

**WEATHERIZATION ASSISTANCE AND**  
**LOW-INCOME HOUSEHOLDS**

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## **Introduction**

Weatherization is one of the most efficient affordable housing tools available to communities and residents. Weatherization is defined as the practice of protecting a building from the elements (such as sunlight, precipitation and wind) and modifying the building to reduce energy consumption and maximize energy efficiency.<sup>1</sup>

Traditionally, weatherization processes have focused on heating and cooling as methods to conserve energy. Currently, however, weatherization is expanding and beginning to focus on “whole house” approaches to incorporate advanced technology. The new methods address energy usage in a comprehensive manner, with a focus not only on heating and cooling, but on environmental impact, health and safety, and economic benefits. Weatherization technologies are evolving from traditional methods in an effort to provide greater energy savings for consumers and to contribute to the economic and environmental health of communities.<sup>2</sup>

Rising utility costs and increasing awareness of potential environmental hazards are increasing the need for the home weatherization. The following pages will serve as an introduction to the need for weatherization, the environmental and economic impact it has on communities, and the assistance programs available for low-income households.

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<sup>1</sup> United States Department of Energy

<sup>2</sup> Weatherization Assistance Program *Plus*

## **Weatherization Methods and Technology**

Weatherization reduces energy costs by increasing energy efficiency. A home energy audit puts a residence through a series of tests to determine its energy efficiency needs. These tests include blower door tests to identify where air is escaping from the home, pressure pan tests to identify leaking ducts, and infrared cameras that show heat being lost. In addition to those tools to test efficiency, there are diagnostic tools that focus on potential health and safety issues and environmental impact. These tools include using a combustion analyzer, which tests a home's heating system and analyzes the composition of the resulting flue gases; a draft test to test the backdrafting that draws toxins back into a home and; a tool to detect gas leaks from stoves and furnaces.

Once a homeowner decides to weatherize, often the task seems difficult and expensive. Unfortunately, when many people hear the term "weatherization", they think only of upgrading their homes with energy efficient windows. While window replacement is indeed an important aspect of weatherization, it is only a small component of the repairs and improvements that can be made to buildings in an effort to make the building energy efficient and environmentally friendly. Additionally, it can often be quite costly to replace windows, which causes citizens to forego weatherization entirely. It is important for people to recognize the other weatherization methods when considering improvements to their property.

The following measures are typical steps taken in weatherizing a home:

1. sealing gaps around doors and windows
2. protecting pipes from corrosion and freezing
3. installing downspouts to protect buildings from surface water
4. ventilation
5. updating roofing and siding
6. insulation

7. replacement of old windows and doors
8. installation of energy efficient heating and cooling equipment

Of these, air sealing, insulation, the replacement of HVAC (heating and cooling) with energy efficient models, and the replacement of appliances are the most cost-effective methods of reducing energy consumption. According to a New York State Energy Research and Development Authority (“NYSERDA”) spokesperson, windows and doors are replaced for aesthetic purposes to increase home value, and are often the last weatherization step taken by homeowners, if needed at all.

According to the United States Department of Energy (“DOE”), the improvements made most often are:

1. Insulation – added to attics, walls, floors, pipes, and water heaters
2. Air Sealing – determined through the Blower Door test, sealed with caulk or weatherstripping
3. Heating & Cooling Modification – including tuning of the units, retrofitting of burners, or replacement of the unit entirely
4. Electric Base Load Measures – replacing lighting, refrigerators and water heaters
5. Other Incidental Repairs – houses often need physical repairs such as broken windows, missing siding, etc. which contribute to their energy inefficiency.

Too often, households do not consider the small improvements mentioned above. They may see the difference as insignificant. However, statistics indicate that leaking air ducts can increase energy costs from 10% to 30%, depending on the severity of the leak.<sup>3</sup>

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<sup>3</sup> DOE

## **Environmental and Economic Impacts of Weatherization**

Increased energy efficiency reduces air pollutant emissions from the combustion of home heating fuel and from the combustion of fossil fuels at electric generating stations.<sup>4</sup> Different studies report carbon dioxide emissions reductions from 1 metric ton to 2 metric tons each year due to weatherization.<sup>5</sup> According to a study done by Oak Ridge National Laboratory, from 1993 through 2002, weatherization saves an average of 30.8% in gas space heating, a reduction of 21.9%. Homes heated with natural gas that weatherize manage to mitigate approximately .23 metric tons of carbon each year. Homes with electric heat that weatherize reduce .475 metric tons of carbon annually.

A study of 12,000 households in Ohio that participated in a weatherization assistance program shows that their average reduction of carbon dioxide was more than 1,350 pounds annually, which is equivalent to about 2.6% of the per capita emissions of the United States. For comparison purposes, the international Kyoto Protocol has called for the United States to reduce emissions by 7% during the years 2008 through 2012. This weatherization-based reduction, if increased to a national level, would help the United States hit approximately one-quarter of that goal.

In addition, the DOE estimates that approximately 30.5 million Mbtu of energy is saved as a result of weatherization. This is a decrease of 23% in primary heating fuel, which reduces the national energy demand by the equivalent of 18 million barrels of oil each year.<sup>6</sup>

In addition to the various air pollutant reductions that stem from weatherization, another environmental impact is reduced waste on the nation's landfills. Energy efficient

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<sup>4</sup> Home Weatherization Assistance Program Environmental Impact Analysis, 3

<sup>5</sup> DOE & Home Weatherization Assistance Program Environmental Impact Analysis

<sup>6</sup> DOE

appliances and technologies last longer, and thus create less physical waste as they do not need replacing as often. A prime example of this fact is a light bulb. Experts estimate that the average CFL (compact fluorescent) bulb will burn for 5 years. During that time, a non-CFL bulb would need to be replaced several times, creating additional waste each time.

Weatherization is good for the economy as well. The first economic impact is the most obvious. Energy savings translate to additional spending. For every dollar saved on energy costs, a household has an additional dollar to spend that will flow through the economy, from a local retailer to the national level.

Weatherization also increases property values and enhances communities. Houses that are energy efficient have higher selling prices, which drive up the value of the entire community around them.

Additionally, housing and weatherization assistance programs help to stimulate local economies. Such assistance programs create local jobs for contractors, engineers, building inspectors, and managers. The benefits of the assistance programs are detailed in the later discussion of each respective program.

## **Weatherization and Low-Income Households**

Rising energy costs disproportionately affect low-income households. According to the DOE, low-income households currently spend almost 16% of their gross income on energy expenditures. This is in sharp contrast to non-low income households, who spend only approximately 5% of gross income on energy costs. As costs continue to rise, this gap will only widen.

The statistics provided by the DOE state that almost 90% of the households that receive weatherization assistance through the federal Weatherization Assistance Program make less than \$15,000 per year, while 66% of the recipients make \$8,000 per year or less.<sup>7</sup> Weatherization assistance programs, both at the Federal and state levels, target low income households, as these households stand to benefit the most from the energy savings. For example, the Federal Weatherization Assistance Program (“WAP”) estimates that the average savings per household that receives assistance in weatherizing their home is \$358 annually. This savings, for a household at the \$8,000 per year income level, would represent a 4% decrease in their energy costs. For households struggling to pay bills, such a decrease in energy spending could help to provide a better quality of life for these citizens.

Low-income individuals would benefit the most from decreased energy costs, but they usually reside in older neighborhoods that are not energy- efficient. From a public policy perspective, it makes sense to target low-income individuals for weatherization program funding. Without such assistance, these households would not be able to financially support weatherizing their homes, as it often would mean making a choice between food and weatherization.

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<sup>7</sup> DOE

Low-income individuals have the greatest need for energy conservation education, as they stand to gain the most from it. Weatherization provides non-monetary benefits that are often lacking in low-income neighborhoods as well. Weatherization helps to maintain safe housing, improve health conditions, reduce homelessness, and improve comfort and quality of life for residents.



## **Weatherization Assistance Programs**

### *Weatherization Assistance Program*

The DOE funds the Federal Weatherization Assistance Program (“WAP”). While this program is federally funded, it is administered at the state and local level. In New York State, WAP is administered through the Division of Housing and Community Renewal (“DHCR”). The DHCR allocates funding to low-income households for weatherization procedures in their homes.

The program is intended for low-income households. For weatherization and energy assistance purposes, New York State defines “low-income” as at or below 60% of state median income. Applicants for assistance apply to local community agencies to determine program eligibility. Here in Buffalo, WAP is administered through organizations such as Neighborhood Housing Services of South Buffalo, Supportive Services Center and the Matt Urban Human Services Center.

Once income eligibility is verified, an energy audit is performed at the residence. This audit conducts tests similar to those described previously, and determines the energy efficiency updates needed for the home. The audit specifies the repairs that are most cost-effective. A certified contractor will perform the necessary work, and the cost is covered by the program at no cost to the homeowner.

WAP estimates the average amount of repairs made at approximately \$2,800 per job. WAP provides assistance to almost 100,000 recipients each year. The goal of the program is to decrease energy costs for low-income households and to educate the public about energy conservation. When repairs and modifications are made through this program, an energy fact sheet is provided to homeowners as a means of educating them

about energy conservation. Additionally, once the weatherization is complete, the program provides a compliance review to double check all work done.

According to the DOE, the WAP provides a tangible economic benefit for local communities. Statistics provided by the DOE indicate that for every \$1 invested in the program, the program returns \$2.69 in energy and non-energy related benefits. Jobs are created and retained by virtue of this program, as local contractors and engineers are employed to complete the work necessary. The DOE statistics state that 52 direct jobs and 23 indirect jobs are created for every \$1,000,000 invested in the program.

Since its inception in 1976, over 5 million homes have been weatherized under WAP.

#### *Assisted Home Performance Program*

The Assisted Home Performance Program is a New York State program administered by NYSERDA. This is one of the New York State Energy Smart programs, funded by the service tariff paid by state residents on their electricity bills (the systems benefit charge, or “SBC”).

According to a NYSERDA spokesperson, the SBC funding is generated on a 5-year basis. This funding has been awarded and distributed by NYSERDA for the past 10 years, with a 5-year budget of approximately \$875 million.

This program targets households in the range of 60% to 80% state median income. Both single family homes and multifamily homes (containing 2 to 4 units) are eligible for the assistance.

This program differs from the federal WAP in that it does not cover 100% of the weatherization costs. The Assisted Home Performance program subsidizes 50% of the costs of weatherization, up to \$5,000 for single-family homes and up to \$10,000 for multi-family housing. For additional funding, however, NYSERDA offers several low-interest loan programs (at up to 4% less than prime rates) for residents to borrow a maximum of \$20,000 towards weatherization costs.

A comprehensive energy audit is conducted by a program certified contractor. The average cost per job under this program is \$7,500. NYSERDA's higher costs, when compared to WAP, may stem from the fact that the NYSERDA program often includes replacement of heating units and other appliances with energy-efficient models, in addition to home repairs and maintenance.

#### *EmPower New York*

Another program administered by NYSERDA is EmPower New York. This program is funded through class-action lawsuits and has limited funding available. The current EmPower New York program is partnered with Honeywell, Inc. to provide replacement lighting and refrigerators for qualified households.

#### *Home Energy Assistance Program ("HEAP")*

HEAP is a federally funded program for low-income individuals. The program is administered by local Departments of Social Services, by county. HEAP provides a cash-award to assist in paying energy bills. Income eligibility for this program is verified, and based upon monthly gross income. HEAP provides regular temporary

assistance and help in emergency situations. The HEAP program is scaled such that the lowest income households, which pay the highest percentage of gross income towards energy costs, receive the most assistance.

HEAP funding is, however, limited, and is allocated on a first-come, first-serve basis.

### **Coordination of Assistance Programs**

It is difficult to coordinate programs that each operate via different levels of government. However, it should be noted that programs are not mutually exclusive. Households receiving WAP are still eligible for assistance through a NYSERDA program and may still receive HEAP, if qualified, and vice versa.

It is important to recognize that benefits of these programs can be maximized by leveraging the assistance provided. An example would be a household that qualifies for WAP assistance. The WAP energy audit would determine what repairs and improvements should be made, and would provide approximately \$3,000 in repairs such as insulation, sealing, etc. Once these repairs are made through WAP, the amount to repair has been decreased, which would allow potential NYSERDA funds to be stretched further.

Residents who apply for Assisted Home Performance are given referrals and information regarding the HEAP program.

### **Recommendations to the City of Buffalo**

In 2003, the median income in the City of Buffalo was approximately \$29,000, a mere \$3,000 higher than the 60% of median state income threshold. These statistics are astounding, and demonstrate that this area is in great need of housing and energy assistance.

Currently, there is no program operated strictly at the local level which provides financial assistance for weatherization. Federal and State funding is limited, and only so much can be allocated each year. Cold-weather cities such as Buffalo suffer from considerably higher energy costs than other cities. It seems obvious to point out that Buffalo would be one of the areas of the state, or even country, in greatest need.

Several public officials have noted that there is not a housing shortage in the City of Buffalo. If this is true, it is baffling that the City allocates money for new-build housing and subsidizing new homeowners each year, while allocating nothing specifically for weatherization assistance for existing homeowners.

The City allocates money for rehabilitation of housing. A portion of this money should be designated solely for weatherization assistance at the local level. Additionally, it is recommended that the City take a revised look at money allocated for new-build housing, and determine if a reallocation, to provide funding for weatherization, is feasible.

Other cities, such as Portland, Oregon, provide funding for both renters and homeowners for weatherization measures, out of low-income housing funding. As weatherization is said to be the most cost-effective affordable housing tool, it only makes sense for cities to establish programs to provide such assistance to its residents.

Community Development Block Grant (“CDBG”) funding can be allocated in such a way to provide a program at the local level. It is time for Buffalo to recognize the needs of its residents and establish a weatherization program.

A weatherization program here could be quite a success, with proper education and public notice of funding availability.