NASCSP | NATIONAL ASSOCIATION FOR STATE COMMUNITY SERVICES PROGRAMS

Weatherization Plus Health
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The Weatherization Assistance Program: An Overview

Bob Scott
Director, Energy Services

Introduction to WAP

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

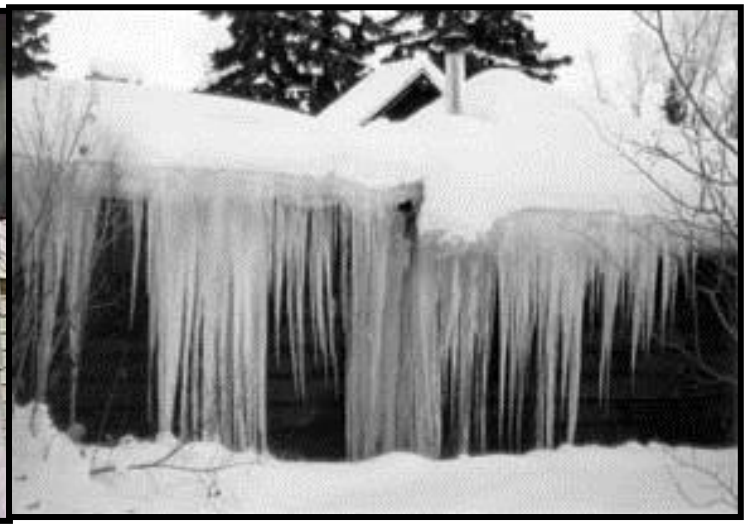
Statutory Purpose

…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

Mission

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

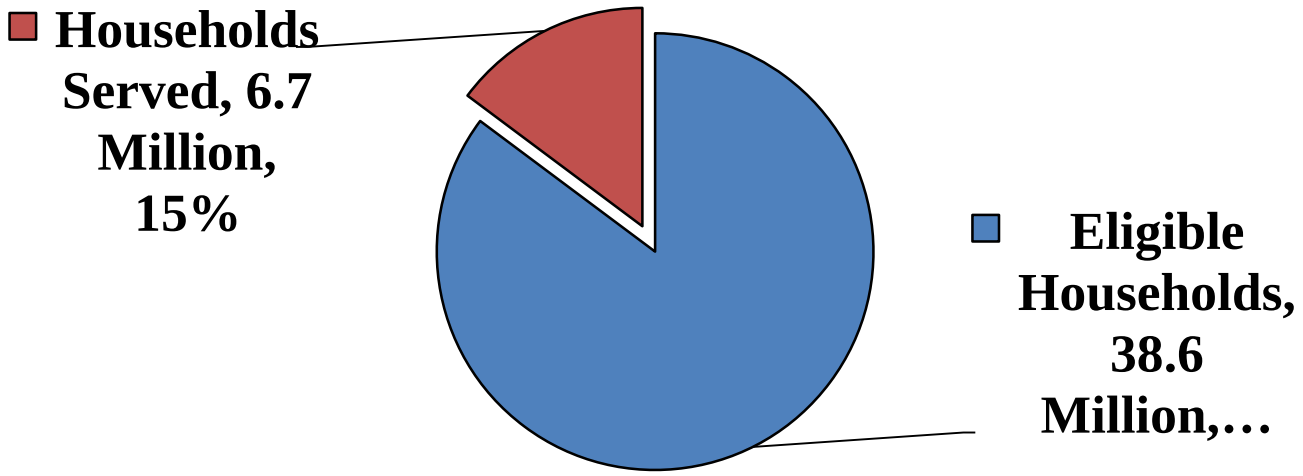


History

- 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

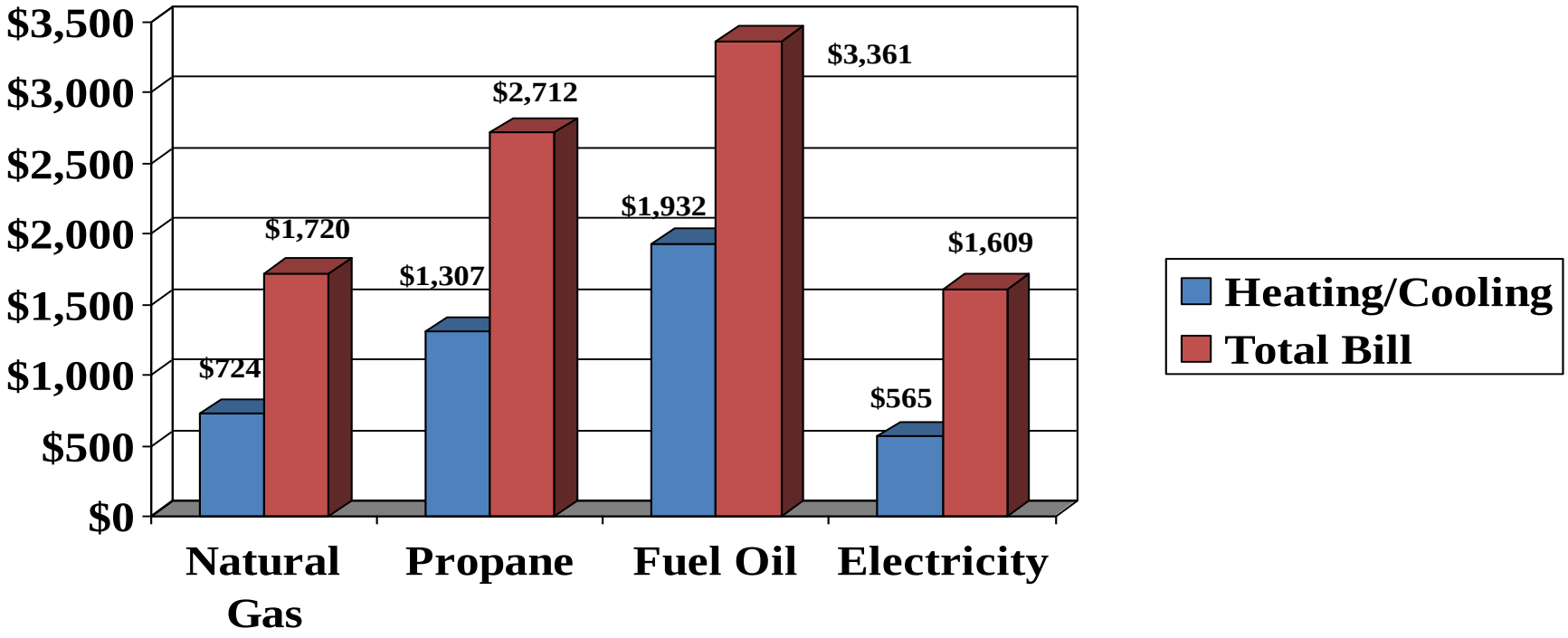
Why Weatherization?

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



EXPECTED ENERGY EXPENDITURES FOR 2010-2011
Low-Income Households

By Primary Heating Fuel



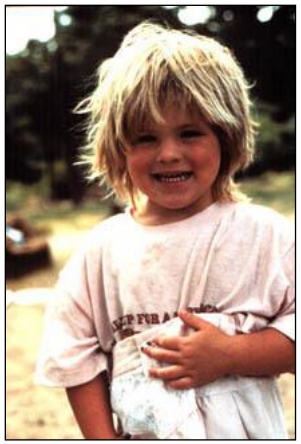
Source: ORNL Tabulation from EIA September 2010 STEO & 2005 RECS

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

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



Why Weatherization?

Home Energy Affordability Gap – 2010 Georgia Data

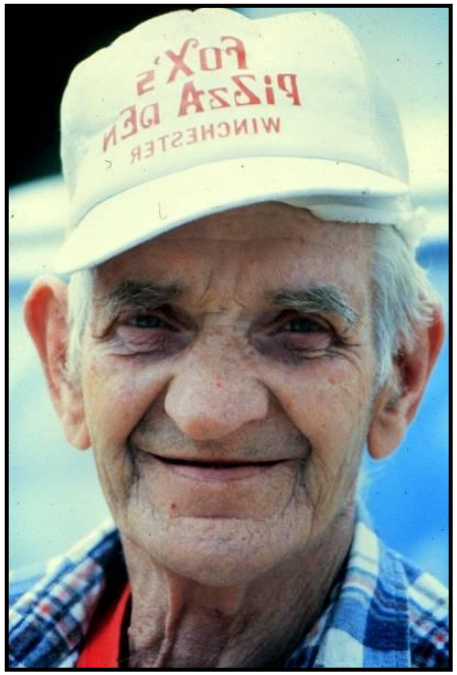
# of Households	Poverty Level	Energy Burden
187,778	< 50% FPL	48.2%
95,874	50 – 74%	19.4%
113,259	75 – 99%	13.9%

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



Housing Stock

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

Housing Stock Often Substandard

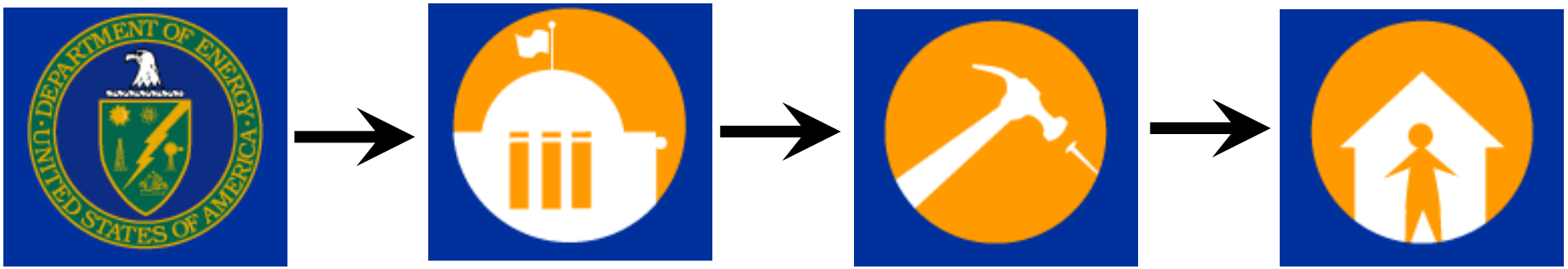
First, you need to identify the air and thermal boundary

Housing Stock Often Substandard

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

Photo: Kim MacDonald

WAP Funding



- 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

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

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

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

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

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

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

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

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

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

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

Diagnostic Tools: Blower Door

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

Diagnostic Tools: Blower Door

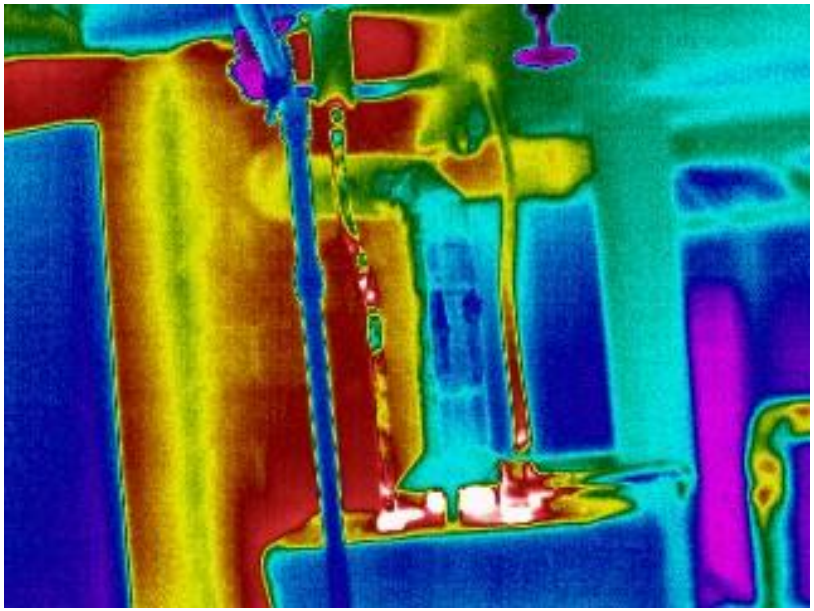
- Gauges indicate level of air leakage
- Used with other devices to locate leaks

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

Diagnostic Tools: Infrared Camera

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



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)

A Word about Multi-Family Units

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

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.

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 Work Force and as a gateway to Green Economy

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.

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.

WAP and the Recovery Act

Pre-Recovery Act

- FY09: $450M
- FY08: $227M
- FY07: $205M
- 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

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 484,000 homes as of June 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

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

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."*

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.

RECOVERY ACT *LEARN MORE >>*

BP BEST PRACTICES *LEARN MORE >>*

WEATHERIZATION PLUS HEALTH *LEARN MORE >>*

WB WAPTAC BLOG *LEARN MORE >>*

? APPLYING FOR ASSISTANCE?

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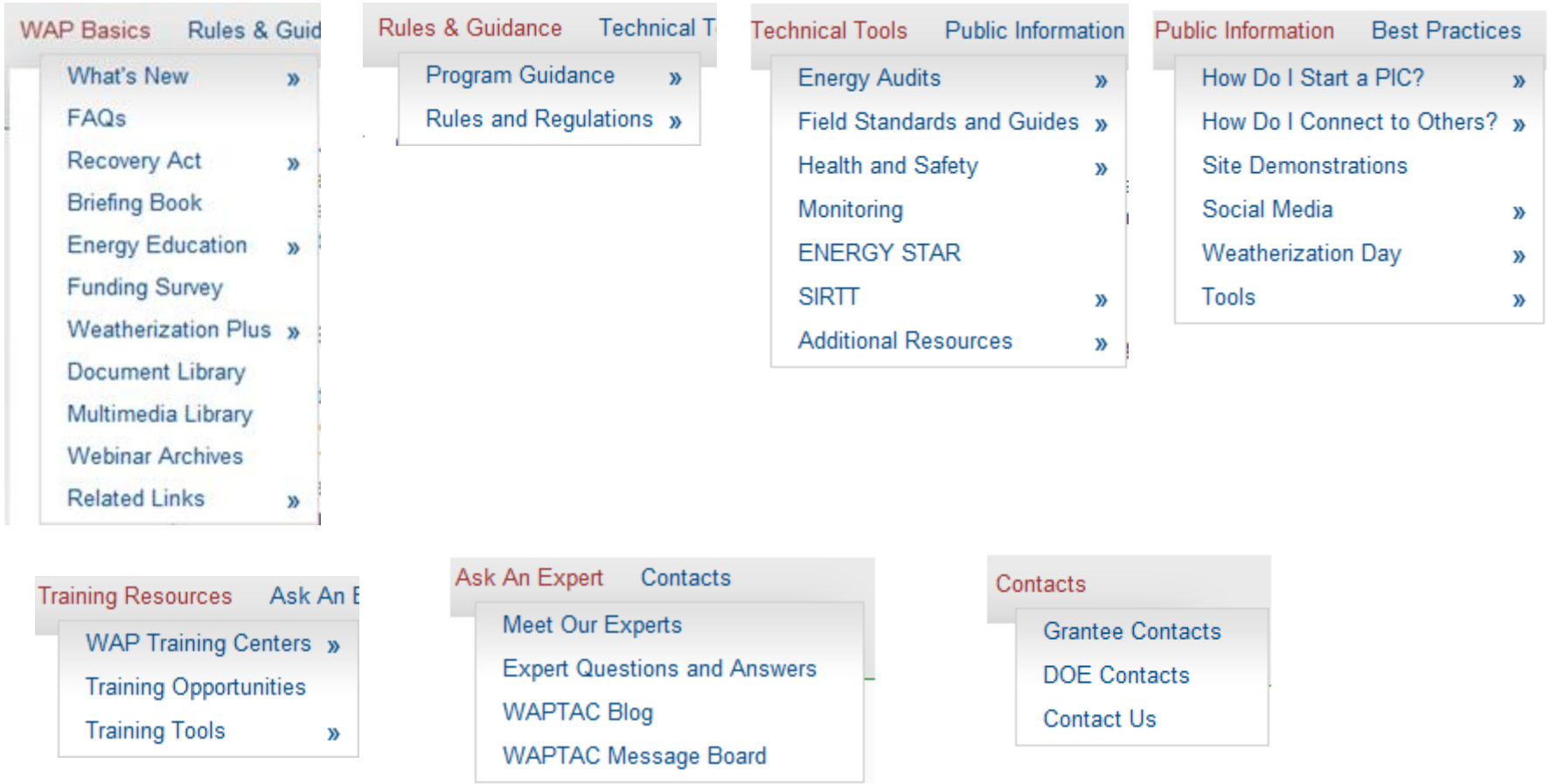
SYSTEM FOR IDENTIFYING REVIEWING TECHNOLOGIES AND TECHNIQUES


WAP Basics
Rules & Guid
What's New »
FAQs
Recovery Act »
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Weatherization Assistance Program
Technical Assistance Center

WAP Basics | Rules & Guidance | Technical Tools | Public Information | Best Practices | Training Resources | Wx Plus Health | Contacts

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- SIRTT »
- Additional Resources »

- State Health and Safety Plans and Other Documents
- Crew Safety
- Combustion Appliances and Gases
- Deferral Standards
- Lead Paint
- Mold and Moisture
- Electrical Issues
- Health and Safety FAQs
- Pollution Occurrence Insurance
- Other Health and Safety Concerns »

- Asbestos
- Building Structure
- Health Problems
- Radon
- Refrigerants
- Spray Polyurethane Foam
- Volatile Organic Compounds
- Resources

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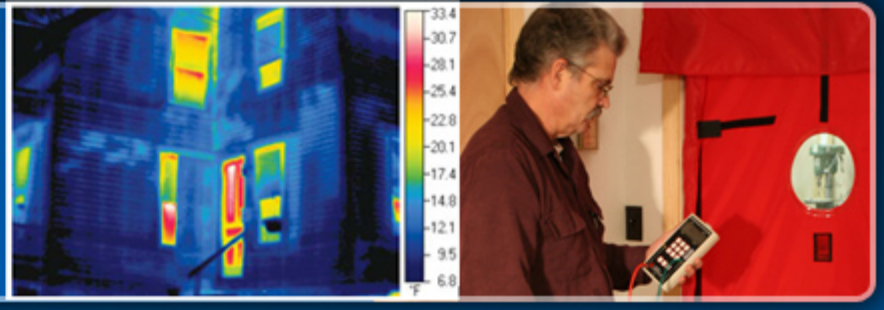

Combustion Appliances & Gases

WAP technology has advanced to the point where dwellings are being sealed tighter than ever before. In accordance with the "house-as-a-system" approach to weatherization, there can be existing indoor air quality conditions that may be intensified by current air sealing techniques. Indoor air quality problems may have existed before weatherization, but not been realized because there were significant air changes in the home. Combustion appliances can be the source of problems that should be addressed by WAP. Related protocols typically include:

- Testing for carbon monoxide and corrective action to reduce to acceptable levels;
- Gas leak detection tests and repairs on gas appliances and supply lines;
- Checking for leaks in oil appliances and supply lines;
- Draft tests and vent inspections and related repairs;
- Testing for backdrafting and potential for flue gases to spill into living space;
- Insuring sufficient combustion air; and
- Insuring proper clearances from combustible materials.

WPN 11-06 HEALTH AND SAFETY GUIDANCE, Space Heater Policy, states that r emoval is required, except as secondary heat where the unit conforms to ANSI Z21.11.2. Units that do not meet ANSI Z21.11.2 must be removed prior to weatherization but may remain until a replacement heating system is in place.

Health and safety procedures outlined in State Plans should address the Grantee's approach to addressing potential health and safety problems with combustion appliances. The plan should include use of DOE funds to remedy problems and how to address problems that cannot be remedied with DOE funds.