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Weatherization Plus Health
Columbus, Ohio
October 4-6, 2011

The Weatherization Assistance Program: An Overview

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Introduction to WAP

- Overview of Weatherization Assistance Program (WAP)
 - History & Mission
 - Flow of Funds
 - The WAP Network
 - The Process
 - WAP Results



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Statutory Purpose

...to develop and implement a weatherization assistance program to increase the energy efficiency of dwellings owned or occupied by low-income persons, reduce their total residential energy expenditures, and improve their health and safety, especially low-income persons who are particularly vulnerable such as the elderly, the handicapped, and children.

Title 42 of the U.S. Code, Chapter 81, Subchapter III,
Part A, 6861

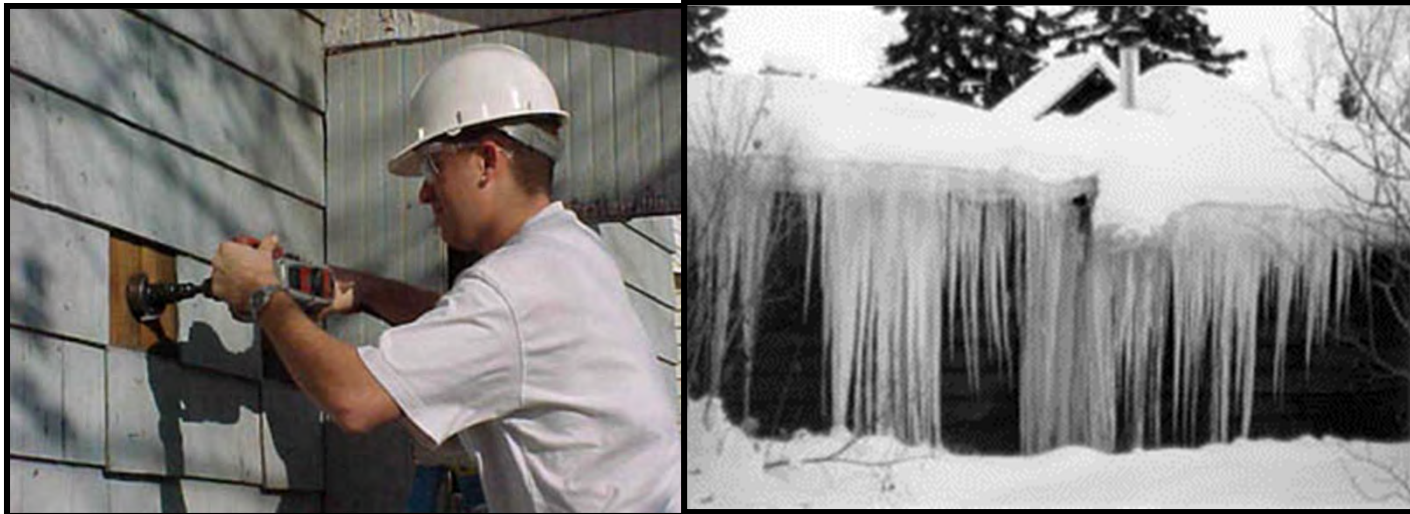


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Mission

To reduce energy costs for low-income families, particularly for the elderly, people with disabilities, and children, while ensuring their health and safety





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History

- Legislated DOE program in 1976
- Highly decentralized service delivery network
- Developed and field-tested advances in residential energy efficiency for 30+ years
- Operates in every state, District of Columbia, among Native American tribes, U.S. Territories

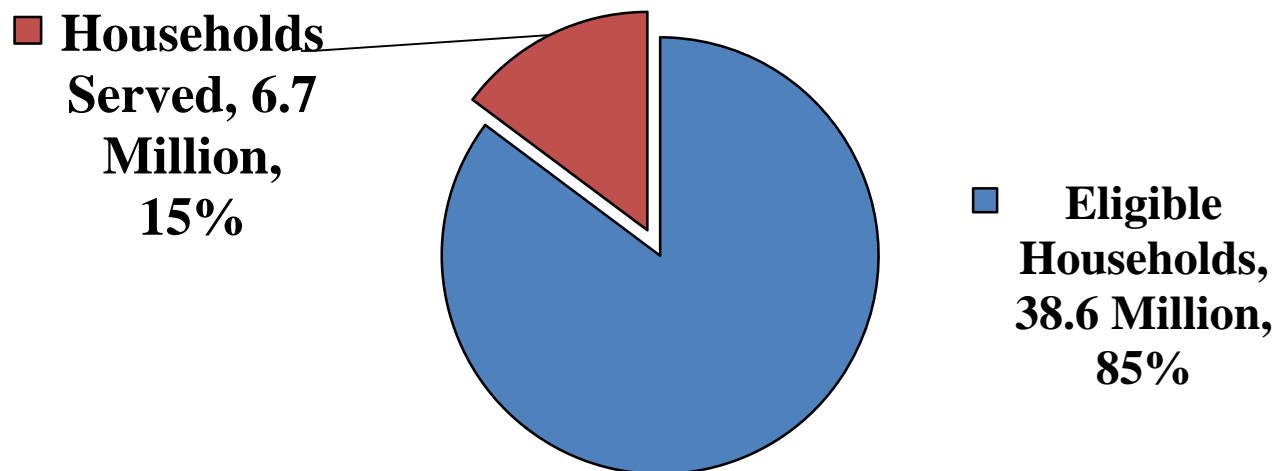


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Why Weatherization?

- Low-income families often choose between heat and other necessities
- Over 30 million households currently eligible for Weatherization services



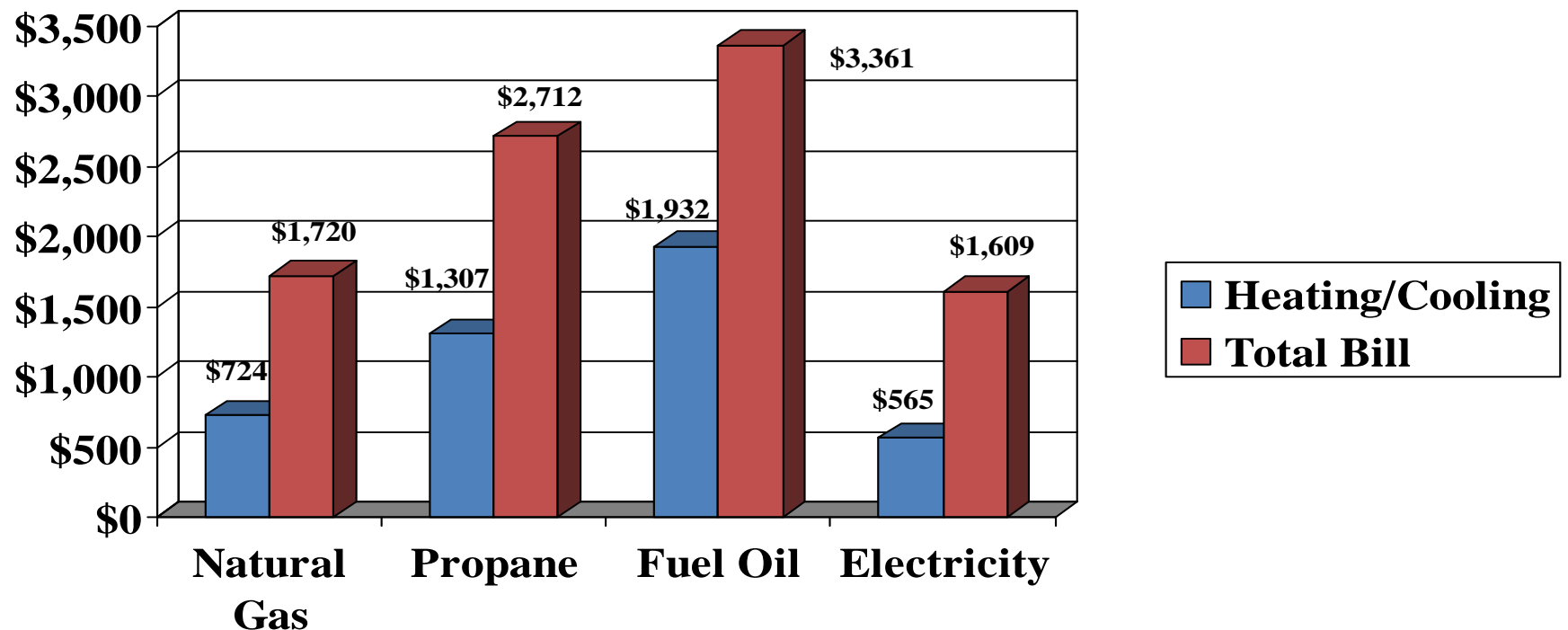


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EXPECTED ENERGY EXPENDITURES FOR 2010-2011 Low-Income Households

By Primary Heating Fuel



Source: ORNL Tabulation from EIA September 2010 STEO & 2005 RECS



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Why Weatherization?

- Increases energy efficiency of the home
- Reduces energy costs year-round
- Provides long-term relief from expensive energy bills
 - Measures continue to save money every year
- Alleviates arrears, breaks destructive cycle of shut-offs and re-connections



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Why Weatherization?

- Low-income households typically spend 15% of their total income in energy vs. 3.3% for other households
- www.homeenergyaffordabilitygap.com
- Low-income families often choose between heat and other necessities
- Gateway for workforce training for new, green economy
- WAP reduces our dependence on foreign oil





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Why Weatherization?

Home Energy Affordability Gap – 2010 Ohio Data

<u># of Households</u>	<u>Poverty Level</u>	<u>Energy Burden</u>
215,269	< 50% FPL	48.4%
123,479	50 – 74%	19.4%
135,728	75 – 99%	13.9%



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Who is Served?

Eligibility based household income <200% of FPL

Priority given to -

- Elderly persons
- Persons with disabilities
- Families with children
- High energy users
- High energy burden





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Housing Stock

- Services delivered to single-family, multi-family, and mobile homes





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Housing Stock Often Substandard

First, you need to identify the air and thermal boundary





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Housing Stock Often Substandard

- Structural problems
- Wiring and plumbing problems
- Poorly maintained
- Neglected heating systems



Photo: Kim MacDonald



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WAP Funding



DOE



Grantees
(**50 States** + DC,
Territories, 2 Tribes)



Local Providers
(predominantly CAAs)



Low-income
Americans

- DOE provides core program funding to states
- States can leverage funds such as LIHEAP (HHS), utilities, and others
- States contract with local agencies to deliver program services



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WAP Funding

- WAP is the largest residential energy efficiency program in the nation
- Most states also receive LIHEAP funding
- DOE rules allow leveraging to expand WAP services
- Substantial utility involvement in several states
- RGGI supporting efforts in some NE states



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WAP Funding

- DOE funding typically defines WAP service delivery network and infrastructure
- DOE program and rules are basis for defining WAP
- Other funding sources may have some variations or flexibility



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WAP Network

- Network of app. 1000 agencies reach every county in every state across the nation
- Approx. 75% of local agencies are CAA's
 - Some local agencies have direct hire crews that do Wx work, others utilize contractors





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The Process

- Client Intake
 - Application and income verification
 - Approval process
- Audit/Estimate of the home
 - Diagnostic testing
 - Determination of most cost-effective measures
 - Determination of health and safety measures
 - Work Order for crew or contractor





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The Process, continued

- Installation of Measures
 - As per Work Order
- Client Education
 - Insure client knows what was done on the home, why, and maintenance tips
 - Educate on other tips to save energy in the home





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The Process, continued

- Quality Control – Post Work Inspection
 - Every completed unit must have an agency inspection before it is reported
 - Insure correct measures were done professionally and effectively as per audit and Work Order
 - Insure combustion safety and indoor air quality
 - Insure accountability of materials used



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Energy Audit

- Energy professionals trained to conduct comprehensive energy analysis
- Various inputs of measurements and conditions
- Calculations and listing of measures in terms of energy payback – SIR's, ranked in order of descending priority



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Energy Audit

Audit is more than the calculations of SIR's

- Diagnostic tests to help identify and remediate inefficiency and health and safety problems
- Visual inspections and practical considerations
- Generation of Work Order and materials needed
- Preview of specific problems or conditions
- Engaging the client so they know what to expect



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How has the WAP evolved since the 1970's ?

Early Weatherization Program

- Lower cost jobs
- Similar measures on all jobs
- More focus on storm windows, exterior measures

Modern Program

- Advanced diagnostic techniques and computerized energy audits to provide most cost effective measures
- Advanced installation techniques, such as densepack sidewall insulation and mobile home insulation
- Increased focus on health and safety

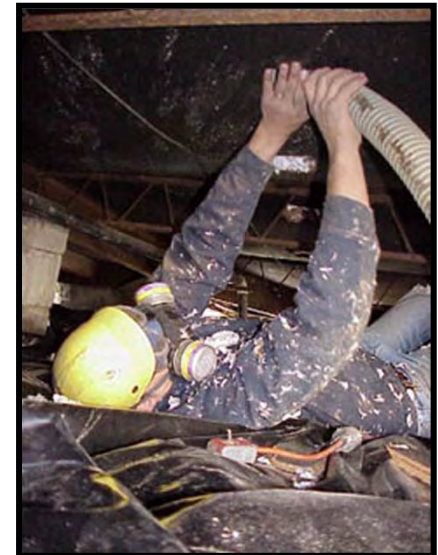


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Typical WAP Measures

- Heating and/or cooling system diagnostic testing, repair, tune-ups, and replacements
- Duct sealing and insulation
- Reducing air infiltration to acceptable levels
- Attic insulation
- Dense pack sidewall insulation
- Other measures as identified, including electric baseload measures
- Advanced mobile home insulation techniques





Technical Basics

Whole House Weatherization / House as a System

A house is a system of interdependent parts.

- The operation of one part affects many others
- When they all work together, the house is comfortable, safe, efficient, and durable

A house will experience problems when its house parts don't work together properly.

- Many are invisible and develop slowly



Technical Basics

- As houses become more airtight, there is more potential for IAQ problems
- The tighter a house is, the more influence individual components have on the others
- All pollutants inside the pressure boundary will eventually be dispersed over the entire area
- Altering a building or its mechanicals can have unexpected consequences



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Diagnostic Tools: Blower Door

- Blower door test identifies air leakage
- Measures air leakage
- Exaggerates leakage so it can be more easily detected





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Diagnostic Tools: Blower Door

- Gauges indicate level of air leakage
- Used with other devices to locate leaks





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Diagnostic Tools: Pressure Pan and Digital Manometer

- Leaky ducts can increase costs by 10-30%
- While blower door runs pressure pan placed over air register



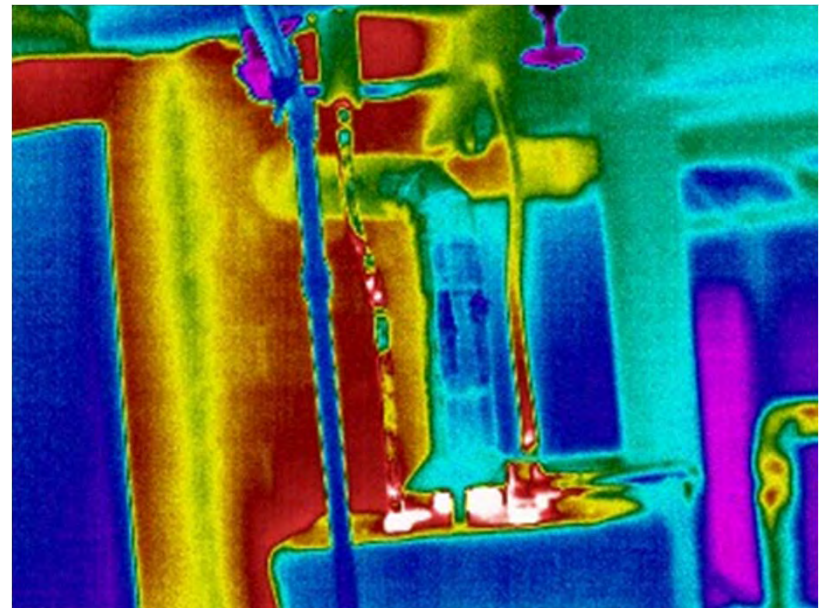


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Diagnostic Tools: Infrared Camera

- Illustrates heat loss
- Guides air sealing and insulation
- Helps to educate clients
- Quality control for insulation and other measures





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Diagnostic Tools: Combustion Analyzer

- Tests heating system for efficiency and safety
- Analyzes composition of flue gases
 - Indicates inefficient combustion, hazardous by-products (e.g., carbon monoxide)





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A Word about Multifamily Units

- Have always been part of WAP, but increased focus under ARRA
- Annual State Plan requires rental plan
- Multifamily buildings require 66% eligibility to qualify entire building
- HUD/DOE Final Rule - WPN 10-15 added 3 lists of eligible Multifamily Buildings
- Different set of skills needed for auditing and retrofits



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Proven Results

- Average annual energy savings = \$437* first-year savings per household, with savings year after year
- Savings average 35% of consumption
- Returns \$1.80 in energy-related benefits for every \$1 invested in the program
- Reduces carbon dioxide emissions by 53 metric tons over life of measures for every home weatherized
- Decreases national energy consumption by the equivalent of 24.1 million barrels of oil annually

* Updated February 2010 based on 20-year EIA annual price projections discounted to present value.



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Other Results and Outcomes

- Value Of Non-Energy Benefits - **\$4,082** over the life of the measures.
- Societal Benefit/Cost Ratio - **2.5 TO 1**
- Supports local economies and small businesses with the purchase of supplies and materials.
- Diagnostic approach and program technology has influenced residential energy efficiency in all housing stock and income brackets
- WAP viewed as major employer of the “Green Workforce” and as a gateway to “Green Economy”



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Success Story

- Though Sarah C. rarely turned on the heat in her Washington home, her utility bill ran nearly \$250 each month.
- Weatherization discovered an electrical short that caused a constant flow of electricity.
- They fixed the problem, installed insulation in her floor and ceiling, and tuned the heating system.





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Success Story

- Gracie A. lived in a house in Virginia where temperatures barely rose above 40 degrees.
- A carbon monoxide test was done, and deadly levels of carbon monoxide were detected.
- A Weatherization team installed a sealed, combustion kerosene heater as well as reinsulated her house.
- WAP assistance resulted in her health improving immediately.





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WAP and the Recovery Act



Pre-Recovery Act

- FY09: \$450M • FY07: \$205M
- FY08: \$227M • FY06: \$243M

Recovery Act (FY 2009 - 11)

- \$5 Billion
- Huge Increase in Production
- Large Increase in Work Force
- Statute amendments including Increase of Training and Technical Assistance Funds



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ARRA WAP Production

- Approximately 590,000 homes occupied by low-income families will receive energy efficiency services with ARRA funds.
- The Program is now ahead of schedule, having completed over 507,697 homes as of August 2011. This work will decrease home energy use as well as reduce monthly energy bills.





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WAP is 8th in ARRA Job Creation

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TOP PROGRAMS, AS REPORTED BY RECIPIENTS (APR 1 - JUNE 30, 2011)

Program Name	Jobs
State Fiscal Stabilization Fund (SFSF) - Education State Grants, Recovery Act	160,649.51
Special Education Grants to States, Recovery Act	57,722.73
Title I Grants to Local Educational Agencies, Recovery Act	51,977.84
Unassigned	45,862.24
State Fiscal Stabilization Fund (SFSF) - Government Services, Recovery Act	26,824.73
Highway Planning and Construction	21,908.94
TRANS-NIH RECOVERY ACT RESEARCH SUPPORT	20,337.24
Weatherization Assistance for Low-Income Persons	14,451.24
ARRA EARLY HEAD START	8,320.42





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ARRA Jobs and Training

- ARRA WAP sustains an estimated 15,000+ jobs with countless more supported by program spending
- WAP is a leader in creating the green workforce
- Training centers across the country teaching the latest diagnostic techniques and skills to conduct home energy audits and state-of-the-art efficiency retrofits
- This training can be applied beyond the low-income Weatherization Program



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DOE T&TA Plan states that ARRA T&TA funds are to:

- *“Build the training capacity to support the weatherization network Recovery Act ramp up and **lay the foundation for a sustainable national retrofit industry** with ready access to a well-trained workforce and opportunities for worker mobility and career pathways.”*





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WAPTAC

www.waptac.org

- ‘Virtual’ library of DOE WAP
- Serves as institutional memory of WAP
- Central repository for presentation materials, photos and videos of work in progress, site demonstrations, news articles, and other documentation to support WAP operations.



WAPTAC

WEATHERIZATION ASSISTANCE PROGRAM
TECHNICAL ASSISTANCE CENTER



Welcome to WAPTAC

Our Mission: To reduce energy costs for low-income families, particularly for the elderly, people with disabilities, and children, by improving the energy efficiency of their homes while ensuring their health and safety.

What is WAP?

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

What is WAPTAC?

The WAPTAC website contains a 'virtual' library of all rules, regulations, policies and procedures required by DOE's weatherization program. The site is a central repository for presentation materials, photos and videos of work in progress, site demonstrations, news articles, and other documentation to support WAP operations. WAPTAC.org serves as the institutional memory of the Program.



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APPLYING FOR ASSISTANCE?





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WAP Basics Rules & Guidance

- What's New »
- FAQs
- Recovery Act »
- Briefing Book
- Energy Education »
- Funding Survey
- Weatherization Plus »
- Document Library
- Multimedia Library
- Webinar Archives
- Related Links »

Rules & Guidance Technical Tools

- Program Guidance »
- Rules and Regulations »

Technical Tools Public Information

- Energy Audits »
- Field Standards and Guides »
- Health and Safety »
- Monitoring
- ENERGY STAR
- SIRTT »
- Additional Resources »

Public Information Best Practices

- How Do I Start a PIC? »
- How Do I Connect to Others? »
- Site Demonstrations
- Social Media »
- Weatherization Day »
- Tools »

Training Resources Ask An Expert

- WAP Training Centers »
- Training Opportunities
- Training Tools »

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What's New?

- [Weatherization Plus Health](#)
- [Weatherization Plus Health](#)
- [New Standardized Curriculum](#)
- [WAP 2010 Funding Survey](#)
- Weatherization Plus Health Events - [Fresno, CA](#) and [Oakland](#)
- [Get Ready for Weatherization Day \(October 30\)](#), start planning today! Download the following updated materials for a successful day:
 - [Weatherization Day Planning Kit](#)
 - [Weatherization Site Demonstration Kit](#)
 - [Updated Media List](#)
- [Weatherization Program Notices for 2011](#)
- [State Letter for 2011 DOE National Training Conference](#)
Learn more about the 2011 DOE National Training Conference in New Orleans, LA [here](#)

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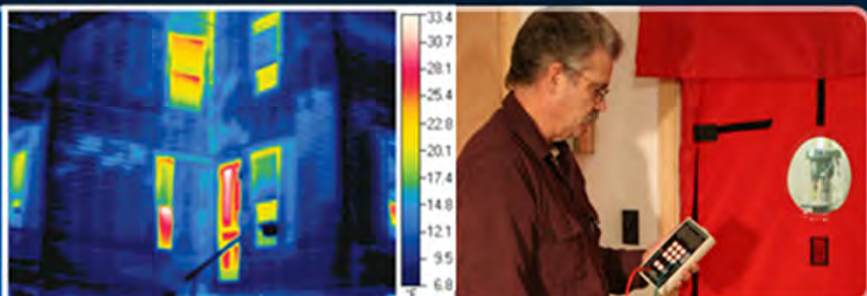
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- [Asbestos - In vermiculite](#)
- [Asbestos - On pipes, furnaces, other small covered surfaces](#)
- [Biological and Unsanitary Conditions](#)
- [Building Structures and Roofing](#)