smoke detector is not present or is not operating properly you may purchase and install one with DOE funds. The cost of the purchase and installation of the smoke detector is a material cost.

Consumer conservation education, including information on the proper operation of the equipment, should be provided. Checks should be made to ensure that auxiliary considerations, such as electrical wiring or chimneys, are in good condition; and, that no obvious building code violations or other safety hazards related to the space heater are evident. 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 materials cost as well) for all space heater work and final inspection by competent professionals should take place before any heater is put into operation.

We have referenced a number of documents that may be useful to the grantees in adding this component to their program. These documents are found in this guidance under the heading of "Related Materials and Documents," and have either already been distributed to you and the grantees; or, as in the case of the Consumer Product Safety Commission pamphlets, being sent under separate cover.

1. Vented Space Heaters

Oil-fired space heaters (which are always vented), vented kerosene space heaters, and vented gas space heaters should be treated as if they are furnaces. DOE is taking this approach because of the similarities with other furnaces: tune-ups are possible; the fuels burn relatively clean and free of sediment; they are relatively low in viscosity and free of ash; and, there are vents and perhaps ducts that can be cleaned. This policy is one that the states have recommended since furnace replacement was first allowed.

2. Unvented Space Heaters

Operation of unvented gas and liquid fueled space heaters can negatively impact indoor air quality through indoor air pollution. Indoor pollutant concentrations resulting from the use of unvented space heaters can vary significantly from house to house depending on the operation of the space heater and the air infiltration/ventilation rates of the residential structure in which it is placed. Poorly adjusted heaters produce substantially greater quantities of carbon monoxide (CO), aldehydes and particulates than properly adjusted units, while inadequate ventilation may result in a rapid buildup of all pollutants including harmful quantities of CO. Even with the IAQ testing done by North Carolina as a guide for our policy, it is still difficult to accurately predict the impact of unvented space heaters on indoor air quality. It is very important to exercise caution in the use of unvented space heaters, since the potential for accumulation of harmful pollutants is clearly evident.

In addition to the production of toxic by-products, unvented space heaters release water vapor equivalent to 8 to 11 gallons of liquid water into the heated space for each million Btu of energy delivered. Water vapor condenses upon cooling to room temperature, creating a source for mold growth and contributing to premature rotting of interior building materials unless adequate ventilation is maintained.

The DOE policy on treatment of unvented space heaters is as follows. In cases where weatherization work takes place on homes with unvented space heaters, local agencies should check to see if a vented space heater can be installed to carry the major heating load. Otherwise the local agency should consider either replacing all the unvented heaters or not weatherizing the house with measures that decrease air infiltration. In cases where replacement is indicated, states should carefully analyze existing conditions to best determine whether to require replacement with the same fuel items. The decision to change fuel types should be on a limited, case-by-case basis.

Current WAP 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 current WAP regulations are undergoing several changes. One of these changes includes a heightened emphasis on health and safety. The replacement of an unvented space heater with a vented one may not be justified through cost-effective methods in and of itself. However, the potential does exist 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 so that total energy costs are less or the same, while the indoor air quality resulting from the use of a vented space heater is greatly improved. The above considerations must be taken into account in justifying replacement of an unvented space heater with a vented one.

a. Electric Space Heaters

DOE will not permit any WAP-funded weatherization work other than incidental repairs on electric space heaters with DOE funds. (If funds from another source are available, DOE will not preclude use of such a source, but we do not encourage it.) This is because of the high cost of electricity as compared to fossil fuels; the lower output ratings (size); the risk of fire hazards – especially in older homes – and, the 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.

b. Gas Space Heaters

ANSI Z223.1 contains the following prohibition against installation of unvented gas space heaters: "Unvented space heaters shall not be installed in bedrooms or bathrooms, nor shall they be installed in institutions such as homes for the aged, sanitariums, convalescent homes, or orphanages." This prohibition, coupled with the potential for serious indoor air quality and moisture problems, leads DOE to permit replacement of gas space heaters only when the existing ones are in poor mechanical condition or pose health and safety risks for other reasons. (We understand that repair is not generally an option with unvented gas space heaters.) Such replacement should be with another gas space heater. We would expect that such replacements would be with vented systems but are not requiring vents in this interim policy.

c. Kerosene Space Heaters

Because of the potential for serious indoor air quality and moisture problems, the potential fire hazards, and that the user must select the proper grade of kerosene, the DOE position on unvented kerosene space heaters is that local agencies may replace or repair unvented kerosene space heaters only if an acceptable plan is submitted to the applicable state. This plan should consider among other things: The cost-effectiveness, health and safety concerns; the code considerations, if applicable; and, a consumer conservation education component. Also, such replacements or repairs should be considered only when the kerosene heaters are the only source of heat and no reasonable alternative exists.

IMPLEMENTATION

The information contained in the section entitled, "Weatherization Considerations," and found on pages 35-38 of the space heater report should be understood and addressed by local programs that get involved in space heater repair and replacement. 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 Support Office review and approval. Funds to address these items as part of weatherization work will be allowable WAP costs. It is especially important to insure that adequate inspection, safety, liability, and insurance procedures exist and be 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 of purchase of the testing device, the mechanical tools necessary to check for indoor air quality and the training of personnel to do the testing are allowable program expenses. These charges may be made to the program support cost category.

RELATED MATERIALS AND DOCUMENTS

August 1, 1991 transmittal of the results of the Indoor Air Quality test component of the North Carolina Audit Field Test.

Analysis of Space Heaters as a Possible Allowable Weatherization Measure (a report).
Space Heater Analysis for WAP.

CONSUMER PRODUCT SAFETY COMMISSION PAMPHLETS (CPSC):

Smoke Detectors Can Save Your Life (English and Spanish versions)
What You Should Know About Space Heaters
On the Side of Safety ... CAUTION Choosing and Using Your Gas Space Heater
Product Safety Fact Sheet - No. 98: Electric Space Heaters
Product Safety Fact Sheet - No. 44: Fireplaces
Product Safety Fact Sheet - No. 79: Furnaces
Product Safety Fact Sheet - No. 99: Ground-Fault Circuit Interrupter (GFCI) Product Safety Fact Sheet - No.9: Ranges and Ovens
Your Home Fire Safety Checklist
What You Should Know About Combustion Appliances and Indoor Air Pollution

POLICY TRANSMITTAL TO GRANTEES

Support offices are requested to provide copies of this interim space heater policy to their grantees and to request that grantees, in turn, provide it to subgrantees.

James Gardner, Jr., Acting Director
Weatherization Assistance Programs Division
Office of Grants Management
Conservation and Renewable Energy

Weatherization Program Notice 02-6

Effective Date - July 12, 2002

SUBJECT: Weatherization Activities and Federal Lead-Based Paint Regulations (Replaces WPN 01-10 Issued 5/10/01)

PURPOSE: The primary purpose is to provide guidance to regional offices and states relative to weatherization health and safety matters associated with lead-based paint in homes. The secondary purpose is to provide information about other federal lead-based paint rules that apply to weatherization work.

SCOPE: The provisions of this guidance apply to all grantees applying for financial assistance under the Department of Energy's Weatherization Assistance Program.

PLEASE NOTE: Some of this guidance DOES NOT apply when weatherization work is done in HUD program housing or when HUD funds are used. The requirements are somewhat different under the HUD's lead paint rule, and agencies that do work in HUD program housing must become familiar with the differences and follow the HUD rule when weatherizing under those circumstances. See **Attachment A** for a discussion about the HUD rule.

BACKGROUND: This program notice replaces Weatherization Program Notice 01-10, Weatherization Activities and Federal Lead-based Paint Regulations of May 10, 2001.

Childhood lead poisoning is linked to reduced intelligence, low attention span, reading and learning disabilities, juvenile delinquency, behavioral problems, and other adverse health effects. During the past 20 years, the removal of lead from gasoline, food canning, and other sources have been successful in reducing population blood lead levels by more than 80 percent.

However, nearly one million children have excessive levels of lead in their blood, making lead poisoning a leading childhood environmental disease. Lead-based paint, along with the contaminated dust and soil it generates in housing, is the major remaining source of exposure and is responsible for most cases of childhood lead poisoning today.

Congress and federal agencies responsible for the environment and disease control have become increasingly aware of the lead-based paint hazard. In 1992, Congress passed and President George Bush Sr. signed into law the Housing and Community Development Act, which included Title X, the "Residential Lead-Based Paint Hazard Reduction Act of 1992. Title X authorized EPA, HUD, and OSHA to develop lead-based paint regulations. This act is the basis for the EPA, HUD, and OSHA regulations discussed in this Program Notice.

The Department of Energy (DOE) is a member of two relevant interagency task forces: the President's Task Force on Environmental Health Risks and Safety Risks to Children and the Federal Interagency Lead-Based Paint Task Force.

POLICY: Lead-based paint dust and other residues are hazards that Weatherization workers are likely to encounter in older homes. HUD estimates that within the national housing inventory,

26 million homes have significant lead-based paint hazards (estimates of the National Survey of Lead and Allergens in Housing at **www.hud.gov**. Furthermore, Weatherization work may directly disturb lead-based paint, possibly creating hazardous conditions. While the authorizing legislation for DOE's Weatherization Assistance Program (WAP) does not specifically address lead-based paint hazard reduction, DOE's policy is that weatherization workers must be aware of the hazard and conduct weatherization activities in a safe manner to avoid contaminating homes with lead-based paint dust and debris, and to avoid exposing the clients, themselves, and their families to this hazard.

It is important to remember that the WAP's legislated purpose is to install energy efficiency measures in weatherization clients' homes, in order to lessen their energy cost burden. WAP is not funded to do lead-based paint abatement work, nor to do lead-based paint hazard control or stabilization **[1]**. In the process of weatherizing a home, workers sometimes encounter and have to disturb painted surfaces that are known or presumed to contain lead-based paint. When that happens, DOE funds may be used to minimize the potential hazard associated with the specific painted surfaces that workers are directly disturbing in the course of installing an energy efficiency measure, but DOE funds may not otherwise be used for abatement, stabilization, or control of the lead-based paint hazard that is in the house.

Weatherization agencies are encouraged to apply for HUD Lead Hazard Control grants and become certified to do lead-based paint hazard control work. Some agencies are doing this work now as an additional business line, and in at least one state some local agencies are performing weatherization work and HUD's lead-based paint hazard control work at the same time.

> **[1]** HUD is funded for the general control or stabilization of lead-painted surfaces in low-income homes, and HUD has programs that provide funding for lead hazard control in many communities.

Weatherization is an energy efficiency program, not a renovation or remodeling or rehabilitation program, and thus may not be subject to other agencies' rules governing renovation, remodeling, or rehabilitation work. However, there are certain instances in which particular federal rules relating to lead-based paint hazard do apply to weatherization work. **Attachment A** is a summary discussion, for your reference, of the other federal agency regulations that pertain to lead-based paint hazards and the circumstances under which we believe these regulations apply to weatherization work. **Attachment B** is a flow chart to assist with determination of the appropriate actions, described below, and applicability of the various federal rules.

DOE GRANT GUIDANCE: Processes known as "lead-based paint abatement," "lead-based paint hazard control," or "lead-based paint stabilization" are not allowable activities using weatherization program funds. However, work that is needed in conjunction with weatherization activities that disturb surfaces having lead-based paint, to prevent the generation of lead-based paint dust and residues, is allowable as long as the work is associated with installing energy efficiency measures.

When weatherization crews disturb surfaces that may have lead-based paint, they must exercise caution to keep any dust that is generated from becoming a hazard to the clients, to themselves or

to their families. They do this (safeguarding people from lead-based paint hazards) through a set of safe work protocols hereafter referred to as lead safe weatherization (LSW). In the course of applying the principles of LSW to the installation of energy efficiency measures, weatherization crews may perform some of the same procedures which are used in the control or stabilization of lead-based painted surfaces, but that will be only incidental to following LSW practices while accomplishing the weatherization of the home.

1. **State Application**. The WAP's program year 2002 Annual Grant Guidance, Weatherization Program Notice 02-1, October 29, 2001, requires states to identify and implement lead safe weatherization. As a part of their health and safety plan, states must identify the procedures for local agencies to follow to address lead-based paint issues. These procedures, at a minimum, were specified to include the following:

    - A description of the LSW practices to be followed by weatherization crews;
    - The timetable for completing any necessary lead-based paint training for local agency Weatherization crews - see paragraph eight below, for deadlines in getting all LSW training completed;
    - The proper disposal of all materials containing lead-based paint; and
    - The description of a "deferral policy" for dwellings where DOE funding or crew training/readiness is insufficient to perform the appropriate LSW practices.

2. **What is LSW?** Lead safe weatherization (LSW) is a set of protocols to be used when disturbing surfaces that may have lead-based paint, that will reduce and control the amount of lead dust and paint chips that are generated. The protocols, when designed and followed properly, address compliance with applicable regulations, including state and local regulations, and may reduce the risk of liability associated with the work. The protocols require training to gain an understanding of lead-based paint hazards and their harmful effects and to acquire skills in reducing the lead dust generated when painted surfaces are disturbed in the course of installing energy efficiency measures. The protocols involve setup and cleanup practices that contain the spread of the lead dust and debris (generated from the weatherization activities) when the work is finished. Lead Safe Weatherization (LSW) is a set of protocols to be used when disturbing surfaces that may have lead-based paint, that will reduce and control the amount of lead dust and paint chips that are generated. The protocols, when designed and followed properly, address including state and local regulations, and may reduce the risk of liability associated with the work. The protocols require training to gain an understanding of lead-based paint hazards and their harmful effects and to acquire skills in reducing the lead dust generated when painted surfaces are disturbed in the course of installing energy efficiency measures. The protocols involve setup and cleanup practices that contain the spread of the lead dust and debris (generated from the weatherization activities) when the work is finished.

    LSW practices/protocols are described in two documents, either of which could be adapted by a state as a model in developing their own set of LSW protocols. These documents are the Montana State University developed LSW curriculum and the state of California WAP

booklet titled "Lead-Safe Weatherization." Both the curriculum and the booklet are available for review on the WAPTAC Web site **www.waptac.org.**

3. **When is LSW Necessary?** In order to be as compatible as possible with pertinent requirements imposed by other agencies' regulations, DOE recommends that states include in their health and safety plan the following set of criteria for determining when LSW would be performed by local weatherization agencies:

    - The dwelling was constructed pre-1978, and
    - The dwelling has not been determined to be lead-based paint free, and
    - Either the amount of disturbed lead-based painted surface exceeds two square feet per room of interior surface, 20 square feet of exterior surface or 10 percent of a small component type, e.g., window; or the amount of lead-based paint dust to be generated by the weatherization work exceeds OSHA-defined airborne levels for lead.

4. **Testing for Lead-Based Paint and Lead-Based Paint Residues.** Testing for lead-based paint is not an allowable weatherization expense; except, when it is related to the installation of energy efficiency measures. These expenditures must be within the limits set by the state in its weatherization health and safety plan. In pre-1978 houses where the presence or absence of lead-based paint has not been determined, testing for lead-based paint could be worthwhile as an economy step. If the anticipated weatherization/energy efficiency work involves disturbing more than a small amount of painted surfaces, then ruling out the presence of lead in the paint would save extra time and costs associated with doing LSW practices. Testing in a home for lead in a painted surface, when it is done, is limited to only those surfaces that will be disturbed.

    Testing can be expensive and may take time. To have any standing in liability suits, testing requires the employment of a person who is a certified lead paint inspector or risk assessor and has been trained and is knowledgeable in sampling techniques. The fastest test results are with a XRF (X-RAY fluorescence) diagnostic tool. It gives an almost instantaneous result, but it is expensive and requires that the operator be certified. Purchases, the cost of training and certification, and maintenance of XRF machines must be funded from other sources, as they are NOT allowable expenditures of DOE weatherization funds.

    Low cost spot-test kits are available that provide a colorimetric (color change) indication of the presence or absence of lead. HUD and EPA are reviewing the efficacy of the commercial kits available, but have not yet completed their findings. Preliminary results indicate that these kits may be useful as a negative screen (an indication that no lead is present); however, agencies should exercise caution since not all spot-test kits are useful as a negative screen.

    The following considerations are offered as a guide to determining whether testing is worth the time and money on a case-by-case basis.

    - Houses built from 1978 on may be assumed to be free of lead-based paint, without testing.

- In houses built prior to 1930 **[2]**, it is logical to simply assume the presence of lead-based paint and save the cost of testing.
- In homes built between 1930 and 1978, testing may not be warranted if the amount of paint to be disturbed is small, since it may be cheaper to perform LSW for a small area than to incur the expense of testing. However, where the amount of paint to be disturbed is relatively large, it may be worth the cost of testing, since a negative result would mean that the crews could dispense with having to perform the LSW protocols.

Routine testing of every house for lead paint levels before the start of work (testing of painted surfaces to be disturbed and/or risk assessment) and at the end (clearance testing) is a standard practice associated with lead paint hazard control or abatement work **[3]** and is not an allowable use of DOE weatherization funds, except as required when weatherization work is being done on HUD homes or with HUD funds. If a state establishes a regimen of routine risk assessment and clearance testing for all cases where the presence of lead paint is a possibility, the state must use other sources of funding to implement such a policy.

[2] Although WAP Notice 01-10 suggested that 1940 was the cut-off year for prevalence of lead-based paint in housing, newer surveys (see reference to the national Survey of Lead and Allergens in Housing) suggest 1930. One reason for this was the apparent lack of housing construction during the Depression. By the time WWII arrived, metals like lead were diverted for the war effort and when the building boom of the late 1940s hit, lead was already being removed from paint. Generally, it is more likely to find lead in trim and door and window paint than in wall paint.

[3] Please note that routine clearance testing is not only used for hazard control, but is required in HUD regulations for maintenance and rehabilitation activities in assisted housing.

NOTE: HUD's guidance to its properties has been to test all properties for the presence of lead-based paint; so, the HUD program housing in your area may already have been tested for lead-based paint.

About Clearance Testing - Clearance testing (as required by the HUD rule) is not a requirement for weatherization work per se. As such, clearance testing is not an allowable expenditure of DOE funds. However, under some circumstances clearance testing may be required if you are doing weatherization work in HUD program housing or you are using HUD funds. In these instances, your first course of action should be to ask the HUD program to fund the additional cost for LSW and clearance testing. If no HUD funds are available, DOE funds may be used for clearance testing since it is a requirement in this instance.

5. **Deferrals.** States should develop a lead-based paint "deferral policy" to provide guidance to their subgrantees as to when it is prudent to defer certain weatherization work in homes that have either tested positive or are assumed to have lead-based painted surfaces. The following steps are recommended:

First, the subgrantee should assess the following factors:

1) Is the agency prepared to work with lead-based paint? (e.g. have workers received training in LSW work practices - NOTE THE TRAINING REQUIREMENT IN PARAGRAPH 8, BELOW; is the necessary equipment, such as HEPA vacuum cleaners, available and does the agency's liability insurance cover work with lead-based paint);

2) What is the condition of the painted surfaces in the house? (e.g., are they seriously deteriorated);

3) What is the extent to which the specific energy efficiency measures determined by the audit will disturb painted surfaces? (e.g., will the disturbance likely generate dust in excess of OSHA minimums); and,

4) Will the cost of doing LSW work represent a large portion of the total cost, such as to exceed the amount allowed by the state's health and safety plan (which could be the case if large amounts of lead-based paint surfaces will be disturbed)?

Second, the grantee should determine, based on consideration of the above factors, whether to:

1) Proceed with all the weatherization work, following LSW work practices, or

2) Do some of the weatherization tasks, defer others, or

3) Defer all of the weatherization work.

Deferral would mean postponing the work either until the weatherization agency is prepared to work with lead-based paint, or until another agency has corrected the problem such that weatherization can be safely performed. In cases where extensive LSW would be necessary, agencies are encouraged to arrange with other organizations, which are funded to do lead-based paint hazard control, to perform some of the more costly activities, such as risk assessment or clearance testing. In areas where there are no organizations performing such work, weatherization agencies may choose to develop their capabilities for lead-based paint hazard control work, but they may not use DOE Weatherization funds for this purpose. The state's lead-based paint deferral policy should not call for deferring the weatherization work solely because there is lead-based paint in the home. In such a home, regular weatherization work that does not disturb painted surfaces can be done.

6. **Funding of Lead Safe Weatherization.** While the WAP Final Rule of 2000 (Federal Register, December 8, 2000) does not mandate a separate cost category for health and safety, it does allow states to budget health and safety costs as a separate category and, thereby, to exclude such costs from the calculation of average cost per home. States are reminded that, if they continue to budget and report health and safety costs under the program operations category, these costs would be included in the calculation of the average cost per home.

States should carefully consider the approach to be taken when they draft their health and safety accounting procedures. While ease of accounting is an important consideration, states 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. When the same items are assigned to incidental repair, weatherization material, or installation cost categories, they must be cost-justified.

Some weatherization agencies have successfully applied for funding from programs such as HUD's Lead Hazard Control and Healthy Homes to augment their weatherization efforts when working in homes with lead paint. In some states, the legislatures have appropriated separate funding to cover the additional costs to train and certify workers for work in homes with lead paint. Another potential source of funding, subject to each state's approval, is the HHS Low-Income Home Energy Assistance Program (LIHEAP). For your reference, **Attachment C** is LIHEAP Information Memorandum #2001-15, February 1, 2001, advising states that they may allow expenditure of LIHEAP funds allocated for weatherization of homes to be appropriately used for certain expenses related to LSW.

7. **Liability Issues.** Unless an agency has specifically purchased additional insurance to cover pollution occurrences, they probably do not have sufficient insurance for their work as required by the WAP's Program Year 2002 Annual Guidance, **Weatherization Program Notice 02-1**. It is likely that their general liability insurance has a pollution occurrence exclusion. The WAP Annual Guidance requires that agencies have sufficient insurance coverage. When there is a gap in the coverage due to an exclusion, the agency has insufficient insurance. Therefore, WAP sub grantees are required to have Pollution Occurrence Insurance (POI).

   DOE strongly advises agencies to either refer or defer weatherization work that will disturb surfaces that may contain lead-based paint, until they have insurance that will provide coverage for LSW work situations involving lead-based paint.

   The cost of such insurance is an allowable DOE expense, and we urge agencies to seek ways to obtain the coverage at reasonable rates. DOE's guidance suggests that states consider undertaking the negotiation of subgrantees' liability insurance, in order to get lower cost coverage for work in situations involving lead-based paint. We are told that some agencies have been informed that they are unlikely to get better rates for their liability insurance unless they have had EPA or state training leading to lead-paint certification. This is not true. Agencies who do not have EPA certified workers have gotten POI at a reasonable rate. Note: EPA certification is not a requirement for doing LSW. EPA certification is required only if the intent of the work is to do lead-based paint abatement work.

   For insurance shopping: there are features about weatherization work that state and local agencies should use in making the case for the lower risk associated with the nature of weatherization work, especially when compared to lead-based paint abatement and lead hazard control work:

   Weatherization is different from lead hazard control work and involves lesser levels of work associated with painted surfaces. In fact, the disturbance of painted surfaces, by comparison,

is minimal and when it happens, is incidental to the purpose of the work - the installation of energy conserving measures. In additional, not all weatherization work involves disturbing painted surfaces and some homes are lead free, and so the risk basis for insurance rates, unlike insurance for lead hazard control work, should not be based on one hundred percent operations in a lead paint environment for every home weatherized.

DOE is involved with EPA and HUD in continuing discussions with the insurance industry about ways to qualify weatherization agencies for more favorable rates. We also welcome suggestions from state and local agencies with experience in obtaining reasonable rates for this kind of work, which we will share with the network.

8. **Training.** WE CANNOT EMPHASIZE TOO MUCH: LSW training for weatherization workers, both in-house and contractor, is critical to the protection of weatherization clients and the workers themselves. Also, it may be helpful or even necessary in getting reasonable Pollution Occurrence Insurance (liability insurance for emissions from lead-based paint and other sources). DOE requires that when the disturbance of painted surfaces is significant (more than the de minimis levels stipulated in the EPA rule or exceeds the emissions levels under the OSHA Rule), weatherization workers be trained in LSW. If workers have not had sufficient training, states must provide training for them before they work on homes with lead paint where painted surfaces will be disturbed in the course of doing the weatherization measures.

   To help states that didn't have a lead paint training program, DOE developed a LSW training course that became available in October, 2001. The course has an easily exportable reference tool illustrating LSW practices. This is not the only training curriculum that is available to states. There are several courses offered by EPA and HUD that would serve as sufficient training for weatherization workers to enable them to do LSW. Although the EPA and HUD lead paint training courses acquaint trainees with the proper work protocols, the DOE LSW training addresses work practices for specific weatherization measures. For workers who will have or have had the HUD or EPA training, states may want to augment that training with DOE's LSW reference tool.

   The WAPTAC Web site has information about the above training courses and can be either downloaded or linked to a site where the course can be accessed. All are available to the states for use in crafting a training program. Any of these courses will provide sufficient orientation regarding the lead paint hazard to allow agencies to safely do weatherization work that disturbs painted surfaces, providing that the agencies follow the state's protocols for LSW activities.

   In order to be an allowable use of DOE grant funds, training in mitigation of lead paint hazards when disturbing painted surfaces must be related to the installation of energy efficiency measures and LSW work practices. Establishing a routine requirement for every weatherization worker to be an EPA (or the state equivalent) certified lead paint worker is a practice used in lead paint abatement work and is not an allowable use of DOE weatherization funds. If a state chooses to implement a training policy requiring

weatherization workers to have EPA training and be certified, they must use alternate sources of funding.

An important deadline and training requirement for States:

Within 60 days of the date of this Program Notice revision, all states must have submitted a LSW Training Plan that is a part of the WAP state plan's annual file. This plan must have a schedule for completion of LSW training for direct hire and subcontract weatherization workers who work on homes with lead paint where painted surfaces will be disturbed in the course of doing weatherization measures. This training must be completed as soon as possible, but within nine months of the date of this program notice. States not able to complete the training within the time frame must submit justification to the regional office explaining why. If the request is reasonable, the Regional Offices will grant an extension to the state.

SUMMARY: We appreciate the continued constructive input of many people in attempting to define and resolve issues surrounding the lead-based paint hazard. We understand that many state and local Weatherization agencies find the incorporation of this guidance into their operations difficult and challenging.

Because of the complexity of these issues, there may be elements that will require still further clarification. The WAPTAC Web site will soon have a compilation of frequently encountered questions and answers for them. Please let us know your questions and issues, so we can work together on dealing with this important health and safety matter.

John Millhone, Director
Office of Weatherization and Intergovernmental Programs
Energy Efficiency and Renewable Energy

Attachments:
A - Other Federal Government Regulations Pertaining to Lead-Based Paint
B - Decision Flow Chart for Applicability of Lead Safe Weatherization Measures
C - LIHEAP Information Memorandum, Transmittal No. LIHEAP-IM-2001-15, February 1, 2001

OTHER FEDERAL GOVERNMENT REGULATIONS PERTAINING TO LEAD-BASED PAINT

The purpose of this section is to provide a helpful reference indicating what weatherization agencies need to know about other federal agencies' requirements that apply to weatherization work in situations involving lead-based paint, and when it may be necessary to get more information.

EPA (for the 406 rule - the Hazard Notification Rule - only) and HUD allow for exemption from their rules if emergency actions are required by imminent danger situations. Certain other conditions will provide exemptions, such as a home designated exclusively for the elderly or disabled where it is certain that no children would live or periodically visit. Consult the rules for specifics.

Further information about lead-based paint may be obtained by visiting the respective Web sites referenced below.

1. Department of Housing and Urban Development (HUD) - Office of Healthy Homes and Lead Hazard Control. HUD's Lead-Based Paint Hazard Control Rule, 24 CFR35, (Part 35) - "Lead-Based Paint Poisoning Prevention in Certain Residential Structures" went into effect September 15, 2000, although some of the provisions (the prohibited paint removal techniques) had been in effect since November 1999. The HUD rule was issued under sections 1012 and 1013 of the Residential Lead-Based Paint Hazard Act of 1992, which is Title X of the Housing and Community Development Act of 1992.

The HUD rule normally does not pertain to weatherization work. However, in certain circumstances described below, the HUD rule does apply to weatherization work.

The HUD rule requires that weatherization agencies, when using HUD funds or working in HUD program homes, perform the work using "lead-based paint safe work practices," which have some distinct differences from the "Lead Safe Weatherization" (LSW) as explained in Weatherization Program Notice 02-6. These practices are specified in §35.930 of the HUD regulation for rehabilitation work. While DOE funds may be used for these measures if they are associated with the installation of energy efficiency measures, HUD funds (i.e., CDBG, lead hazard control program, etc.) may also be available in certain communities.

The HUD rule sets "de minimis" levels (two square feet per room of interior surfaces and 20 square feet of exterior or 10 percent of a small component type - e.g., window) of disturbed painted surfaces for adherence to the rule. States should note that in some homes there can be extremely high concentrations of lead present in small surfaces areas that could generate high exposure levels when disturbed and endanger residents. This could result in an OSHA citation. In this case, OSHA worker safety regulations govern, and employers are obligated to observe good work practices (explained in the program notice as LSW) to ensure that levels of lead-based paint dust are kept below acceptable levels. See the OSHA regulations below.

When the HUD Regulation ***does apply***:

The HUD regulation only applies to weatherization work when all four of the following conditions are true:

It is pre-1978 housing, and

The dwelling has not been certified to be lead-based paint free, and

The amount of disturbed lead-based painted surfaces exceeds two square feet per room of interior surfaces or 20 square feet of exterior surface or 10 percent of a small component, e.g., window, and

Either it is HUD-assisted housing (including HUD Section 8 vouchered housing), and/or HUD funds are being used to weatherize, rehabilitate, or repair the home.

When the HUD Regulation ***does not apply***:

The HUD rule does not apply to weatherization work when any one of the following five conditions is true:

It is post-1977 housing, or

The dwelling has been certified to be lead-based paint free, or

The amount of disturbed lead-based painted surfaces is less than two square feet per room of interior surfaces or 20 square feet of exterior surface or 10 percent of a small component, e.g., window, or

The home is neither a HUD program home, nor is HUD money funding the weatherization work, or related rehabilitation or repair of the home, or

The housing is designated exclusively for the elderly or disabled.
Web site reference: **http://www.hud.gov/** or call 1(800) 424-LEAD.

2. Environmental Protection Agency (EPA) - Office of Pollution Prevention and Toxics.
Only one of the EPA rules, section 406 of the Residential Lead-Based Paint Hazard Act of

1992, applies to Weatherization work. This is the Hazard Notification Rule, which became effective June 1, 1999, under EPA Final Rule, 40 CFR Part 745 titled; "Lead; Requirements for Hazard Education Before Renovation of Target Housing." Under certain, fairly common circumstances (explained below), Section 406 requires Weatherization providers to give a copy of the EPA booklet "Protect Your Family from Lead in Your Home" (publication number: EPA 747-k-94-001) prior to the start of work (if mailed, at least seven days before). The rule also has a record keeping requirements. The EPA publication "The Lead-Based Paint Pre-Renovation Education Rule: A Handbook for

Contractors, Property Managers and Maintenance Personnel," EPA-747-B-99-004, September 1999, outlines local agencies' responsibilities. Multiple copies of both documents can be ordered from the Government Printing Office, (202) 512-1800 or 1(866) 512-1800.

Section 402. The Lead-Based Paint Worker Certification rule does not apply if the intent of doing the work in the home is weatherization work, therefore, LSW practices utilized while installing energy efficiency measures do not require worker certification.
EPA's new section 403 rule is the Lead Hazard Standard. More information about his rule can be found at **http://www.epa.gov/.**

EPA's Office of Sold Waste memorandum to RCRA Senior Policy Advisors, EPA Regions 1-10, subject: Regulatory Status of Waste Generated by Local agencies and Residents from Lead-Based Paint Activities Conducted in Households from July 2000 allows disposal of everyday household hazardous materials – residue or debris containing lead-base paint, like replaced windows or discarded clothing – from homes as nonhazardous waste and thus not subject to toxic chemical disposal rules. Household lead-based paint debris, however, must be handled in a way that will not generate or discharge lead-based paint debris to the environment, either at the client's home or in transporting to a disposal site. A copy of the EPA memorandum is posted on the WAPTAC Web site.

The proposed EPA rule referred to as the Renovation Rule has not yet been sent out to federal government organizations for comment. DOE strongly believes that this rule does not apply to Weatherization work since we limit work to the installation of energy conserving measures to reduce the energy burden on low-income families. We do not consider Weatherization work to be renovation or remodeling activities.

When the EPA Regulation ***does apply***:

The EPA regulation (section 406) only applies to weatherization work when all three of the following conditions are true:

It is pre-1978 housing, and

The dwelling has not been certified to be lead-based free, and

The amount of disturbed lead-based painted surfaces will exceed two square feet per room of interior surfaces or twenty square feet of exterior surface.

When the EPA Regulation ***does not apply***:

The EPA rule does not apply to Weatherization work when any one of the following three is true:

It is post-1977 housing, or

The dwelling has been certified to be lead-based paint free, or

The amount of disturbed lead-based painted surfaces will be less than two square feet per room of interior surfaces or twenty square feet of exterior surfaces; however, it is recommended that Weatherization agencies do hand out the booklet in all cases involving pre-1978 housing, since it is excellent outreach material and the work may change after the job has begun, involving more disturbance of painted surfaces than originally anticipated.

Web site reference: **www.epa.gov/** or call 1(800) 424-LEAD.

3. **Occupational Health and Safety Administration (OSHA)**. Title X, subtitle C, Section 1031 and 1032, Worker Protection, of the Housing and Community Development Act of 1992 amended the Occupational Safety and Health Administration (OSHA) standards for occupational health and environmental controls in Subpart D of 29 CFR part 1926 by adding a new Section 1926.62 containing employee protection requirements for construction workers (includes Weatherization workers) exposed to lead.

In general, when painted surfaces are disturbed and lead paint is suspected, workers should perform the work in a way that will contain the generated lead dust. The OSHA Construction Standard (1926.62), Good Work Practices, requires that employers ensure that good work practices are followed when worker exposure to lead exceeds the action level, which is an eight-hour Time Weighted Average (TWA) of 30 ug/m3 (micro grams per cubic meter). For weatherization agencies, LSW practices are deemed to constitute the "good work practices" referred to in this rule. Further compliance activities are required if worker exposure to lead exceeds the Permissible Exposure Level (PEL), which is an 8-hour TWA of 50 ug/m3.

Actual measurement of on-site exposure levels is difficult and expensive. When judging the proper level of worker protection for compliance with the OSHA lead exposure regulations, employers may substitute laboratory test results, if they are for comparable activities, in lieu of actual on-site monitoring data. Battelle National Laboratory did some testing to determine exposure levels to lead dust for certain (not all) tasks associated with Weatherization activities. These test results are posted on the WAPTAC Web site. For these tasks, where the levels of lead-based paint dust can be predicted to be less than the action level, the weatherization agencies need not employ most LSW practices in order to be in compliance with the OSHA rule.

In houses where there is the potential for lead exposure and where Weatherization workers will be performing tasks for which comparable laboratory data are not available, assume that the action level is exceeded and ensure that workers follow LSW procedures.

The Weatherization Program, as well as several states, is performing studies to determine the level of lead-based paint dust generated by typical Weatherization activities. The results are expected in late fall this year and we will keep you posted.

When the OSHA Regulation ***does apply***:

> The OSHA rule always applies when painted surfaces are disturbed and workers are exposed to a lead-based paint hazard. When the exposure exceeds the action level and the PEL, i.e., an 8-hour TWA of, respectively, 30 and 50ug/cubic meter, employers are required to have workers observe further precautions. The action level triggers several ancillary provisions of the standard such as exposure monitoring, medical surveillance, and training. Additional requirements must be observed when the PEL is exceeded.

When the OSHA Regulation ***does not apply***:

> The OSHA standard always applies; the amount of protection and measures taken varies according to the exposure. If the agency has objective data from test results, or similar operating experience, showing that the particular weatherization activities being conducted do not exceed the action level, even when lead-based painted surfaces are disturbed, then most of the OSHA standards do not apply.

Website references:

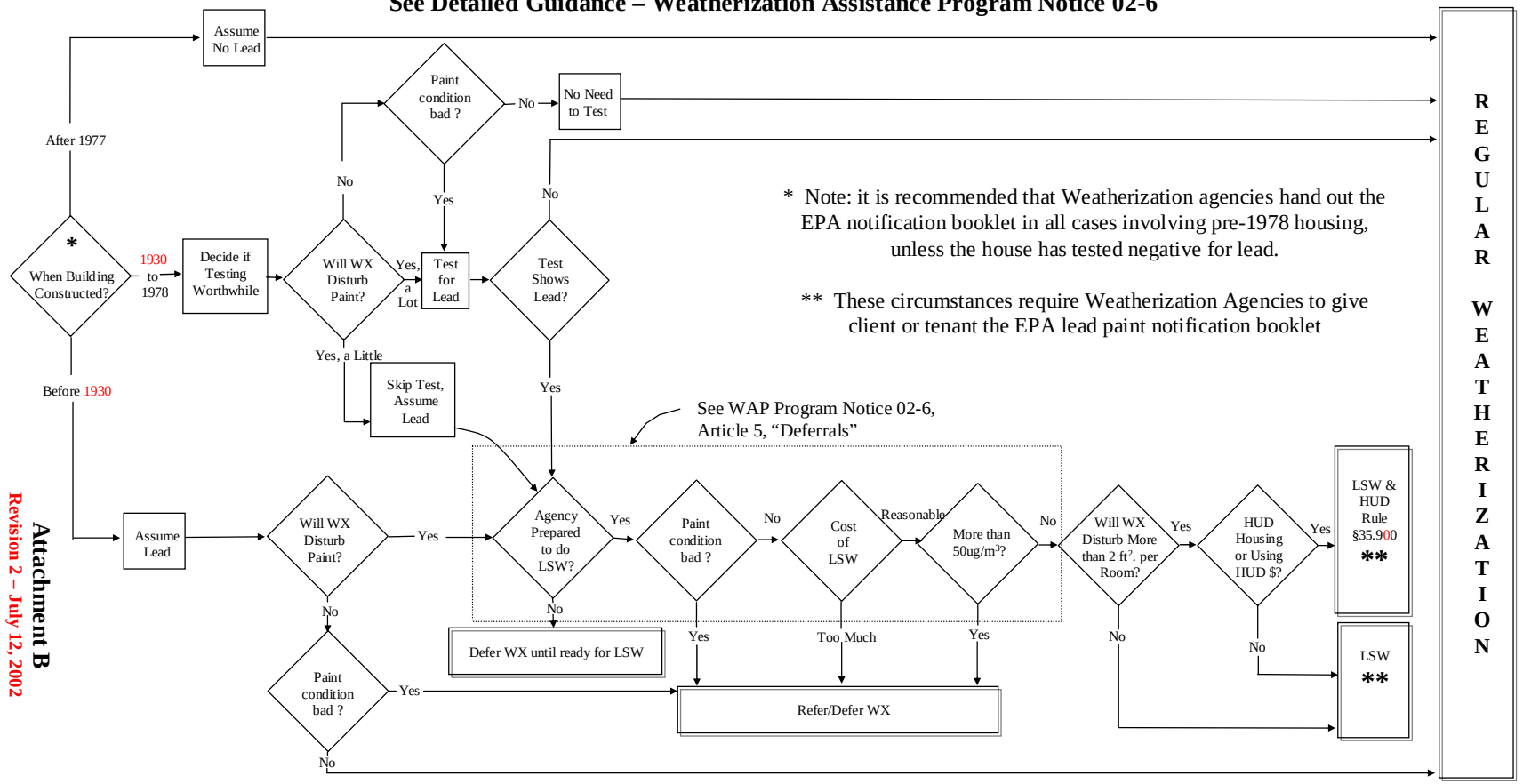
www.osha.gov

4. **State and Local Requirements**. Finally, weatherization program managers should always consult local and state regulations, as they may be more stringent than those of the federal government. If so, they must be followed. If they haven't already, WAP grantees are encouraged to establish contacts in their state offices with lead-based paint training and certification program managers.

Decision Flow Chart for Applicability of Lead Safe Weatherization (LSW) Measures

See Detailed Guidance – Weatherization Assistance Program Notice 02-6

July 12, 2002



* Note: it is recommended that Weatherization agencies hand out the EPA notification booklet in all cases involving pre-1978 housing, unless the house has tested negative for lead.

** These circumstances require Weatherization Agencies to give client or tenant the EPA lead paint notification booklet

Attachment B
Revision 2 – July 12, 2002

LOW-INCOME HOME ENERGY ASSISTANCE

Information Memorandum

Transmittal No: LIHEAP-IM-2001-15 Date: February 1, 2001

TO: Low Income Home Energy Assistance Program (LIHEAP) grantees and other interested parties

SUBJECT: Lead Paint Hazard Control and Weatherization

RELATED REFERENCES: Low Income Home Energy Assistance Act, Title XXVI of the Omnibus Budget Reconciliation Act of 1981, Public Law 97-35, as amended.

PURPOSE: To advise grantees of ways to coordinate and safely carry out weatherization activities in homes with lead paint hazards.

BACKGROUND: Homes built before 1978 often contain lead-based paint. Medical studies have shown that lead is toxic, especially to young children, and can cause harm to the brain, kidneys, bone marrow and other body systems. At high levels, lead can cause coma, convulsions, and death. Comparatively low levels are also harmful, and can cause reduced intelligence, behavior difficulties, fetal development abnormalities, and other problems.

The effects of lead are so serious that several federal agencies are working together to address the problem. These agencies include HHS, HUD, DOE, the Environmental Protection Agency, and Justice.

CONTENT: Major sources of lead in the home are paint used on walls and woodwork. For example, when the sash of a double-hung window is moved up and down to open and close the window, significant amounts of lead dust can be released into the air.

When some weatherization work is done on a home, it can have the effect of increasing the airborne lead, thus leading to increased medical problems for the residents of the home and for the workers (and for the worker's families, when lead dust is carried in on work clothes and shoes). For example, when walls with lead paint are disturbed in the process of adding insulation, lead dust can result.

LIHEAP grantees may spend up to 15 percent of their available funds on weatherization activities (up to 25 percent with a waiver from HHS). LIHEAP grantees that spend funds on weatherization often transfer the funds to the state agency that administers the Department of Energy's Weatherization Assistance Program for Low Income Persons (WAP), and use the WAP rules for LIHEAP weatherization funds. Such LIHEAP grantees should be aware of new WAP guidance in the area of lead-based paint.

WAP has recently issued guidance to their grantees that requires them to train workers and incorporate certain practices in doing weatherization work in low-income homes when lead-based painted surfaces are disturbed. The Department's strategy is to accomplish the weatherization of their client's homes so that no harm comes to the clients, their workers, or

the worker's families from weatherization activities involving lead paint. While WAP funds cannot specifically be used for lead-based paint hazard reduction services, it is DOE policy that WAP workers be made aware of lead-based paint hazards and be trained in lead-based paint safe work practices. DOE is taking a proactive approach to dealing with hazards associated with disturbing lead-based paint during the weatherization process.

WAP's annual guidance to grantees for FY 2001 requires states to add a lead paint hazard control section to their health and safety plans in their grant application. States must describe how they will implement lead-based paint safe work practices in their weatherization programs, including:

1) A description of the lead paint safe work practices to be followed by weatherization crews;

2) The timetable for completing any necessary lead paint training for local agency weatherization crews;

3) The proper disposal of all materials containing lead paint; and

4) The description of a "walk away" policy from dwellings where LIWAP funds or crew training are insufficient to do the tasks in a lead paint safe work manner.

A newly reconstituted WAP Health and Safety Committee adopted as a model on an interim measure, the set of protocols for doing lead paint safe work that the state of California uses in its weatherization program. A copy of these protocols have been distributed to the state WAP offices and is attached for your information.

LIHEAP grantees may wish to adopt the DOE WAP lead paint guidance for any LIHEAP funds spent on weatherization. These guidelines allow the use of funds to train weatherization workers in lead paint safe work practices and the purchase of equipment (such as HEPA vacuums) which is necessary to do weatherization work in a lead paint safe manner.

In addition, while LIHEAP funds may not be used to carry out lead hazard control measures by themselves, there may be activities which meet the goals of both weatherization and lead paint hazard control. An example might be repair or replacement of windows that have lead paint.

ATTACHMENTS: **Lead-Safe Weatherization** - California lead paint safe work practices guidelines.

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Janet M. Fox, Director

Division of Energy Assistance

Office of Community Services

WASHINGTON STATE DEPARTMENT OF COMMERCE
TBRA (TENANT BASED RENTAL ASSISTANCE) PROGRAM
POLICIES AND PROCEDURES

D.Lead Based Paint

HUD Lead Regulation 24 CFR Part 35, Subpart M, applies to the TBRA program, and can be found in Section 4b of this manual. **The regulation only applies to structures built before 1978 that house children under the age of six.** Please consult the regulation itself to make sure that your agency implements this regulation fully and properly. The following is a summary of the main points:

1. Notification about the potential presence and hazard of lead **must be given** to all TBRA clients. A HUD pamphlet on lead-based paint can be found in Section 6d. Written notice of lead hazard evaluation or reduction activities must also be given to occupants and posted at the applicable work site.

2. **Leases must include a provision that the lessee shall immediately notify the contractor when a newborn or additional child under the age of six comes into the household.** Leases must also contain a provision that the lease will be void if clearance is not obtained after lead hazard reduction activities (including paint stabilization in pre-1978 buildings) are required.

3. The TBRA application must asks about any children under six years old. **Establish a tracking system**. The files of client households that have children under six should all be flagged

4. Determine whether a given rent-assisted property was built before 1978. This information is available from local county offices. If was built before 1978, follow these guidelines.

5. **Your HQS inspector must complete the online Visual Assessment Course and get the certificate to prove it.** This is easy, just go to **www.hud.gov,** find the HUD Visual Assessment Training Course, go through all the slides and complete the questions, then send an email with the information requested to the email address at the end. The certificate will come in the regular mail in about three weeks. This qualifies your inspector to recognize deteriorated paint.

6. When a unit is certified or re-certified, all deteriorated paint must be stabilized.

7. Safe work practices include safe work methods, occupant protection, work-site preparation and cleanup. **In structures built before 1978, safe work practices must be used to stabilize deteriorated paint** or any lead hazard reduction work. Documentation of this is required, and consists of those doing the work having

8. Completed training on safe work practices with a copy of the training certificate(s) of completion on file.

9. In structures built before 1978, clearance must be obtained after any lead hazard reduction work. Failure to get clearance on any unit where lead hazard reduction activities have occurred results in rental assistance being discontinued for that unit. Keep records of any unit where clearance is required but has not been obtained to insure that the unit does not become rent assisted, even if another eligible household wants to live there.

10. Risk assessments, paint inspections, clearance, or training are reimbursable with TBRA administrative funds only.

11. **Check with the local or state health department at least quarterly for a list of children with elevated blood lead levels** in their service area. This must be cross-checked with the addresses of your rental assistance units. Keep the documentation from these quarterly contacts on file.

12. If a child with an elevated blood lead level lives in a rent-assisted unit, then a risk assessment is required within 15 calendar days. If lead hazards are identified, then interim controls or abatement must be done within 15 calendar days of the risk assessment using safe work practices, and clearance is required. Otherwise the unit will cease to be certified.

Educate and work with building owners to implement these new regulations in pre-1978 residential buildings. If lead hazard reduction work is needed, the burden to pay for it is on the building owner. There are no TBRA funds available for lead hazard reduction, although you can use TBRA administrative funds to do risk assessments, paint inspections, clearance, or training for your staff. However, since administrative dollars are precious, you will probably want to have the building owner pay for any risk assessment or clearance needed. A building owner may still do his own painting work provided that he or she has been trained in safe work practices, has a certificate of completion to prove it, and uses these practices while working. Otherwise, the building owner must hire trained and certified workers.

Find a local risk assessor and clearance technician that you can call on or reference when needed. Also, find a local company or two that is trained and certified to do lead hazard reduction work for reference as well.

Information Resources

- For more information about HUD's lead regulation, call the regulation hotline at (202) 755-1822, ext. 104 or send an e-mail to **lead_regulations@HUD.gov**.
- Copies of the HUD Regulation 24 CFR Part 35 and other documents containing technical information are available from HUD USER at (800) 245-2691, from HUD user's Web site at **www.huduser.org**, or from Community Connections at (800) 998-9999.
- Copies of the EPA pamphlet "Protect Your Family from Lead in Your Home" are available from the National Lead Information Center at (800) 424-LEAD.
- For a complete copy of Washington State Department of Commerce TBRA Program Policies and Procedures contact Cheryl Bale at (360) 725-2997 or **cherylb@cted.wa.gov**.

MMWR December 8, 2000 49(RR14); 1-13
Recommendations for Blood Lead Screening of Young Children Enrolled in Medicaid: Targeting a Group at High Risk

By Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP)

The federal Medicaid requirements for blood lead screening of young children enrolled in Medicaid are summarized below in an excerpt (pages 8 and 9) from the entire document found on line at **www.cdc.gov/**.

Health Care Financing Administration (HCFA) Policies for Blood Lead Screening of Children Enrolled in Medicaid

Current HCFA policies require that all young children enrolled in Medicaid be screened with a blood lead test (i.e., federal Medicaid requirements). In December 1999, the American Academy of Pediatrics supported this policy, emphasizing the higher risk for elevated BLLs among children enrolled in Medicaid (*9*).

Since 1989, federal law has required states to screen children enrolled in Medicaid for elevated BLLs as part of prevention services provided through the Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) program. The EPSDT program provides screening and entitles children to any federally allowable diagnostic and treatment service necessary to correct the condition found by the screening (*10*). Details of blood lead screening requirements are periodically revised by HCFA, which administers the Medicaid program at the federal level.

Federal Medicaid regulations were updated in 1998 to require that all children must receive a blood lead screening test at ages 12 and 24 months. All children aged 36-72 months who have not previously been screened must also receive a blood lead test (*11*). A blood lead test is the only required screening element. There is no waiver to this Medicaid requirement for blood lead screening at this time.

Pollution Source Survey

Date: _____
Assesor: _____

High-Risk Household Members

1) Family members less than 4 or more than 60 yrs old Yes ___ No ___
2) Any household members with asthma, respiratory problems or flu like symptoms? Yes ___ No ___
3) Is anyone living in the house pregnant? Yes ___ No ___

Source of Contaminants			Comments:
How old is the house? _____			
4) Paint peeling or flaking on floors, walls, ceilings?	Yes ___	No ___	_____
5) Has carpet ever been water soaked?	Yes ___	No ___	_____
6) Is carpet covering a concrete floor?	Yes ___	No ___	_____
7) Any unvented combustion appliances in the home?	Yes ___	No ___	_____
8) Do household members smoke inside the home?	Yes ___	No ___	_____
9) Do cars park in attached garage?	Yes ___	No ___	_____
10) Seasonal water pooling in crawl space?	Yes ___	No ___	_____
11) Plumbing leaks in crawlspace?	Yes ___	No ___	_____
12) Noticeable leaks or water staining on ceilings or walls?	Yes ___	No ___	_____
13) Indoor pets?	Yes ___	No ___	_____
14) Paints, solvents, thinners, pesticides stored in home?	Yes ___	No ___	_____
15) House keeping problems? Clutter / Unsanitary	Yes ___	No ___	_____
16) Has this house been tested for Radon?	Yes ___	No ___	_____
17) Are Insecticides or rodenticides used in home or ductwork?	Yes ___	No ___	_____
18) Other			_____

Strengths of Indoor Contaminants			Comments
19) Unusual odors in the house?	Yes ___	No ___	_____
20) Is moisture noticeable on windows?	Yes ___	No ___	_____
21) Visible mold anywhere in house?	Yes ___	No ___	_____
22) House temp. unusually warm or cold	Yes ___	No ___	_____
23) Humidity levels unusually high?	Yes ___	No ___	_____

Sample Weatherization Mold Inspection and Release Form

Mold can be a problem in any home, but especially in those where there is an excessive amount of moisture or humidity present. In addition, if there are several people, pets, plants, or fish aquariums present, conditions exist for mold to grow. (Agency) may not provide direct mitigation of existing mold problems. An assessment of your home included a visual check for mold.

During (Agency) energy audit on (DATE_____), our auditor/estimator identified Mold growth in the following room(s):

☐ Living/Bedroom Areas	☐ Mold is visibly present.	☐ Bathroom Areas	☐ Mold is visibly present.
☐ Laundry Areas	☐ Mold is visibly present.	☐ Combustion Areas	☐ Mold is visibly present.
☐ Crawlspace Areas	☐ Mold is visibly present.	☐ Attic Areas	☐ Mold is visibly present.
☐ Basement Areas	☐ Mold is visibly present.	☐ Other Location	☐ Mold is visibly present.

Other Location: _____

Moldy or musty odors are an indicator that there may be hidden mold growth.

Moldy or Musty Odors ☐ Are present. ☐ Are not present.

The Department of Energy generally does not allow Weatherization agencies to mitigate mold problems, but some actions associated with a cost effective energy saving measure may be taken to reduce moisture problems. The (Agency) will take the following measures that may help to mitigate existing moisture problems:

☐ _____
☐ _____
☐ _____
☐ _____

Check and Sign One of the Notification or Disclaimers Below

☐ **Moisture Disclaimer**: I have received information concerning moisture and mold conditions in my home, including the EPA booklet *"A Brief Guide to Mold, Moisture, and Your Home"* (if mold conditions have been identified) and I will take steps to reduce excessive moisture. I agree to hold (Weatherization Agency) harmless for any future moisture or mold problems that are not associated with the weatherization work. Maintain this copy in the client file.

_____ _____
Weatherization Client Date

_____ _____
Agency Auditor/Estimator Date

☐ **Deferral Disclaimer**: Advise the client that the (Agency) can not cost effectively resolve the identified mold or moisture. Document who will be responsible for the corrective action. Explain and list the conditions that justify the agency to "DEFER" the work and have the client sign and date in the space below indicating agreement to planned action. Maintain this copy in the client file.

_____ _____
Weatherization Client Date

_____ _____
Agency Auditor/Estimator Date

Potential Hazard Conditions

1. Mold and Other Biologicals

   The guidance in this section is in compliance with DOE Weatherization Program Notice 05-1.

   Specific issues covered in the mold section of the revised 2006 Weatherization Program Health and Safety Plan include:

   a. Mold remediation is not an allowed expenditure of DOE funds

   b. Sample Mold Inspection and Release Forms and Pollution Source Survey forms to be used during energy audits on all homes are included in the exhibits.

   c. Commerce, through the Peer Circuit Rider Program, will provide additional mold training during PY 2006. This training, based on modules developed by Montana State University under contract with DOE, was delivered in PY 2005.

   The Weatherization Assistance Program is not a mold remediation program. The use of DOE funds for the removal of mold and other related biological substances is not an allowable weatherization expense. Generally, DOE funds should not be used to test, abate, remediate, purchase insurance or alleviate existing mold conditions identified during the audit, work performance period or quality control inspection. Also, in homes where multiple sources of funds are used, **any mold insurance or mold abatement costs must be charged to another funding source - not DOE.** If necessary, weatherization services may need to be delayed until the existing mold problem can be referred to another agency for funding of remedial action. DOE funds may be used to correct energy-related conditions to allow for effective weatherization work and/or to ensure the immediate or future health of workers and clients.

   Mold-Related Weatherization Procedures

   Commerce uses **Section 9, *Moisture Control***, of the revised Weatherization Specification as Washington State's guiding mold protocol. Contained within the Moisture Control specifications is direction when encountering homes with mold

   All initial home inspections must include a mold procedure/checklist. The results of all mold inspections must be documented in client files. If mold is discovered during the initial inspection of a home by the energy auditor that cannot be adequately addressed by the weatherization crew, then the unit should be referred to the appropriate public or nonprofit agency for remedial action.

   CommerceD, through the Peer Circuit Rider Program, will provide mold and moisture training. The PCR developed a "Mold and Moisture" Train the Trainer curriculum using the Montana State University Protocols as directed by DOE to ensure that each local agency has the capacity to provide mold and moisture training to new staff.

To assist state and local agencies with current information about mold and moisture, check the WAPTAC Web site or the resource documents listed below.

- "A Brief Guide to Mold, Moisture, and Your Home," U.S. Environmental Protection Agency (EPA), Indoor Environments Division (IED). **www.epa.gov/**

- "Guidelines on Assessment and Remediation of Fungi in Indoor Environments," New York City Department of Health, Bureau of Environmental and Occupational Disease Epidemiology. **www.ci.nyc.ny.us/**

In dwelling units where mold conditions have been identified, the local agency must give dwelling occupant(s) a copy of the EPA booklet *"A Brief Guide to Mold, Moisture, and Your Home"* before the start of any work. The local agency must document in the client file that the booklet was received by the occupant(s). This verification will include a signed statement from the occupant(s) that they received the EPA booklet.

Removal of mold, odors, viruses, bacteria, unsanitary conditions (including raw sewage), and rotting wood is not a Weatherization responsibility. However, program workers frequently encounter these conditions. DOE funds may be used, and accounted for under Health and Safety, if these conditions must be remedied to allow effective weatherization work or to ensure the immediate or future health of workers and clients. **The notable exception is mold remediation, which is not an allowable expenditure of DOE funds.**

2. Combustion Appliances and Combustion Gases

Combustion appliances (furnaces, water heaters, cooking ranges, ovens, and vented space heaters) are included in this measure. Testing for safety will be conducted in accordance with Commerce's Combustion Safety Procedures, and is performed pre- and post weatherization. Each local agency has carbon monoxide detection equipment and has been trained in the performance of appropriate safety tests. Draft gauges are also used to verify that safe and effective chimney draft levels exist. If measured carbon monoxide exceeds safe levels as prescribed by EPA, ASHRAE, and gas utilities, corrective action is taken which may include cleaning of equipment including chimney or flue, tune-up, correcting pressure imbalances, repair or replacement of a furnace, and other measures as needed. Unvented space heaters will be removed and replaced. Carbon monoxide detectors may be installed, as needed, per Commerce Policies and Procedures, **Chapter 5, *Providing Weatherization Services***.

3. Fire Hazards

Combustion appliances and their associated venting systems can also present potential fire hazards. Refer to Commerce Combustion Safety Procedures in Section 3 of the Weatherization Handbook for guidance on visual and diagnostic testing of combustion appliances before and following completion of weatherization work.

4. Existing Occupant Health Problems

   Local agencies will be aware that some individuals' health problems could be exacerbated by weatherization activities. For example, some clients can be sensitive to dust generated from the installation of cellulose insulation. As noted previously, client health and safety work may be deferred until client's health problems have abated.

5. Indoor Air Quality

   Indoor air quality and minimum ventilation levels are addressed in Commerce's Blower Door and Air Sealing Procedures. Minimum acceptable levels for air changes are based on ASHRAE standards. When necessary, mitigation is provided by determining the source of the problem and implementing an effective mitigation strategy. To assure acceptable ventilation levels, a timed system of mechanical ventilation, with fresh make-up air may be appropriate. Repair of existing exhaust fans may be done by crew, but new or replacement installations, which involve rewiring, will require a licensed electrical contractor. For indoor air quality concerns related to bulk moisture problems, dehumidification may be in order. In homes with forced air systems, room-to-room pressure balancing is performed, as necessary.

   a. Asbestos

   General asbestos removal is not approved as a health and safety weatherization cost. Major asbestos problems should be referred to the Washington State Department of Ecology and/or the Environmental Protection Agency (EPA). Where local agencies work on large heating and distribution systems, including related piping, asbestos removal might be necessary. Removal is allowed to the extent that energy savings resulting from the measure will provide a cost-effective savings-to-investment ratio. This would normally be true with work done on large, multifamily heating systems. Where permitted by code or EPA regulations, less costly measures that fall short of asbestos removal, such as encapsulation, may be used when it is determined that the condition of the asbestos is in a friable state.

   b. Radon

   Where there is a previously identified radon problem, work that would exacerbate this problem should be limited. Radon abatement is not an allowable activity under the weatherization program. However, those costs associated with taking precautions in a dwelling known to have radon problems are allowable weatherization expenditures. These costs are allowable if an energy audit indicates that weatherization techniques would help in radon remediation. While local agencies should establish sound radon-related strategies, major radon problems should be referred to the appropriate local environmental organization or agency for mitigation or abatement. The Bonneville Power Administration funded a statewide radon-monitoring program in the mid-1980s and concluded that radon is not prevalent statewide in Washington.

c. Formaldehyde and Volatile Organic Compounds (VOCs)

Formaldehyde vapors may be slowly released by some new carpets, wafer board, plywood, etc. VOCs are also emitted by some household cleaning agents, paint and construction adhesive. Storing VOCs outside the living space, such as in an unattached garage or storage shed, may be of benefit to households with increased chemical sensitivity.

6. Lead-Based Paint

NOTE: The requirements for this section are taken from 5.13 of the "DOE Weatherization Program Notice 03-1" and "Program Notice 02-6."

Background: On July12, 2002, the Weatherization Assistance Program issued "Program Notice 02-6, Weatherization Activities and Federal Lead-Based Paint Regulations" (Exhibit 1). This document and its attachments provide guidance to regional offices and states regarding weatherization health and safety matters associated with lead-based paint in homes. The document provides information about other federal lead-based paint rules that apply to weatherization work. These requirements and Washington State policies will be addressed in this section.

Childhood lead poisoning is linked to reduced intelligence, low attention span, reading and learning disabilities, juvenile delinquency, behavioral problems, and other adverse health effects. Nearly one million children nationally have excessive levels of lead in their blood, making lead poisoning a leading childhood environmental disease. Lead-based paint, along with the contaminated dust and soil it generates in housing, is the major remaining source of lead exposure and is responsible for most cases of childhood lead poisoning today.

The Housing and Community Development Act of 1992, which includes Title X, the "Residential Lead-Based Paint Hazard Reduction Act of 1992," directed EPA, HUD, and OSHA to develop lead-based paint regulations.

The Department of Energy is a member of two interagency task forces: the President's Task Force on Environmental Health Risks and Safety Risks to Children, and the Federal Interagency Lead-Based Paint Task Force.

Lead-based paint dust and other residues are hazards that weatherization workers are likely to encounter in older homes. HUD estimates that within the national housing inventory twenty-six million homes have significant lead-based paint hazards. Furthermore, weatherization work may directly disturb lead-based paint, possibly creating hazardous conditions.

Policy: Weatherization workers must be aware of the hazard and conduct weatherization activities in a safe work manner to avoid contaminating homes with lead-based paint dust and debris and to avoid exposing the occupants, themselves, and their families to this

hazard. The protocols used to safe guard people from lead-based paint hazards are called Lead Safe Weatherization (LSW).

A. Washington's Lead Safe Weatherization Protocols

Washington State requires the use of Lead Safe Weatherization protocols published in "Lead-Safe Weatherization: A Training and Reference Manual for Weatherization Managers and Crews" by Montana State University Extension Service.

Some local agencies are performing weatherization work and HUD's lead-based paint hazard control work at the same time, when using HUD funds or working in HUD program homes. In those instances, Washington State requires the use of Lead-Based Paint Safe Work Practices protocols as specified in the regulation and training materials:

1. HUD's Lead Safe Housing Rule, 24 CFR, Part 35.

2. "Lead Paint Safety: A Field Guide for Painting, Home Maintenance, and Renovation Work," Department of Housing and Urban Development.

3. "Addressing Lead-Based Paint Hazards During Renovation, Remodeling, and Rehabilitation in Federally Owned and Assisted Housing," Department of Housing and Urban Development.

Copies are available at **www.waptac.org/** and **www.hud.gov/**.

B. When Lead Safe Weatherization Protocols Should Be Used

Lead Safe Weatherization shall be performed when:

1. A dwelling was constructed prior to 1978 and it has not been determined to be free of lead-based paint.

2. One of the following conditions exists:

   (a) The amount of disturbed lead-based painted surface exceeds (de minimis levels):

      (1) Two square feet per room of interior surface

      (2) Twenty square feet of exterior surface or

      (3) Ten percent of a small component type, for example a window or

   (b) The amount of lead-based paint dust that will be generated by the weatherization work exceeds the OSHA/Washington Industrial Safety and Health Act (WISHA) defined airborne levels for lead of 30 $\mu g/m^3$ or

(c) The agency assumes that the home has lead-based paint and the weatherization measures will disturb paint that exceeds de minimis levels.

Refer to the Attachment B of "Program Notice 02-6," "Decision Flow Chart for Applicability of Lead Safe Weatherization (LSW) Measures," to assist with the determination of the appropriate actions.

3. Other Federal Government Regulations

Attachment A, "Other Federal Government Regulations Pertaining to Lead-Based Paint" outlines what weatherization agencies need to know about other federal agencies' requirements that apply to weatherization work in situations involving lead-based paint. HUD, OSHA/WISHA (adopted and added to OSHA), and EPA requirements apply to weatherization work.

For example:

a. HUD Rule, 24 CFR Part 35 titled: "Lead-Based Paint Poisoning Prevention in Certain Residential Structures," (issued under sections 1012 and 1013 of the Residential Lead-Based Paint Hazard Act of 1992, which is Title X of the Housing and Community Development Act of 1992) applies. The HUD Rule requires that weatherization agencies, when using HUD funds or working in HUD program homes, perform the work using Lead-Based Paint Safe Work Practices, which are distinct from LSW. The HUD rule also sets "de minimis" levels (two square feet per room of interior surface and twenty square feet of exterior surface or ten percent of a small component type, for example a window) of disturbed painted surfaces, for adherence to the rule.

   This HUD Rule's Subpart M applies to the Tenant Based Rental Assistance Program (TBRA), which provides targeted, low-income tenant populations with utility, deposit, and rent costs for up to two years per Commerce funding cycle. The regulation only applies to structures built before 1978 that house children under the age of six. For related policies and procedures see **Exhibit 9.6, *"Washington State Department of Commerce TBRA Program Policies and Procedures."***

b. OSHA Rule, 29 CFR Part 1926 (and corresponding WISHA Rule WAC 296-62) applies, in general, when painted surfaces are disturbed and lead paint is suspected. Workers should perform the work in a way that will contain the generated lead dust. The OSHA Good Work Practices (Lead Safe Weatherization qualifies) are to be used when worker lead exposure exceeds the action level of 30 $\mu g/m^3$ (an 8-hour Time Weighted Average). Exposure monitoring, medical surveillance, and training are also requirements. If the Permissible Exposure Level (PEL) of 50 $\mu g/m^3$ is exceeded, additional requirements must be observed.

c. EPA Rule, 40 CFR Part 745 titled: "Lead: Requirements for Hazard Education Before Renovation of Target Housing," (referred to as the Lead-Based Paint Pre-Renovation Education Rule or Lead PRE) applies. Weatherization providers are required to give a copy of the EPA booklet "Protect Your Family from Lead in Your Home" prior to the start of work (if mailed, at least seven days). Under this regulation, agencies who do not give and document proper notification could incur large fines if found doing weatherization work in pre-1978 housing stock where more than two square feet of paint surfaces are disturbed.

d. EPA's Office of Solid Waste memorandum to RCRA Senior Policy Advisors, EPA Regions 1-10, subject: "Regulatory Status of Waste Generated by Contractors and Residents from Lead-Based Paint Activities Conducted in Households, from July 2000," also applies. It allows disposal of everyday household hazardous materials - residue or debris containing lead-based paint such as replaced windows or discarded clothing - from homes as non-hazardous waste and thus not subject to toxic chemical disposal rules. Household lead-based paint debris, however, must be handled in a way that will not generate or discharge lead-based paint debris to the environment, either at the client's home or in transporting to a disposal site.

e. The Department of Health and Human Services Health Care Financing Administration's policies require that all young children enrolled in Medicaid be screened with a blood lead test at ages 12 and 24 months. All children ages 36 - 72 months who have not previously been screened must also receive a blood lead test. See **Exhibit 9.7, an excerpt from "*Recommendations for Blood Lead Screening of Young Children Enrolled in Medicaid: Targeting a Group at High Risk*."**

4. Guidelines Determining When Lead-Based Testing Should Be Done

Consider the following when determining whether testing is worth the time and money on a case-by-case basis:

a. Houses built from 1978 on may be assumed to be free of lead-based paint without testing.

b. In houses built prior to 1930, it is reasonable to assume the presence of lead-based paint and save the cost of testing.

c. In homes built between 1930 and 1978, testing may not be warranted if the amount of paint to be disturbed is small, since it may be cheaper to perform LSW for a small area than to incur the expense of testing. However, where the amount of paint to be disturbed is relatively large, it may be worth the cost of testing, since a negative result would mean that the crews could dispense with having to perform the LSW protocols.

Testing shall be performed by an EPA-certified (or EPA-approved state certifying program) Lead Paint Inspector or Risk Assessor. Limited testing of only those surfaces that will be disturbed with a certified XRF (X-Ray Fluorescence) operator is recommended. (HUD and EPA are reviewing the efficacy of the commercial spot-test kits but have not completed their findings. Preliminary results indicate that these kits may be useful as a negative screen--an indication that no lead is present. However, agencies should exercise caution since not all spot-test kits are useful as a negative screen.)

Testing on a case-by-case basis where related to installation of energy efficiency measures is an allowable DOE expenditure. The purchase and maintenance costs of an XRF and the cost of training and certification of staff to operate the XRF must be funded from other sources, as they are not allowable DOE expenditures.

Clearance tests are not required for units receiving only weatherization (local agencies may, however, elect to do clearance testing), but they are required if HUD funds are used or work is done in HUD program housing. A Lead Sampling Technician under the authorization of a Lead Paint Inspector or Risk Assessor may perform clearance tests. When EPA issues its certification requirements, a technician may apply for EPA certification to perform this test independently. HUD-related work, including LSW and clearance testing, should be covered by HUD funds. If no HUD funds are available, DOE funds may be used for clearance testing in this instance.

5. Deferral Policy Related to Lead-Based Paint

   a. In determining whether to defer or postpone weatherization work on a home that has tested positive for lead-based paint or is assumed to have lead-based painted surfaces, agencies should assess the following:

      (1) Is the agency prepared to work with lead-based paint? Have workers received the required training in Lead Safe Weatherization protocols and, if the housing is also HUD financially assisted, Lead-based Paint Safe Work Practices? Is the necessary equipment, such as HEPA vacuum cleaners, available? Does the agency's liability insurance cover work with lead-based paint?

      (2) What is the condition of the painted surface in the house? Is it so seriously deteriorated that a work person's presence just walking around the house is enough to stir up lead-based paint dust that is a threat to the clients and workers?

      (3) What is the extent to which the specific energy efficiency measures determined by the audit will disturb painted surfaces? Will the disturbance generate dust in excess of OSHA minimums?

(4) Will the cost of doing Lead Safe Weatherization work represent a large portion of the total cost and exceed the amount allowed in the State's Health and Safety Plan?

b. Using the above answers, the agency should conclude one of the following:

(1) Proceed with all the weatherization work following Lead Safe Weatherization work practices or

(2) Do some of the weatherization tasks and defer others or

(3) Defer all of the weatherization work.

Deferral means postponing work until the agency is prepared to work with lead-based paint, or until another agency has corrected the problem so that weatherization can be safely performed. Weatherization work should not be deferred solely because there is lead-based paint in the home. Even in such a home, regular weatherization work that does not disturb painted surfaces and does not stir up lead-based paint dust can be done.

6. Funding of Lead Safe Weatherization

DOE funds may be used to pay for weatherization activities that disturb lead-based painted surfaces while installing energy efficiency measures or for case-by-case testing.

DOE funds shall not be used for abatement, stabilization or control of lead-based paint hazards, or routine entrance and clearance testing. However, U. S. Department of Housing and Urban Development (HUD) funds such as Community Development Block Grant (CDBG), lead hazard control programs and Home Repair and Rehabilitation Program funds may be used to do this work. Also, U. S. Department of Health and Human Services' (HHS) Low-Income Home Energy Assistance Program (LIHEAP) may be used for certain expenses related to Lead Safe Weatherization.

Specifically, for DOE funding, agencies should budget Lead Safe Weatherization costs under health and safety as a separate cost category, excluded from the calculation of average cost per home. Lead Safe Weatherization costs include labor, material, insurance, training in Lead Safe Weatherization practices, and equipment (not the XRF).

7. Liability Insurance

In "Weatherization Program Notice 02-6," DOE requires that local agencies have sufficient insurance coverage before performing weatherization work that will disturb surfaces that may contain lead-based paint. Commerce requires Pollution Occurrence

Insurance (POI) for both local agencies and subcontractors. POI is purchased for the lead hazard control work associated with weatherization and rehabilitation. It is likely that POI will need to be added to an agency or subcontractor's general liability insurance coverage. Subcontractors who procure POI insurance must name the local agency under "Additional Insured" on their policy.

If agencies or their subcontractors are performing Lead-Based Paint Inspections or Risk Assessments, Errors and Omissions Insurance (EOI) is required. Errors and Omissions Insurance is purchased for lead-based paint inspections, risk assessments and clearance tests.

The cost of this insurance is an allowable DOE expense. To qualify for lower rates, local agencies and subcontractors can show that not all weatherization work involves disturbing painted surfaces and some homes are lead free, so the risk basis for rates should not be based on 100 percent operations in a lead paint environment for every home weatherized.

DOE's Weatherization Office, the Environmental Protection Agency (EPA), HUD, the National Association for State Community Services Programs (NASCSP), the National Community Action Foundation (NCAF) and insurance industry representatives have worked together on these issues to provide reasonably-priced lead-based paint liability insurance to local agencies and their contractors across the country. For more information on this insurance, go to the WAPTAC Web site: **http://www.waptac.org/**

8. Training

The Housing Division of Commerce requires Lead Safe Work Practices or Lead Safe Weatherization training or an EPA certification, including hands-on training in the field, for direct hire and contractor weatherization workers, supervisors and coordinators who work on homes with lead paint. Commerce has provided local agency contractors with a CD version of the "Lead Safe Weatherization, a Training and Reference Manual for Weatherization Managers and Crews," by Montana State University Extension Service. The Peer Circuit Rider (PCR) has provided this training as part of an on-going training program. New employees of local agencies and subcontractors, who will be working in the field, must attend training and be certified within nine months of their hire date. Until that time, they must perform all work in which there may be a disturbance of lead-based paint under the supervision of someone certified as a LBP supervisor. Copies of training certificates for local agency and subcontractors shall be kept on file at the local agency.

Lead-based Paint Hazard Reduction Training Programs

a. Module 1 - Objective for Lead Safe Weatherization Training

1. To understand why it is important to minimize and control the generation of lead dust when doing weatherization work.

2. To understand the Department of Energy and State Washington Department of Commerce expectations for and boundaries of working with lead-based paint specific to weatherization.

3. To gain a working knowledge of the regulations governing worker protection from hazards created by disturbance of lead-based painted surfaces.

4. To gain a working knowledge of tools, techniques and resources required to achieve the objectives listed above.

   Upon completion of this course, participants will be able to perform weatherization in a manner that minimizes creation and dispersal of lead contaminated dust and protects residents, especially children, from possible lead exposure. This course will show participants how to perform their work in a manner that creates the least amount of dust possible, and how to contain and clean up dust that they do create so that it does not spread throughout the house or to neighboring properties.

b. Module 2 - Objectives for Lead Safe Work Practices Training

1. To understand why it is important to minimize and control the generation of lead dust when doing renovation, remodeling, rehabilitation and maintenance work.

2. To gain a working knowledge of tools and techniques required to achieve those objectives.

3. To understand the U.S. Department of Housing and Urban Development and Washington State Department of Commerce rules and regulations regarding the disturbance of lead-based painted surfaces during renovation, remodeling, and rehabilitation in federally owned and assisted housing.

4. To gain a working knowledge of the regulations governing worker protection from hazards created by the disturbance of lead-based painted surfaces.

   Upon completion of this course, participants will be able to perform renovation, remodeling, and rehabilitation in a manner that minimizes creation and dispersal of lead contaminated dust and protects residents, especially children, from possible lead exposure. This course will show contractors how

to perform their work in a manner that creates the least amount of dust possible, and how to contain and clean up dust that they do create so that it does not spread throughout the house or to neighboring properties. The techniques discussed in this course apply to work performed by a variety of contractors and employees, including plumbers, electricians, residential renovators, re-modelers, and painters.

c. Module 3 - Objectives for Lead Containment and Cleanup Training

1. To gain experience in the use of tools needed to minimize the generation of lead dust when doing work that disturbs lead-based painted surfaces.

2. To learn and practice the techniques required in lead safe work practices to contain dust and debris within a work area where lead-based painted surfaces are being disturbed.

3. To become familiar with the tools and supplies necessary as well as practice the methods used to cleanup an area where hazardous amounts of lead contaminated dust have been identified or where work has been done that disturbed a lead-based painted surface.

4. To become familiar with the use, bag replacement, and proper maintenance of a high efficiency particulate air (HEPA) vacuum.

   Upon completion of this course, participants will be able to perform renovation, remodeling, rehabilitation and Weatherization in a manner that minimizes creation and dispersal of lead contaminated dust and protects residents, especially children, from possible lead exposure. This course will show participants how to perform their work in a manner that creates the least amount of dust possible, and how to contain and clean up dust that they do create so that it does not spread throughout the house or to neighboring properties.

d. Module 4 - Objectives for Lead Safe Worker Protection Module

1. To gain a thorough understanding of the Washington Industrial Safety and Health Act (WISHA) and OSHA standards and requirements for protecting workers from harmful levels of lead in construction.

2. To gain familiarity with the use of equipment used to monitor and protect workers from exposure to harmful levels of lead in construction.

3. To understand what is needed to implement a worker protection program that complies with WISHA and OSHA.

Upon completion of this course, participants will have been provided with the information necessary to able to implement a Lead Safe Worker program that complies with the WISHA and OSHA standards and requirements to prevent lead exposure in construction.

Outreach to Local Agencies

To ensure that all local agency crews and contractors have opportunities to be trained in lead safe activities, the following methods will be used to facilitate training:

a. The Peer Circuit Rider (PCR) will post classes on the **Building Performance Center** web site. Classes will be filled on a first-come first-served basis.

b. The PCR will send training notifications to the local agencies.

c. The PCR will send the names of employees, agency, and class title and date information to the Home Repair and Rehabilitation program (HRRP) manager when trainings have been completed.

d. The HRRP program manager keeps a database of agencies and the lead training they have received. One of the entries in this database will be the Lead Safe Weatherization training, when it was taken, and by whom.

5. Building Structure

Building rehabilitation is beyond the scope of the Weatherization Assistance Program; however, program workers frequently encounter homes in poor structural condition. Dwellings whose structural integrity is in question should be referred to other funding sources such as HOME, CDBG, and Rural Resources. Weatherization services may need to be delayed until the dwelling can be made safe for crews and occupants See **Section 5.5 *Deferral Standards***. Incidental repairs necessary for the effective performance or preservation of weatherization materials are allowed. Examples of these limited repairs include sealing minor roof leaks to preserve new attic insulation and repairing water-damaged flooring as part of replacing a water heater.

6. Electrical Issues

Electrical inspection by a licensed electrician is required for each building component (attic, walls, floor) containing knob-and-tube wiring for which insulation is proposed, prior to insulation being installed. Repairs, if necessary, are to be made before insulation work can proceed. The electrician must certify the knob-and-tube wiring in each component is safe for insulation by the completion of the Commerce Knob-and-Tube Inspection Form. Copies of the form must be posted at the residence and

placed in the client's file. The cost of electrical inspection and minor electrical repairs may be charged to the Health and Safety category.

In 1987, Section 324 (article 324-4) of the National Electrical Code (NEC) was revised to prohibit the use of concealed knob-and-tube wiring "in the hollow spaces of walls, ceilings and attics when such spaces are insulated by loose or rolled insulating material." Since 1987, NEC added a prohibition against "foamed in-place" insulation as well. While the NEC is a national code, it is not administered and enforced nationally. Building codes are administered on the state, county, or local level but are usually based on one of the national model codes (e.g., BOCA, CABO, UBC), which reference the NEC for electrical requirements. State or local jurisdictions can amend the model code they have adopted to meet specific local concerns. For example, Washington, Oregon, and two local jurisdictions in Ohio amended NEC 324-4 to allow loose or rolled thermal insulation in spaces containing knob-and-tube wiring providing specific conditions are met. (For more on DOE's knob-and-tube guidance, see **Exhibit 9.2, *Knob and Tube Wiring: Revised Policy Superseding Guidance of 7/25/83 and 7/13/88*.)** Serious electrical hazards exist when gross overloads are present. Should auditors and crews find such existing problems, they should notify the owner. Weatherization measures that involve the installation of new equipment such as air conditioners, heat pumps, or electric water heaters can exacerbate previously marginal overload problems to hazardous levels. The problem should also be noted in the client file. To the extent that these problems prevent adequate weatherization, the local agency should consider repairing them on a case-by-case basis.

7. Refrigerant Issues

   The replacement of air conditioners, approved since 1992, and the recently approved refrigerator replacements (Weatherization Program Notice 00-05) requires agencies to reclaim refrigerant per Clean Air Act 1990, section 608, as amended by 40 CFR 82, 5/14/93.

   The appliance vendor, demanufacturing center, or other entity recovering the refrigerant must possess EPA-approved section 608 type I, or universal certification.

8. Other Code Compliance Issues

   Local agencies must ensure that weatherization-related work conforms with applicable codes in jurisdictions where the work is being performed.

Managing the Low-Income Weatherization Program

References

1. **CFR (Part, Subpart Number)** – Title #, Code of Federal Regulations, Part/Subpart #

   For example, 10 CFR 440 (Weatherization Assistance Program for Low-Income Persons)

   http://www.gpoaccess.gov/cfr/retrieve.html

2. **WPN #, Date** – Weatherization Program Notice (Dates will Vary)

   For example, WPN 05-1, 2004 (Program Year 2005 Weatherization Grant Guidance)

   http://www.waptac.org/sp.asp?id=6878

3. **OMB #** – Office of Management and Budget Circulars, Number of Circular

   For example, OMB A- 87 (Cost Principals for State, Local, and Indian Tribal Governments)

   http://www.whitehouse.gov/omb/circulars/

4. **WAC #** – Washington Administrative Code Title, Chapter, Section

   For example, WAC 51-13-402 (Solid Fuel Burning Appliances and Fireplaces)

   http://apps.leg.wa.gov/wac/

5. **RCW #** - Revised Code of Washington Title, Chapter, Section

   For example, RCW 46.12.095 (Requirements for Protecting Security Interest)

   http://apps.leg.wa.gov/rcw/

6. **Commerce General Terms & Conditions** – Department of Commerce General Terms & Conditions
7. **WAP Health & Safety Plan** – Weatherization Assistance Program Health & Safety Plan
8. **Specifications for the Low-Income Weatherization Program** – Department of Commerce
9. **Commerce Monitoring Protocol** –Department of Commerce
10. **EOW Field Guide** – Energy OutWest Field Guide
11. **DOE Specific Terms & Conditions** – Department of Energy Specific Terms & Conditions
12. **HHS Specific Terms & Conditions** – Department of Health & Human Services Specific Terms & Conditions

13. **BPA Specific Terms & Conditions** – Bonneville Power Administration Services Specific Terms & Conditions
14. **MM Specific Terms & Conditions** – Matchmakers Services Specific Terms & Conditions
15. **Commerce Energy Assistance Program Policies**

    http://www.liheapwa.org/policy/