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Weatherization: A Step Towards Green Cities

Abstract

Home heating is a basic necessity that comes at a very high cost, particularly for residents in the city of Buffalo. Weatherization is an efficient and affordable method for reducing energy costs by increasing home energy efficiency. Existing buildings are renovated to increase energy efficiency and decrease energy consumption. Promotion of weatherization programs provides the City with an essential opportunity to financially empower its most vulnerable residents, who are the least able to manage constantly rising heating and energy bills.

Keywords

Buffalo, Environment, Air Pollution/Climate Change/Energy, Buildings and Housing, Report, Other, PDF

Weatherization: A Step Towards Green Cities

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Introduction: The need for Weatherization Programs in Buffalo

Home heating is a basic necessity that comes at a very high cost, particularly for residents in the city of Buffalo. Weatherization is an efficient and affordable method for reducing energy costs by increasing home energy efficiency. Existing buildings are renovated to increase energy efficiency and decrease energy consumption. Promotion of weatherization programs provides the City with an essential opportunity to financially empower its most vulnerable residents, who are the least able to manage constantly rising heating and energy bills.

Forbes magazine recently listed Buffalo as the second most expensive city in which to heat a home in the United States.¹ The average cost of heating a home in Buffalo is \$1,618.27 a year.² According to *Forbes*, the local price of natural gas, which 88% of Buffalo residents use to heat their homes, is higher than almost every other locality in the nation. Higher costs are further exasperated by Buffalo's climate. Weather was the most significant factor in their rankings, and Buffalo was the second coldest city measured.

The *Forbes* story is the second time that Buffalo has found itself at the top of a national study this year. According to the U.S. Census Bureau the City of Buffalo is the second poorest city in the nation.³ Almost 30 percent of the city's population lives below the poverty line, and for them the rising cost of energy significantly affects their budget.

¹ http://www.forbes.com/home/realestate/2007/10/22/heating-expensive-cities-forbeslife-cx_mw_1022realestate.html

² *Id.*

³ United States Census Bureau

Low-income households spend 14% of their annual income on energy, compared to 3.5% for other households.⁴

The City of Buffalo should devote a portion of its Community Development Block Grant funds to delivering energy efficiency services to low-income households through weatherization programs. Weatherization enables low-income households to permanently lower their heating bills by making their homes more energy efficient. This proposal will highlight a variety of weatherization methods and outline the extensive community benefits realized through weatherization programs. The proposal will also suggest ways that the City can leverage CDBG funds against services that New York State already makes available to low and moderate income households in order to realize the greatest impact.

Weatherization Technology

Weatherization services can include a variety of energy efficiency measures for homes and apartment buildings. The weatherization service provider will choose the most efficient measures for each home based on a computerized on-site energy audit of fuel consumption and household energy use patterns. By addressing each home as one energy consuming system, the provider finds the best combination of approaches for reducing the total energy consumption.

Typical weatherization services include installing insulation, sealing ducts, tuning and repairing heating systems, and mitigating heat loss through windows, doors, and other infiltration points. Replacing appliances with energy efficient models is an important component that should not be overlooked.

⁴ Weatherization Assistance Program; <http://www.waptac.org>

Weatherization not only makes home energy more affordable for families, it allows them to live in a warm and healthy environment. Economic indicators cannot adequately measure these quality of life benefits, particularly for the elderly and families with small children. In addition to immediate benefits for individual households, the positive results of widespread weatherization programs are spread throughout the community.

Financial Empowerment

First and foremost weatherization is about financially empowering low income communities. Reducing the burden on family energy budgets helps households become more self-sufficient. By investing in home energy efficiency through weatherization programs the City can help residents reduce the crippling effects of poverty.

Weatherization programs protect vulnerable residents who are most affected by skyrocketing energy prices: those on fixed incomes, the poor, disabled and elderly by reducing both energy bills and fuel consumption.

Homes that are gas-heated may realize an average reduction of 23% in annual energy consumption, which means savings of \$461 a year for the average household.⁵ The rapidly rising price of gas and oil exacerbate the energy burdens of low-income families who do not have the discretionary funds to cushion the blow this winter, which is expected to be the most expensive heating season ever. Many families are simply unable to adjust their budgets for fluctuating heating bills. Families with homes that have been weatherized have reduced fuel consumption and lower energy bills for years to come. They are in a much better position to cope with rising prices.

⁵ Meg Power, "FY 2006 Energy Bills Forecast: the Impact on Low-Income Consumers," p. 10

Benefits to the Local Economy

For most people, living in poverty means living in crisis. It means constantly being confronted with short term choices between shelter, food, medicine, transportation and other essential services. Paying the bill to keep the heat on in Buffalo often means that people will have less money available to spend in the community. The impact of a large number of households facing unaffordable home heating bills is felt throughout the economy. Investing in weatherization is a cost effective way to close the gap between heating bills and a low income customer's ability to pay.

The US Department of Energy estimates that for every \$1 invested in a weatherization program \$2.69 is returned to the household and spread to the community. \$1.53 is seen in the reduction of energy bills and \$1.16 of it is realized through local employment, reduction of uncollectible utility bills and improved housing quality.⁶

Increasing these funds will ensure that federal HEAP funds are stretched further to benefit greater numbers of clients (HEAP is the Home Energy Assistance Program, which helps people with low incomes to pay their heating bills each winter). If clients who are also HEAP recipients receive weatherization services they will no longer be as dependent on HEAP assistance to meet their bills in the future. Therefore HEAP will be able to reach more households.

Local Job Creation

Weatherization is one aspect of new “green economy” efforts happening around the country. A green economy includes efforts to transition economies and infrastructure

⁶ Weatherization Assistance Program

to decrease dependence on oil and natural gas. Building a new green economy requires a skilled workforce. Cities are presented with an opportunity to train new workers in modern construction techniques. Weatherization requires contractors, engineers, carpenters and other workers.

Job quality and work training standards should be attached to all city money that goes towards green building initiatives, including this proposal, to ensure the greatest community benefit. Ideally programs should include city-wide local hiring commitments. Opportunities for job creation and skills training are critical when city funds are utilized, given the high rates of unemployment in the city of Buffalo.

According to the Department of Energy for every one million dollars invested in weatherization 52 direct jobs and 23 indirect jobs are created. Weatherization programs across the country have provided more than 8,000 direct jobs and thousands more in indirect employment.⁷ Many of these jobs have been created in the neighborhoods that weatherization programs serve where jobs are needed most.

Protecting Old Housing Stock

According to the Census Bureau's Survey of Income and Program Participation, the most common problem when meeting basic needs is a household's inability to pay utility bills. The same data also shows that housing quality is an even better predictor of inability to pay bills than lack of income is. Analyzing this data Opportunity Studies has concluded that "whether a consumer is in poverty or a moderate-income worker, the

⁷ Id.

likelihood that their energy bills will exceed their means is determined more by the condition of their home than by their income.”⁸

Reducing Greenhouse Emissions

Weatherization benefits the environment in multiple ways as well. Increased energy efficiency results in a reduction of harmful gas emissions from the combustion of heating fuel. By decreasing the amount of pollutants released by residential buildings, weatherization improves local air quality and combats global warming. Weatherization also encourages maintenance both of existing homes and appliances, saving landfill space and preventing unnecessary construction of new housing.

21% of all energy consumed in the U.S. is used by residential buildings. The average home emits 22,000 lbs. of carbon dioxide a year, almost twice the amount of the average car. Studies have shown that carbon dioxide emissions are reduced by over a metric ton annually due to weatherization. The average home that has been weatherized may reduce annual energy consumption by 31.2 MBtu. According to the WAP, “nationally, this decreases energy consumption by the equivalent of 15 million barrels of oil every year.”⁹ Reducing the national energy demand is important for national security and for meeting international commitments to reduce greenhouse gas emissions.

Weatherization Programs

Federal weatherization funding began as a response to the 1973 Arab oil embargo and was intended to assist low-income families respond to abrupt changes in the energy

⁸ <http://www.opportunitystudies.org/repository/File/weatherization/connection-housing-and-unpaid-bills.pdf>

⁹ <http://www.waptac.org>

markets. Early on, most measures were limited to inexpensive conservation measures such as insulating windows with plastic. Today, however, weatherization is the nation's largest residential energy efficiency program and involves a much more comprehensive approach.¹⁰

The Federal Department of Energy funds the Weatherization Assistance Program (WAP). The DOE Project Management Center portions grants to state agencies, which in turn contract with local agencies to deliver weatherization services to income-eligible residents. In New York State WAP is administered by the Department of Housing and Community Renewal. Energy-efficiency services are delivered in every county in the state by local agencies.

In Buffalo the services are performed by the Neighborhood Housing Services of South Buffalo and the Matt Urban Human Services Center. Funds are allocated to low-income households for weatherization services. Residents seeking assistance apply directly to these local community agencies. For those who qualify, an energy audit is performed to determine what cost effective repairs are necessary to increase energy efficiency of the home. One of the two agencies will perform the necessary work, and the cost is completely covered by the state. As the program is intended for low-income households, eligibility for the WAP is based on income. For purposes of receiving weatherization services, New York State defines "low-income" as at or below **60%** of state median income.

The state has also committed to assisting low and moderate income families benefit from weatherization through the Assisted Home Performance Program (AHP). Administered by NYSERDA this program subsidizes income-eligible households helping

¹⁰ Id.

them pay for installation of eligible measures. Households with incomes below **80%** of the state median income are eligible.

Unlike WAP, AHP does not cover 100% of the cost of weatherization measures; rather, it covers 50% of the cost, up to \$5,000 for single-family homes and up to \$10,000 for multi-family homes. In addition, NYSERDA offers loans at up to 4% below the prime rate for up to \$20,000 in weatherization costs. The average cost to each household is \$3,750.¹¹

The majority of contractors who perform weatherization measures are for-profit businesses. One non-profit agency, New Buffalo Impact, also works with NYSERDA to administer services. New Buffalo Impact performs a home performance assessment that includes an examination of each home's air leakage rate, insulation situation, combustion appliance draft rates, efficiency of the heating system, and visual inspection of all windows and doors. They perform blower door testing and infrared scanning to determine the location of heat losses. Each household is then provided with a 10-page Energy Star assessment report that contains recommended actions as well as calculations of the real dollar saving made by taking each action.

Homes that require insulation will have environmentally-friendly cellulose blown in using high density blowing techniques to avoid the insulation settling that is a problem for so many home owners. Blower door-assisted air sealing is diagnostic work designed to reduce the air leakage rate of each home, making the house tighter, more efficient and comfortable. Technicians will seal any electric and plumbing penetrations in the attic and basement where cold air leaks in, increasing the efficiency of the heating distribution system.

¹¹ <http://www.nyserda.org>

New Buffalo Impact is certified and accredited by the Building Performance Institute in both heating and cooling installations, and is a licensed heating contractor in the City of Buffalo. They will install Energy Star® rated windows and doors. In addition they are able to help households save on electricity by installing Energy Star® lighting and appliances such as refrigerators, clothes washers and dishwashers at high-volume contractor's pricing.

Coordinating and Supplementing Existing Programs with CDBG Funds

Government and non-profit providers should allow residents to access multiple assistance programs with one application. If we consolidated the application process for WAP, HEAP and other assistance programs, we would be better able to ensure that services are available to those who need them. Better coordination would ensure a more efficient use of funds: for example weatherizing homes of HEAP clients would save precious HEAP funds.

In addition, CDBG funds should be used to supplement existing programs. Money could be given to the local agencies that administer WAP funds so that they can increase the number of households they are able to serve annually. The average wait for WAP recipients is well over a year.¹² For an idea of one agency's current capacity please see the second attachment, South Buffalo Neighborhood Housing Service's 2006-2007 report of completed homes.

Additionally, the City could use CDBG funds to match NYSERDA's AHP grants so that weatherization services are affordable to a greater number of households. For those families with incomes just above the WAP guidelines, many weatherization

¹² Conversation with staff of West Side Neighborhood Housing Services

services are unaffordable, even with the AHP 50% match. If the City were to fund some or all of the resident's portion of the bill, many more residents could utilize the services, and the city would pull in more state funding, thus spreading its limited CDBG funds even further. If the City were to fund all of the resident's portion, it could also use AHP as an alternative to WAP for free weatherization for all low-income residents, including those below 60% of state median income. The advantage of using AHP in addition to WAP would be the 50% state match that comes with AHP.

Weatherization Meets the Goals of the CDBG Program

The Community Development Block Grant Program is a federal program administered by the U.S. Department of Housing and Urban Development (HUD). CDBG funds are a very flexible resource that can be used in a variety of ways to address the needs of low income people. Congress's primary objective for CDBG has always been to improve communities by providing "decent housing and a suitable living environment and expanding economic opportunities..." all "*principally for persons of low and moderate income.*"¹³ "Principally" has been defined as a minimum of 70% of a jurisdiction's funds.¹⁴ In other words, CDBG money belongs to low- and moderate-income people.

For purposes of CDBG funds, "low and moderate income" are defined by the law as individuals and families as whose incomes fall below 80% of the median income for the entire Metropolitan Statistical Area (MSA). The term "low income" applies to

¹³ [Law, Sec. 101(c)]

¹⁴ [Law, Sec. 101(c) and Sec. 104(b)(3)]

individuals and households with incomes below 50% of the median income for the entire MSA and “moderate income” means those with incomes above 50% but below 80%.¹⁵

The City of Buffalo is considered an “entitlement jurisdiction” and is automatically entitled to CDBG funding. Cities with a population of more than 50,000 people and county with 200,000 are “entitlement jurisdictions” and receive 70% of total CDBG funds. The level of funds a city receives hinges on the percentage of low income residents and the state of the housing stock. It should therefore go without saying that low income people should be the principal recipients of the benefits from CDBG funds.

Any activity that is funded must pass a two-part test. Activities have to meet a national objective and they must be eligible. Jurisdictions using CDBG money must give “maximum feasible priority” to projects that meet one of HUD’s three national objectives; benefit lower income families, aid in preventing or eliminating slums and blight, or meet an urgent need. Using CDBG funds to weatherize homes for low-income families falls under the objective of “benefiting lower income households”.

The regulations provide four different tests to determine whether an activity meets this objective the housing benefits test, the area benefit test, the limited clientele test, and the jobs benefit test. The housing benefit test applies to weatherization. Under this test, single family homes that are rehabilitated with CDBG funds must be lived in by low-income people in order to meet the housing benefits test. Multi-family structures must have at least 51% of the units occupied by low-income people.¹⁶

The statute outlines a number of categories of eligible activities in Sections 200 through 207 for entitlement jurisdictions. Both private and public buildings can be

¹⁵ [Law, Sec. 102(a)(20)]

¹⁶ [Law, Sec. 506(b)(4)]

rehabbed. CDBG aid can take the form of grants, loans, loan guarantees, and other means. Private individuals (homeowners and landlords), nonprofit organizations, and for-profit businesses are all eligible to apply for funds to rehab property. The regulations list a number of ways that CDBG can be used for rehab, including paying for labor and materials and weatherizing.¹⁷

CDBG may also be used for “housing services” if they are related to another HUD block grant program, HOME. Energy audits are considered a housing service. Housing services are different than rehab services, which are listed at Section 202(b). Under this category funds can be used for labor, materials, and other costs of rehab. Among other activities rehab includes improvements to increase energy efficiency such as installing storm windows and insulating buildings.

Weatherization Meets the Goals of the City’s Consolidated Plan

In order to receive funds activities must fit into Buffalo’s HUD approved consolidated plan.¹⁸ The city of Buffalo is currently in the process of submitting its new 2008-2013 five year consolidated plan. The 2003-2008 Consolidated Plan identified the following goals, as the basis for any spending plans for federal grant dollars. Projects that are submitted are asked to meet at least one of the goals. While the new plan is not finished, it is not likely that there will be a significant change in the broader goals.

Goal 1: Increase Homeownership Opportunities

Goal 2: Provide Decent Affordable Housing

Goal 3: Ensure Equal Opportunity in Housing

¹⁷ [Law, Sec. 105(a)(4)], See Regs, Sec. 202 for entitlements

¹⁸ [Law, Sec. 104(c)] [Regs, Sec. 302 for entitlements].

Goal 4: Strengthen Communities/Enhance Suitable Living Environment

Goal 5: Remove Slum & Blight

Goal 6: Expand Economic Opportunities

Weatherization services are an ideal use of CDBG funds because they address each of these six goals. Homeownership opportunities are increased because lower energy bills make it more affordable to maintain a home. Weatherization not only makes owning a home more affordable, it increases the housing quality. Homes that have been weatherized are more comfortable, cutting down on drafts and staying warmer in the winter and cooler in the summer. As low-income neighborhoods that stand to benefit most from weatherization are disproportionately made up of people of color, these programs do help to make home ownership opportunities equal.

Increasing homeownership clearly strengthens communities, but an often overlooked benefit of weatherization, decreasing carbon emissions and other pollutants, is also significant. Improving air quality is essential for creating an enhanced suitable living environment. Weatherization further improves a community's quality of life by cutting down on slums and blight. Abandoned housing is a serious problem for the city of Buffalo. When families can afford to live in their homes they are less likely to walk away from them or lose them to foreclosure.

Finally, weatherization programs increase economic opportunity right in the communities they serve. Weatherization has direct as well as indirect positive impacts for local economies. Skilled jobs are created in neighborhoods typically plagued with high unemployment rates. Families whose homes have been weatherized have more money to spend in the community.

Few programs bring as many comprehensive benefits to the community. By investing in weatherization the City can take steps towards meeting every one of the goals in the Consolidated Plan. CDBG dollars are stretched further when used for weatherization because they can be matched by New York State. As the City moves forward with the 2008-2013 Consolidated Plan and the next round of CDBG funding, weatherization should be a main priority.

Attachment 1

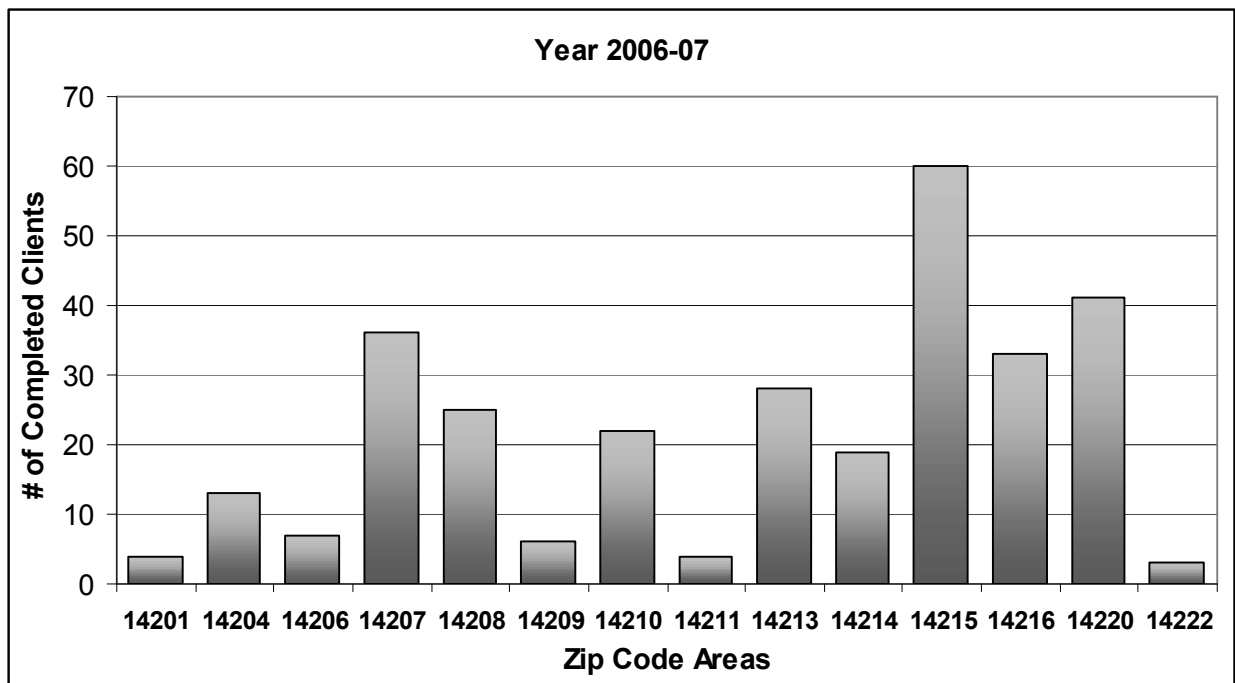
Tips for Improving Home Energy Efficiency

- Lower your thermostat at night and whenever the house is unoccupied. Close off and don't heat unoccupied rooms (If you consistently set your thermostat back at night 10 degrees Fahrenheit, you may reduce your heating bill by 10-20 percent.)
- Lower the thermostat and dress warmer. As little as 1 to 3 degrees (F) makes a noteworthy difference in energy consumption.
- Lower the temperature on your *electric* water heater to 120 (F) degrees. Turn it off when leaving for extended periods of time. Electric water heaters can be set on timers; gas heaters must be set manually.
- Set refrigerator temperatures between 37 and 40 degrees (F). Clean the coils. Keep the refrigerator stocked; it takes more energy to cool an empty refrigerator.
- Consider replacing your older model refrigerator, especially if older than 10 years. Older models can often use over 3 times the energy of newer models.
- Wash full loads of dishes and air dry.
- When washing clothes, use warm or cold water and rinse with cold. Air dry clothes, but not indoors as this creates unwanted mold and moisture problems.
- Shut off lights, computers and other electronic appliances when you're not using them. Many computer monitors have a sleep mode setting which, when activated, greatly reduces energy consumption.
- Always use the bathroom or kitchen exhaust fans while showering or cooking and baking to avoid potential moisture problems.
- Use a microwave or toaster oven for smaller items.
- Install a low-flow showerhead. Showers use less hot water than baths; also consider taking shorter showers.
- Close your fireplace damper and seal the opening shut when not in use.

- During the heating season, open south-facing window coverings (e.g. drapes, blinds, etc.) during the day. Close all window coverings at night to keep the heat in.
- Install foam gaskets behind electric-outlet and switch-plate covers.
- Examine and adjust, if necessary, weather stripping, door sweeps, and thresholds.¹⁹

Attachment 2

SBNHS 2006-2007 Homes Served by South Buffalo Neighborhood Housing Services



¹⁹ <http://www.energyideas.org/documents/factsheets/hometips.pdf>