

Weatherization: A Grand Program for Arizona

Five million tourists visit the Grand Canyon each year to experience the breathtaking views and hike the winding trails. Visitors are often surprised to learn that more snow falls in the Grand Canyon Plateau than in Minneapolis, Minnesota. While the temperature may be cool in the plateau region, the surrounding area swelters in high heat. Many Arizona residents survive the heat with sophisticated cooling systems. For low-income families, however, keeping cool can pose a challenge. To assist these households, Arizona partners with the U.S. Department of Energy (DOE) to implement the Weatherization Assistance Program (Weatherization). Weatherization reduces energy costs for low-income households by improving the energy efficiency of their homes, while ensuring their health and safety.

Low-income families typically spend about 14% of their annual income on energy, compared to 3.5% for other households, and Arizona residents pay some of the highest energy costs in the nation. Low-income families often have to cut back on other necessities to pay their energy bills. Weatherization reduces home energy consumption, which provides a permanent boost to the household's budget. These measures protect against future fluctuations in energy prices and supply.

Arizona's Department of Commerce administers the state's Weatherization Program and a network of 10 local agencies delivers energy efficiency services to every county in the state. Since the program's inception in 1977, more than 24,000 Arizona homes have been weatherized.

Weatherization crews use a computerized energy audit to determine the most cost-effective measures appropriate for each home. Diagnostic tools, like a blower door and digital manometer, are used to detect and mitigate air infiltration and pressure imbalances. Crews also test heating units and cooking appliances for carbon monoxide, an odorless, colorless gas that can be deadly in large quantities.

NATIONAL WEATHERIZATION PROGRAM

Homes weatherized in 1999	68,000
DOE allocations in 1999	\$135 million
Average annual energy cost savings per household	\$300
Average space heating savings	25-30%
Energy benefits returned for every \$1 invested	\$2.10
Jobs supported	7,000

ARIZONA

Homes weatherized in 1999 (with DOE \$)	757
DOE funding in 1999	\$660,080
Clients served in 1999	1,909
Elderly	33%
People with disabilities	56%
Families with children	33%

*Percentages reflect some instances of households occupied by more than one priority group.

Typical weatherization services include installing insulation; sealing and balancing ducts; tuning and repairing cooling and heating systems; and mitigating heat gain through windows, doors, and other infiltration points. When cost-effective, Arizona crews also apply white elastomeric roof coating on mobile homes to reduce heat gain. As part of weatherization, clients are educated on the proper use and maintenance of the measures installed.

A TEAM EFFORT

The Colorado River cascades through the Grand Canyon, challenging river runners with 70 major rapids. Rafters work together to navigate the turbulent waters and successfully reach their destination. Weatherization relies on creative partnerships to deliver a wider range of services to low-income households, thereby improving the total efficiency and safety of their homes. Arizona leverages funding from other federal, state, and utility programs.

The Tucson Urban League leveraged funding from multiple sources to repair and weatherize an aging adobe home. The home suffered from structural weaknesses, including an external wall that collapsed during the weatherization inspection. The agency used leveraged funds to rebuild the wall and reinforce the structure. Weatherization funds were used to install typical energy efficiency measures. The family was relieved and grateful for their safe, comfortable home.



Tucson Urban League leveraged funds to provide extensive weatherization and renovation work for this Arizona family.

LAYERS OF BENEFITS

The Grand Canyon's unique geologic record is exposed in its walls. Each layer tells its own story and the layers combine to form one impressive structure. Similarly, Weatherization creates an array of benefits for Arizona. Weatherization reduces energy costs for low-income families and helps them to become more self-sufficient. This benefits the community by keeping dollars in the local economy that would typically be exported out to pay for energy. Every \$1 retained in the community produces an estimated \$3 in multiplier benefits.

Reducing residential energy demand decreases electricity generation and associated power plant emissions, a significant source of air pollution. This improves local air quality and reduces adverse health effects, particularly

asthma. Weatherization measures also reduce annual emissions of carbon dioxide, a leading greenhouse gas, by an average of one ton per weatherized home. Improving air quality and avoiding greenhouse gas emissions is particularly important for Arizona. A recent surge in growth and traffic congestion has contributed to increased air pollution.

The program's true impact, however, is best revealed one household at a time. Stella Miller*, an elderly homeowner in Payson, contacted her local weatherization agency for assistance with unmanageable energy bills. When the crew arrived, she told them about her chronic headaches. Suspecting carbon monoxide poisoning, the crew immediately inspected the furnace and discovered a cracked heat exchanger. They tested the furnace and found massive amounts of carbon monoxide leaking into the house. The crew also noticed that random flames shot from the flue, creating a potential fire hazard. Recognizing the seriousness of the situation, they quickly shut the faulty furnace down and replaced it with a new one. Thanks to the prompt response of the Arizona crew, Stella now lives in a safe and energy-efficient home.

WEATHERIZATION WORKS!

Weatherization produces an impressive range of benefits for low-income households and communities. Nationally, for every \$1 invested in the program, Weatherization returns \$2.10 in energy-related benefits. Weatherization measures reduce national energy consumption and curb demand for imported oil. Weatherization works for Arizona and America!

**Names have been changed to protect the privacy of the subjects.*



TO LEARN MORE ABOUT THE WEATHERIZATION ASSISTANCE PROGRAM, CONTACT:

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Visit the Weatherization Web site at: www.eren.doe.gov/buildings/weatherization_assistance
or call the Energy Efficiency and Renewable Energy Clearinghouse at: 1-800-DOE-3732



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