

A PROGRAMMATIC ASSESSMENT OF THE U.S. DEPARTMENT OF ENERGY
LOW-INCOME WEATHERIZATION ASSISTANCE PROGRAM

Prepared by Shiva RaissiCharmakani

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Faculty Advisor: Tony G. Reames

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ABSTRACT

Performing energy efficiency measures in aging housing stock could save on energy bills especially in communities burdened by utility costs. The U.S. Department of Energy (DOE) Weatherization Assistance Program has helped more than 7 million income-qualified households during over 40 years since its implementation in 1976, under title IV of the Energy Conservation and Production Act. The purpose of this study is to look at this program from a perspective other than benefit-cost analysis. This paper is based on analyzing the interviews conducted with leaders, supervisors, and chairpersons at four local Community Action Agencies (CAAs) in Southeast Michigan. It examines the barriers in implementing the program as well the opportunities to assist CAAs with those barriers. It also discusses the positive impacts of the program and the consequences of potential budget cuts. Currently, lack of sufficient federal funding, high number of application deferrals known as “walk-aways”, and cumbersome guidelines are mentioned as major barriers facing these CAAs. The paper concludes with policy recommendations to address these barriers.

Keywords: Energy Efficiency, Energy Justice, Community Action Agency, Energy Policy, Fuel Poverty

Dedications

I dedicate this to my family: To my wonderful husband, *Shahrokh*, who has always stood by my side and has kindly supported me, I cannot possibly thank him enough; and to my amazing parents and my dear brother who have always supported me with their unconditional love and kindness.

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List of Acronyms

ARRA	American Recovery AND Reinvestment Act of 2009
CAA	Community Action Agency
DOE	U.S. Department of Energy
LIHEAP	Low-income Home Energy Assistance Program
ORNL	Oak Ridge National Laboratory
SIR	Savings-to-Investment Ratio
WAP	Weatherization Assistance Program

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1. Introduction

Based on the 2015 Residential Energy Consumption Survey (RECS), 37 million U.S. households are energy insecure with 5.5 million of them residing in the Great Lakes Region (Illinois, Indiana, Michigan, Ohio, Wisconsin). According to the International Energy Agency (iea) in its report on “Evaluating the co-benefits of low-income energy-efficiency programmes”, increasing energy efficiency in these houses could be an opportunity to reduce energy insecurity (iea, 2011). Weatherization Assistance Program is the federal low-income energy efficiency program in the United States. Shuffled as a welfare program, it has long been under attack while providing an opportunity to pave the path toward self-sufficiency in low-income households; and potentially serving as a long-term strategy to alleviate fuel poverty. The U.S. Department of Energy Low-income Weatherization Assistance Program (WAP) was established in 1976 under the “Energy Conservation and Production Act”. Title IV, section 411 of the Energy Conservation and Production Act describes the purpose of WAP as “...to *develop and implement a supplementary weatherization assistance program to assist in achieving a prescribed level of insulation in the dwellings of low-income persons, particularly elderly and handicapped low-income persons, in order both to aid those persons least able to afford higher utility costs and to conserve needed energy.*” To administer the program, local Community Action Agencies (CAAs) were established around the country under the

“Economic Opportunity Act” of 1964. The CAAs were initially designed to be non-governmental agencies who operate with federal funding (Bunch and Sulamoyo, 2017). Funding for the program comes from the U.S. Department of Energy (DOE) which annually accepts applications from grantees (i.e. U.S. states, the District of Columbia, U.S. territories, and Native American tribes). The funding received by grantees is then distributed among sub-grantees (i.e. local CAAs) to carry out WAP. Three factors are considered in determining the WAP formula allocation including low-income population, climatic conditions, and Residential Energy Expenditures by Low-Income Households in each State (U.S. DOE, 2016). In addition to the formula allocation, each state has a fixed, base allocation which differs from other states. Number of the weatherized units is the measure of success for WAP implementors. The number of annual weatherized units (i.e. unit goal) is referred to as production while WAP is described as a production-based program.

Briefly, WAP is a mean-tested program which provides low-to-no-cost energy efficiency measures (e.g. furnace, water heater, insulation) to qualified households. Households qualify based on their income and federal income guidelines in any given year. It was probably the oil crisis of 1973 that prompted the creation of WAP (U.S. DOE, Weatherization Program History). It would not be surprising that such trend continued for the program to only get attention at the time of crisis. Historically, WAP was aimed at households at or below 125% of federal poverty line (Brown et. al., 1993). After the

energy crisis of 1990s, the program guideline was expanded to 150% of poverty (Tonn et. al., 2003). Finally, in the wake of the mid-2007's Great Recession it further expanded to 200% since more people lost their jobs or became unable to afford energy due to increase in prices (U.S. DOE, Weatherization Program History). While the weatherization funding only got attention during national economic or energy crises, the need for the program increased during these periods, potentially offsetting the increase in the funding allocation for this program. From an institutional perspective, the funding has always dragged behind the existing need. The issue of funding holds true beyond the United States. In the UK, as an example of another developed economy, Brenda Boardman discusses how the responsibility of government institution is written in a vague language ("*as far as it is reasonably practicable*" as an example used by her) when it comes to evaluate their productivity in a judicial context (Boardman, 2010, p.13). In discussing the government's responsibility and comparing the level of funding to the extent of need, she went on to cite Richard Macrory in describing how "*... budgets would dictate legal duty rather than the other way round*" (Boardman, 2010, p.14) (Macrory, 2008, p. 57). Similarly, funding for WAP has never gone beyond \$250 million dollars nationwide), except for the fiscal year 2009 during which it received \$450 million, preceding the federal appropriation from the stimulus package under the American Recovery and Reinvestment Act of 2009 (ARRA) (Reames, 2016b). Figures 1

demonstrates the level of funding for federal energy assistance programs including WAP (excluding ARRA funding) and the Low-income Home Energy Assistance Program (LIHEAP). Figure 2 shows WAP expenditures during ARRA.

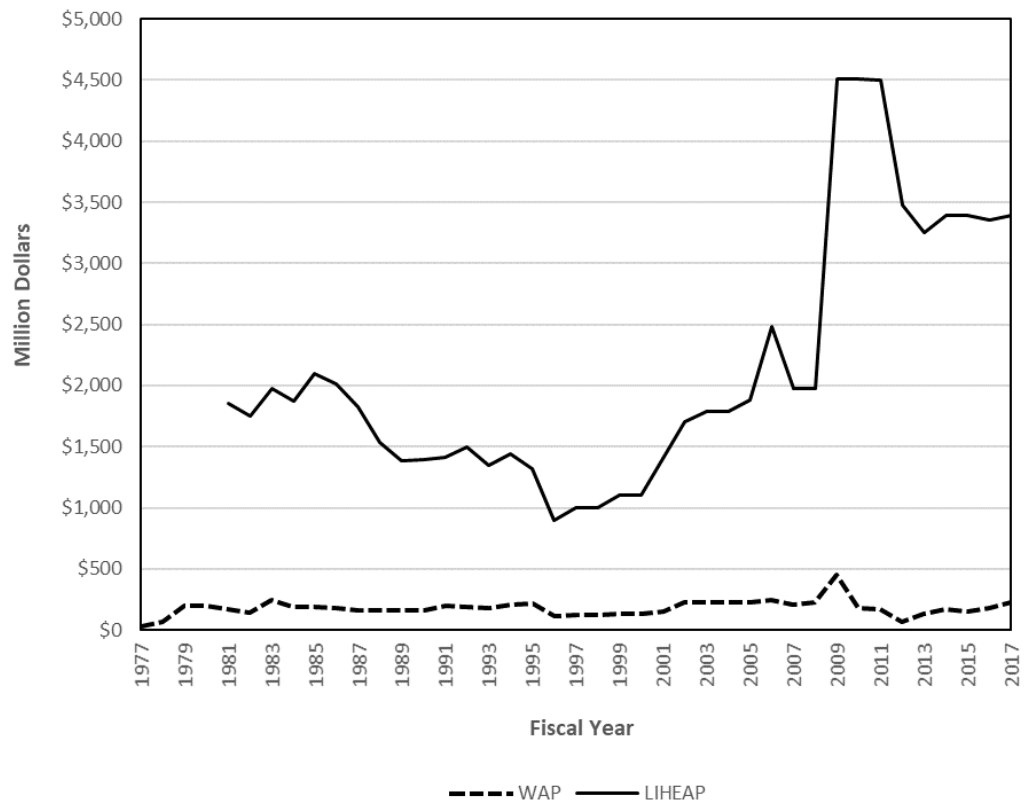


Figure 1. Federal low-income energy programs funding, 1977-2017, excluding ARRA

Source: Reames, T.G., 2016. From Oil Crisis to Economic Crisis: 40 Years of American Energy Conservation and Assistance. 2016 Policy History Conference, Nashville, TN June 1-4, 2016.

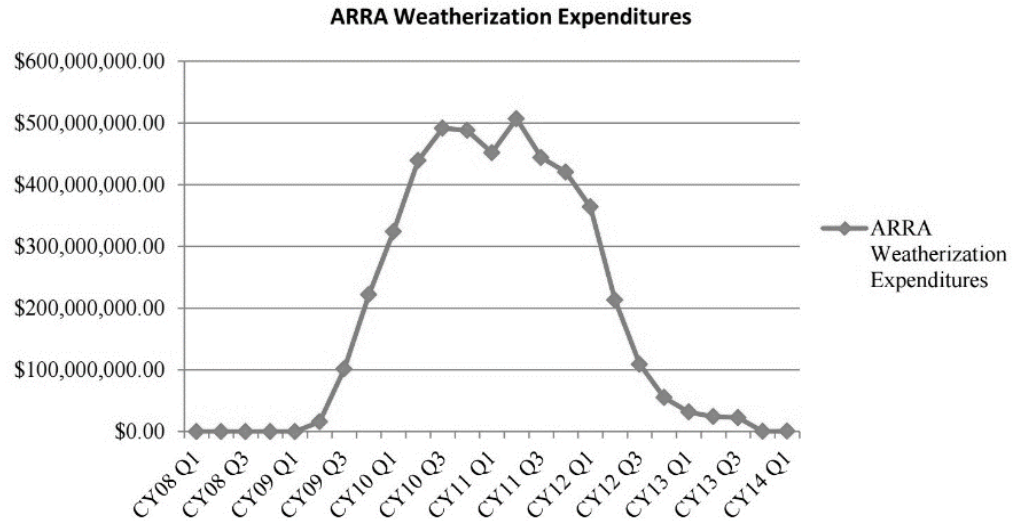


Figure 2. DOE WAP Expenditures during the Recovery Act Period
 Source: Tonn, B., Rose, E., Hawkins, B., 2015. National Weatherization Assistance Program Characterization Describing the Recovery Act Period.

WAP has gone through multiple evaluations. These studies provided justification and proof for the energy and non-energy benefits of the program. Yet, with all the benefits discussed in these evaluations, a 2015 study on WAP concluded that the program is not economically justified (Fowlie et.al., 2015). The data presented in these evaluations were, with limitations, representative of the national program. However, not all states were among the state studies in these meta-evaluations. The state of Michigan was one of the states not present in these studies, except for a fuel survey back in 1984. These evaluations discussed some of the challenges CAAs are facing in performing the program. However, they were focused on cost-effectiveness of the program, overshadowing the discussions around these challenges. This makes a programmatic assessment of WAP necessary

as well as making Michigan a suitable state to look at. As a complement to previous studies and in an effort to cover the less attended aspects of WAP, this study focuses on the barriers and opportunities faced by some of the local Community Action Agencies in Southeast Michigan as they implement the program. Next section provides background and literature review on WAP evaluation. Section 3 explains the methodology and data used in this qualitative research. Section 4 presents the discussion of the results based on the data analysis. Results from this study could raise awareness among policymakers about the impacts of WAP, emphasize the barriers facing the program, as well as highlight opportunities for CAAs to leverage as they see fit given the characteristics of their service areas. Last section of the paper provides conclusions and policy implications. Currently, WAP is targeted for elimination by the current administration. Hence, it appears timely to conduct such study on the program.

2. Background and Literature Review

2.1 Nationwide Program Evaluation

As with all federal assistance programs, it is expected that WAP will be economically reasonable based on a cost-benefit analysis. Cost-effectiveness has been assessed via evaluations and meta-evaluations which use energy savings based on pre-weatherization consumption level as the primary measure. The first national evaluation of the weatherization assistance program (WAP) was done in 1993 based on the results from the 1989 program year. The purpose of this evaluation was to do a benefit cost analysis of the program as well as to calculate energy savings (Brown et al., 1993). In a continued effort to understand the value of WAP, the first meta-evaluation was done covering the period of 1990 to 1996. This study was an evaluation of 19 studies collected from 15 states (both published and unpublished) (Berry, 1997). It was followed by another meta-evaluation covering the period of 1996-1998, assessing data from ten studies done by six states and the District of Columbia (Schweitzer & Berry, 1999). The two meta-evaluations found huge differences between their calculated energy savings of the weatherization program compared to that of the 1989 national evaluation. The studies attributed these differences to an increased uptake of more sophisticated efficiency measures as well as a more precise energy audit process using the blower door test (Schweitzer, 2005).

Similar to these analyses, two other meta-evaluations were done on state studies to collect updated data as well as to cover all climate regions. One of these studies was done on data collected from thirty-seven studies. It found that households who were higher energy consumers before receiving weatherization could achieve significantly more savings in terms of energy costs while lower energy users have a narrower margin to decrease their consumption (Berry & Schweitzer, 2003).

The other meta-evaluation took the same approach as other studies in focusing on households that use natural gas as their space heating fuel since they consisted the major portion of the available data. Their findings were consistent with Berry (1997), and Berry and Schweitzer (2003) in that the energy savings were higher than those found in the national evaluation of 1989 due to the reasons discussed above. However, their approach was different than the previous meta-analyses in that they aggregated data in studies from same state while the previous ones accounted for them as separate studies. (Schweitzer, 2005)

To evaluate WAP, in all these evaluations, the Oak Ridge National Laboratory (ORNL) considered all the energy and non-energy benefits of WAP, including avoided cost of health problems due to weatherization practices. They concluded that the benefits of Weatherization are four times greater than its cost (Tonn et.al., 2014). This finding was consistent with findings from other studies. One 2001 study accounted for the benefits

achieved from avoided health costs as well as those brought about through increased employment opportunities as a result of energy efficiency practices (Goodacre et al., 2001). Considering non-energy benefits of WAP further increases the saving-to-investment ratio (SIR) of the program, which in turn could help demonstrate the impact of the program. These evaluations focus on economic justification of the program.

In 2009, after the great recession, President Obama signed a stimulus package, namely the American Recovery and Reinvestment Act (ARRA), to allocate funding to different sections of the economy to help the nation recover faster. The Weatherization Assistance Program received \$5 billion to be spent over three years. After 2012 the funding returned to its previous levels. Tonn et.al. (2014) looked at a sample of homes weatherized during the program year (PY) 2008 to retrospectively evaluate the weatherization program before receiving the stimulus package. This study calculated the saving to investment ratio (SIR) of the program based on housing type, climate region, and fuel type. Tonn at al. argued that by calculating the total energy cost savings, energy measures costs, and considering both energy and non-energy benefits, the program had a SIR of 4.72 in 2013 dollars (4.1 in 2008 dollars). To understand the perspective of the stakeholders, the authors also surveyed contractors, program recipients (clients), as well as grantees (states, territories, and Native tribes) and sub-grantees (local community action agencies performing the program) and found high levels of satisfaction

among all groups. The program recipients highlighted the following program benefits: lower energy bills, fewer sick days for workers and fewer school absentees for kids, fewer health-related emergencies, increased comfort, increased affordability of energy bills and other utility bills, and more importantly, increased financial resources to buy food, prescription, and other necessities. As authors have put it, these benefits are directly attributable to weatherization.

Several studies discussed the non-energy benefits that could be attributed to WAP. In an assessment of the previous data and meta-evaluations, researchers categorized these benefits into three categories: 1) ratepayers, 2) households, and 3) society with the societal benefits highly surpassing the former ones (Schweitzer & Tonn, 2003).

Non-energy benefits of WAP attributed to health and safety (or lack thereof in the absence of the program) have been assessed by multi-disciplinary professionals. As mentioned before, low-income population often struggle to pay for food since they have to keep the heat running in winter. According to the 2015 RECS, 25.4 million U.S. households reported *“Reducing or forgoing food or medicine to pay energy costs”*. Based on a study in Iowa, more than 40% of the survey participants set their thermostat below 65 degrees Fahrenheit in winter, which is lower than the established threshold by the World Health Organization (WHO) to ensure health and comfort (Mercier et al., 2000; Teller-Elsberg et al., 2016). A small percentage

of participants mentioned turning their hot water off during winter to reduce their bills (Mercier, et al. 2000). Due to such coping strategies, these households will be exposed to health hazards, especially those having vulnerable member(s) (seniors, children, person(s) with disability).

2.2 Lived Experience of Fuel Poor and the Need for WAP

Previous studies have discussed the effects of being fuel poor on people's health, especially in vulnerable groups, such as young children. In a 2006 study, authors assessed households who receive energy assistance through the Low-Income Home Energy Assistance Program (LIHEAP) to pay for their energy bills. Consistent with the findings from other studies, these households had to choose between monthly necessities and paying energy bills as a coping strategy, such as forgoing food to pay for bills. This situation, which the study referred to as food insecurity, poses high health risks to children due to malnutrition, pointing out further repercussions of being fuel-poor (Frank et.al, 2006). Another study done in 2016 acknowledged the severity of fuel poverty in Vermont. The authors discussed the sharp increase in the fuel-poor population from 2000 to 2012 and argued that excess winter deaths could possibly be attributed to the inability of low-income households to afford sufficient home energy (Teller-Elsberg et.al., 2016). In addition, housing stock in areas with concentrated poverty is typically older and less energy efficient further burdening these households (Bednar et.al., 2016) (Reames, 2016a).

With more people struggling with the discussed circumstances after the 2008 recession, ARRA brought about a high increase in WAP funding. In assessing the American Recovery and Reinvestment Act (ARRA), Tonn et al. (2016) acknowledged both its positive and undesirable impacts on the weatherization program. ARRA brought about a huge flow of money, \$5 billion, compared to the less than a couple hundred million average annual appropriation over the last decade. The authors discussed that along with an opportunity to weatherize more households, it brought about a few challenges, including new guidelines and restrictions for the program; as well as an increased attention by media, and increased oversight by the federal government which ultimately created hurdles for the weatherization network. However, based on their study of the ARRA period, Tonn and colleagues concluded that still “...*two-thirds of grantees and over 40% of sub-grantees stated that they believe that the long-term impacts of ARRA on leveraging relationships will be positive.*” This level of satisfaction with the program among grantees and sub-grantees could be justified when one considers how insufficient funding has long been a challenge for implementing the program. In fact, the need has always been greater than the available funding. Based on a study of weatherization, in the program year 2008 only around 98,000 out of the total 35 million eligible households received weatherization (Tonn et al., 2014).

Results from the previous studies further necessitate a programmatic assessment of WAP to focus on barriers in implementing the program. Next section presents the methodology, data, and data analysis for this study.

3. Methodology

3.1 Description of Study Area

The State of Michigan resides in the cold/very cold region, experiencing harsh winters. Michigan has been among the high recipients of Weatherization allocation due to its climatic conditions, the number of its low-income households, and their energy expenditures. The 2016 According to the 2016 Weatherization Briefing Book by the U.S. DOE, Michigan is shown to have weatherized over 1,000 units in the Program Year 2015. Separate statistics from the DOE, based on the ORNL reports, further support Michigan's weatherization efforts. Since 2010, the state of Michigan has weatherized more than 12,000 homes (Weatherization and Intergovernmental Programs Office Project Map – Michigan).

According to the 2012-2016 American Community Survey (ACS) 5-year Estimates, the poverty rate in Michigan is at 16.3% compared to the national rate of 15.1%. The Southeast region of Michigan consists of ten counties represented by eight local Community Action Agencies. The Southeast Michigan region has a population of 5,316,521, 53.7% of the total population of Michigan. This research focuses on five of these counties which are home to a total population of around 4 million. Of this population, over 1.3 million (approx. 32.5%) were below 200 percent of the U.S. federal poverty level in 2016. This number translates into over 250,000 families

(approx. 22.5%) living below 200 percent of poverty. Although the average poverty rate is around 15.2% across the five counties, poverty rate has a broad range of approximately 6% - 24%. These areas include some of the most affluent zip codes as well as some of the poorest ones which might suggest that the average poverty rate could be a biased factor to consider in assessing the area.

Data on housing structures and the median year structures were built, as well as the responses we got from the agencies suggest that residents are dealing with old and inefficient housing especially in areas with higher concentration of poverty. In the study area, the median year structures built across the five counties ranges from 1955 - 1987; with an average of 1972 which is 5 years older than the 1977 national median. Based on the 2009 Residential Energy Consumption Survey (RECS), median year housing units were built is 1975 for the whole U.S. sample, ranging from 1920 to 2009 with 57.5% of the sample houses built before 1979. To draw a comparison with the national statistics, the median year housing units were built is 1960 in Michigan, ranging from 1920 to 2006. According to RECS 2009 75.9% of Michigan houses in the sample were built before 1979 (RECS 2009). The median age of the house in Michigan is 15 years older than the national median suggesting that Michigan has a relatively older housing stock compared to the Poverty and housing inefficiency do not make a good combination when it comes to fuel poverty; raising the energy expenditures

as a portion of income and making the living conditions harder for those in need. Once again, this justifies why it seemed appropriate to choose the State of Michigan for this study.

3.2 Data

Four semi-structured phone interviews, transcribed verbatim, created the material for performing qualitative data analysis. The interviews included questions on the program procedures, agency approach in program implementation, funding allocation, average expenditure, barriers for implementing the program, area-specific characteristics, program impacts, opportunities for improvements, as well as some insights on the program and the negative impacts of possible program elimination/budget cuts. In assessing the background of the Weatherization Program evaluation, over ten reports on program evaluations and surveys from the Oak Ridge National Laboratory (ORNL) were gathered. These reports included one national evaluation published in 1993 based on the 1989 Program Year, four meta-evaluations for the periods of 1990-1996, 1996-1998, 1993-2002, and 1993-2005, and an impact evaluation based on 2007-2009 Program Years, as well as reports on energy savings and non-energy benefits of the Weatherization Program. In addition to the ORNL reports, peer-reviewed articles were used to encompass topics related to evaluation of the WAP as well as findings on the living condition of low-income population, their energy burden, health issues, and WAP impacts. These articles provided a big picture of the lived

experience of the fuel poor. Ideas were also borrowed from a few books and working papers to have a comprehensive understanding of the previous research and assessment of the low-income energy efficiency program from different perspectives. The demographic data and the housing physical structure data (i.e. median year structures were built) were gathered from the United States Census Bureau American Fact Finder based on the 2012-2016 American Community Survey 5-year Estimates.

3.3 Data Analysis

Four semi-structured phone interviews were conducted with senior positions at four local Community Action Agencies which provide service to the five counties of the study area. The interviewees were asked questions on program's process, guidelines, expenditures, challenges, and opportunities. During the process of qualitative data collection and analysis the interviews were transcribed verbatim for coding. Atlas ti software was used to code the transcripts. A hybrid approach was taken for coding, combining a list of pre-set codes (where applicable) as well as free-coding to capture nuances. Due to the richness of the ideas discussed in the interviews, free-coding was the focus of the methodology since the pre-set list could not fully capture the diversity and comprehensiveness of the interviewees' responses. The overall coding was done based on the NCT model as suggested by experts (Friese, 2014) (Saldaña, 2009). This model consists of a non-linear multi-cycle approach for qualitative coding. The first-cycle coding

was performed at the first encounter with the transcripts to gather information and ideas. During the second-cycle of coding, the codes were grouped into families based on similarity of the concepts they presented. Numerical prefixes were assigned to the codes to help categorize them into smaller groups within each family. Later, inside each family, the codes with similar information were merged and grouped into broader topics or super-codes while other ones became subsets. At this stage the super-codes were divided to categories and subcategories based on their broadness, and the subsets became the collection to form meticulous codes to assess the subject matter. The categories were finally grouped to create higher order themes. Lastly, the subcategories were linked to their related lower order codes, associated with quote(s) where applicable. The results from this analysis are presented and discussed in the next section.

4. Discussion of the Results

4.1 Summary of the Results

This section presents the themes, categories, and subcategories that were the focus of the study. The analysis of the codes resulted in developing three themes, eight categories, and twenty-two subcategories demonstrated in the table below. Themes include barriers which demonstrate the financial, physical/structural, and administrative barriers for implementing the program; opportunities which present ideas for addressing the barriers and/or assisting with program implementation; and impacts which discuss the positive impacts of the program as well as the consequences of budget cuts or program elimination. Despite the relatively small sample size, results from this study could have implication and application beyond the context of Southeast Michigan.

Table 1. Results of the Interview Analysis Including Themes, Categories, Subcategories, and Quotes

Theme	Category	Subcategory	Quote
Barriers	Financial Barriers	Insufficient budget (i.e. federal appropriation)	"And then budgets keep shrinking and shrinking..."
		Shortage/lack of sufficient minor home repair dollars	"Those dollars are being spread to a wide variety of needs. "
			"...quite frankly your low-income population, even though they are given a share of that that's not the only priority these communities have."
			"We can solve a lot of health and safety issues and make homes more eligible for weatherization and other types of energy related programs if there were minor home repair dollars available."
	High Rate of Walk-aways/Client Deferrals due to Physical Barriers	Aging Housing Stock	
		Maintenance Issues	"...there is a lot more stricter guidance [on] asbestos and repairs which makes the walkaways a lot higher."
		Health and Safety Issues	
		Cumbersome guidelines	"if we could move some of those increased regulations on the weatherization and expand some of the repairs that you could do, I think we could catch up and do more units. I think that's a barrier to success of that programs."
	"I would say there is a lot of regulations and a lot of rules that we have to follow and it's kind of hard to keep track of all of them..."		
	Administrative Barriers	Cumbersome paperwork	
Staff issues			
Program Coordination			

Table 1. Continued: Results of the Interview Analysis Including Themes, Categories, Subcategories, and Quotes

Theme	Category	Subcategory	Quote
Opportunities	Opportunity for Collaboration	Collaboration of Utility Companies	"...they [utilities] are also assisting us, ... and we try to great their services with our services..."
		Coordination between federal programs	
		Collaboration with Other Organizations	
	Opportunity for Program Innovation and Integration	Providing wrap-around services	
		Leveraging External Funding Resources	
		Sustainability	"...sustaining the house for a client in a positive manner for the next 20 years." "...do modifications towards a good, solid, and safe structure."
	Opportunity to Reduce Walk-aways	Availability of Minor home repair dollars	"...what might be an average cost, so you don't have to have a walk away from a home, how we define that is somewhere between \$500 to \$1,000."
		Guidelines	"... if we had a little more flexibility..." "...what I would like to see is a little less regulation on us..."
		Program allocation	"...I would like to see more budget for us..."
Impacts	Benefits of the Program	Energy-related	"...it is a program for energy reduction." and "...20% to 30% annual energy savings per home"
		Non-energy-related	"...if we can keep seniors in their home instead of going into assistant living or into a hospital because we are providing a safe and healthy environment for them..."
	Disadvantages of Budget Cuts	Household Impacts	"If we lose that funding, it will be catastrophic."
			"...there is no safety there for low-income people or people that are vulnerable if these programs are cut."
			"Just people aren't going to be able to afford their bills."
		"I just foresee a lot of homelessness, a lot more homelessness than what we already have."	
	Societal Impacts	"...if we were to cut off utility assistance, and cut off weatherization, some of these people are going to lose their homes."	

4.2 Description of the Situation

The interviewees provided first-hand descriptions of the living condition in their service areas, especially areas that experience high concentration of poverty. Households in poverty face difficult financial situation affecting their ability to afford life necessities and “...just make dues as best as they can.” They have difficulty paying energy bills, struggle with foreclosure, and are unable to pay for necessary repairs. Inability to pay for repairs along with the old and sub-standard housing condition in these areas could cause people to suffer from various health conditions. Some try to do repairs through getting a loan in exchange for placing a lien on their home while others may not be able to do so since they already have a lien or two on the home. Housing stock in these areas is described as old, large, lacking insulation, and having inefficient appliances (e.g. furnace), leading to high energy bills. Even some households above the poverty level are not shielded from the struggle of paying their energy bills. These conditions exacerbated after the mid-2007 Great Recession and the job loss it caused.

In the study area, there is an inequality in energy bill payments between households with different income levels. According to one of the CAAs, households in low-income areas spend 17% of their income on energy bills while this number is around 4% for middle -income households. Weatherization has been successful in helping these clients. A weatherization supervisor described the situation as:

“... this program has been very successful in helping these people ...a lot of these houses are pretty large and have no insulation in the walls, the attic, you should be paying \$800 a month for the electric bills, for the gas bills. If you have a furnace that is 20 years old, we can go into a house like that and insulate the walls, insulate that attic, put in a new furnace and maybe a water heater and bring that bill down to maybe two or three hundred dollars a month instead of \$800 a month, it is really beneficial to these people, maybe helps them to be able to feed the baby instead.”

Agencies differ in their approach toward implementing WAP given the characteristics of their service area and the situation of their clients. Based on the results, although different in approach, these agencies shared the core mission of feeling responsible to assist those in need as best as they could with the resources at hand.

“...a home that you may consider a dump is somebody’s castle, and we want to treat them as if it is their castle and we want to do anything we can to help them with that castle.” - a weatherization supervisor instructing weatherization staff

4.3 Barriers

4.3.1 Administrative Barriers

According to the CAAs, cumbersome guidelines is one of the key administrative barriers they face since they need to comply with different guidelines and regulations when implementing the program. Guidelines could get more complicated when agencies try to couple weatherization with other program(s) at the time of service. With any increase in restrictions or any removal of an allowance, it gets more challenging for the CAAs to

implement the program as they try to find venues to better assist their clients according to the new guidelines. These guidelines are mainly related to the allowances to perform (minor) repairs as well as to address health and safety issues.

"if we could move some of those increased regulations on the weatherization and expand some of the repairs that you could do, I think we could catch up and do more units. I think that's a barrier to success of that programs."

Cumbersome paperwork, staff issues, and program coordination are the other barriers facing the CAAs. Each client has to provide a lot of documents for eligibility assessment to receive assistance. Although the cumbersome paperwork prevents fraudulent activities and applications, it creates a burden both for the clients and the agency. It takes approximately 2 hours for an agency staff to process the intake of a client, making sure all the required documents for determining eligibility are in place. The cumbersome paperwork puts pressure on staffing time and budget which is stated as staff issues. This is while the client's income eligibility is only good for 12 months before receiving the service. Lastly, it seems like program coordination is not an easy task for agencies. Lack of a default coordination between WAP and other federal or state programs could create hurdles in

implementing the program, which could prevent leveraging the full potential of assistance programs in helping clients.

4.3.2 Financial Barriers

WAP has a relatively small federal appropriation compared to other programs. It might be fair to say that financial barrier has been an ever-present hurdle for implementing WAP. Based on the interviews, financial barriers could be categorized as insufficient funding for the program, which means the insufficient federal appropriation for WAP; and shortage of minor home repair dollars, which could largely affect WAP implementation in areas where housing stock is in need of repair. This situation could get more complicated in areas with high concentration of poverty where there is a huge need for the program and agencies simply lack sufficient funding to help everyone. Lack of sufficient funding and limited administration dollars not only impact the number of units that could potentially be scheduled for weatherization based on the available funding but could also create hurdles in hiring staff resulting in staff shortage. Staff shortage could hurt agencies in areas with huge need for the program as they process intake of applications.

"The biggest difficulty now is the support dollars and the administration dollars."

"...and then budgets keep shrinking and shrinking..."

Not having access to flexible and sufficient home repair dollars creates additional hurdles. It seems like the status of minor home repair dollars drags behind the need. In absence of flexible and sufficient minor home repair dollars it looks as if the financial allocation for WAP fails to accommodate different incomes and housing conditions.

4.3.3 From Eligible Households to Eligible Houses

High Rate of Walk-aways/Client Deferrals due to Physical Barriers

As mentioned earlier, walk-away refers to client deferral for various reasons. Based on the results from this study, physical condition of housing structure was the main reason for walk-aways and is the focus of this paper when discussing walk-aways. High rate of walk-aways is a barrier for implementing WAP especially in areas where poverty is higher, and housing structure is older. Based on a case study by one of the CAAs on 100 approved WAP applicants, they found that 75% were deferred because of structural issues in their houses. The issues pertaining to and resulting in walk-aways are categorized as aging housing stock, maintenance issues, health and safety issues; and cumbersome guidelines which is not only an administrative issue but also complicates and even hinders the process, increasing the rate of walk-aways.

According to the walk-away case study mentioned earlier, asbestos around pipes and furnace, roof issues, knob-and-tube wiring, and mold were the most prevalent issues respectively. The case study concluded with a cost

assessment for removing these issues, some at a cost as low as \$200. Roof was mentioned as the *"hardest and most expensive to deal with"*. Based on the descriptions in one of the interviews, repairing or replacing a roof may cost any from \$8,000 to \$25,000 on average depending on its condition. Communications with the agencies implied that they do not typically take on many roof jobs since it could prevent them from achieving their unit goal.

Conjointly, the important factor that seems to intensify the state of things is the presence of cumbersome guidelines. Weatherization guidelines became stricter throughout the time. For instance, agencies were previously allowed to repair roofs using LIHEAP money, another allowance that was eliminated last year.

"...there is a lot more stricter guidance [on] asbestos and repairs which makes the walkaways a lot higher."

Conclusively, based on what was gathered from the interviews, those in extreme need for WAP would be underserved due to these barriers. These physical barriers could create a paradoxical challenge for high performers of the weatherization in areas with higher poverty rate. High program performers strive to go beyond 100% of their annual unit goal while they could be challenged in areas with high poverty and old housing stock. High performer agencies in such areas have to spend a lot of staffing time and

dollars to find enough eligible houses for performing weatherization to be able to hit their unit goal. This could lead to considering WAP as a program “... for houses in decent shape...”. However, if they could have access to sufficient and flexible minor home repair dollars, they could reach their weatherization goal without having to walk-away from dozens of housing structures before finding eligible ones. Walk-aways not only affect clients but were also described as “*applications that never become jobs*”. Barriers are interrelated. Figure 3 shows a network of how these barriers affect one another.

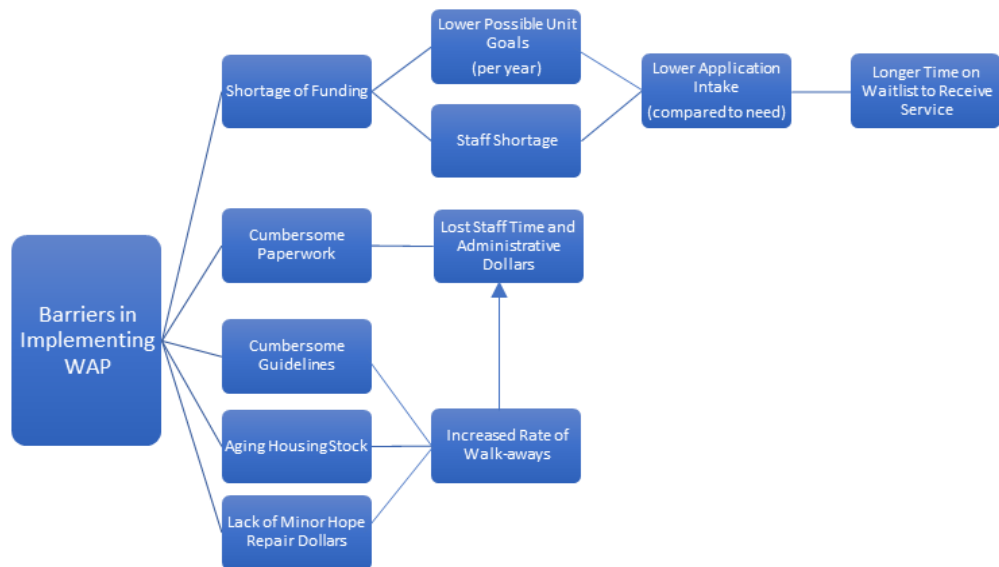


Figure 3. Network of Barriers in Implementing Weatherization Assistance Program

4.4 Opportunities

4.4.1 Opportunity for Collaboration

Based on what was gathered from the interviews, coordination between WAP and other federal programs; as well as collaboration with utility companies and other organizations proved to be beneficial as CAAs put a collective effort toward implementing WAP. In areas where utility provider(s) have a good collaboration with the CAA, it has had a positive impact on implementing WAP. As described, the utility collaborations ranged from providing energy efficiency programs such as replacing refrigerators, to providing rebates and energy education programs. In some areas there was not a connection between utility company and CAA in communicating about and referring clients with high energy burden.

"...they [utilities] are also assisting us, they will call us and say: hey, we got [a] client [] that's qualifying for a furnace and it would be nice if we could do weatherization on the home", and we try to great their services with our services so that we can again get the most bank for the buck when we are at that home."

In discussing referrals, CAAs mentioned that there are a few organizations which refer clients to them including charitable organizations. Based on the results it proved beneficial in assisting energy burdened clients.

It goes without saying that coordination between federal programs could not only benefit WAP but could also be beneficial in implementing

other programs. Coordination between federal programs and WAP could better assist CAAs as they try to implement weatherization.

4.4.2 Opportunity for Program Innovation and Integration

Providing wrap-around services, leveraging external funding resources (private money), and considering sustainability were among the opportunities mentioned by the CAAs in having innovation while integrating other programs with WAP. The CAAs are already administering other poverty reduction programs as well as providing different services to their clients ranging from energy education to financial literacy. This holistic service through program integration is what the CAAs referred to as providing a wrap-around service to their clients to assist them in different aspects. As CAAs discussed, program integration and the wrap-around service have proved beneficial in implementing WAP and in achieving better results. Based on the results it seems like poverty, with all its complex circumstances and consequences, could better be alleviated through leveraging a holistic approach toward assisting those struggled with it.

Leveraging external funding has played a key role for some of the agencies. It has proved most beneficial in rectifying maintenance, and health and safety issues which previously prevented clients to receive WAP. Leveraging external dollars provided the opportunity to re-enter several previously deferred clients (i.e. walk-aways) into the program to receive weatherization.

The agencies mentioned considering sustainability as another opportunity to better implement WAP and to be able to benefit from its long-term positive impacts. One of the CAAs discussed how they have a whole-house approach in weatherizing houses. By leveraging all the capacities to perform a whole-house weatherization, agencies were able to sustain houses for a long time. This sustainability approach toward WAP could provide residents with a healthy and safe environment for an extended period of time.

A retroactive assessment of completed weatherization jobs was mentioned as another opportunity which could assist agencies with implementing WAP. It was pointed out that “...as meticulous as the process of weatherization program is...”, for agencies, there could be an opportunity in going back and collecting data on completed projects to be able to do a retroactive assessment. It goes without saying that agencies would need to be supported with the capacity to carry out this type of assessments.

4.4.3 Opportunity to Reduce Walk-aways

Results from the interviews highlight a consensus among agencies that leveraging a combination of factors could provide the opportunity to reduce the rate of walk-aways. These factors include an increase in WAP budget by the federal government, having access to more minor home repair dollars, and more importantly, having more flexibility with guidelines in rectifying issues that are currently increasing walk-aways. According to the

CAAS, area-specific characteristics could complicate the issues. In discussing this complexity CAAs mentioned that taking these characteristics into account (e.g. high poverty rate, old housing stock) by policy makers could potentially assist with relaxing some of the stricter guidelines and removing some of the currently existing barriers.

Barriers and opportunities are related to each other. It could be argued that the barriers could be rectified through leveraging an opportunity or a combination of opportunities. Table 2 summarizes the relationship between barriers, and the potential opportunities and solutions to address them.

Table 2. The Relationship Between Barriers, and Opportunities to Address The

Barriers	Opportunities/Solutions
Aging Housing Stock	Whole-house Approach Toward Sustaining the Residence
Maintenance Issues	
Staff Shortage	Leveraging External Funding Resources Increase in Federal Appropriation Increase in Access to More Minor Home Repair Dollars
Shortage/lack of Minor Home Repair	
Insufficient Federal Appropriation	
High rate of Walk-aways/Client Deferrals	Collaboration Between Utility Companies and Other Organizations with CAAs
	Increased Coordination Between WAP and Other Federal Programs
Health and Safety Issues	More Flexibility in Guidelines
Cumbersome Guidelines	
Cumbersome Paperwork	

4.5 Impacts

"Weatherization is not a band aid."

"Energy Efficiency + Utility Assistance = Self-sufficiency"

4.5.1 Benefits of The Program

CAAs described benefits of the program under the two categories of energy-related and non-energy-related benefits. Energy-related benefits typically include reduction in energy consumption leading to annual savings on energy bills for the WAP recipients.

"... it is a program for energy reduction."

"... 20% to 30% annual energy savings per home."

Non-energy-related benefits mentioned by the agencies included financial empowerment of low-income households, providing them with a healthy and safe environment, creating jobs, reducing the burden on other taxpayers, as well as reduction in carbon footprint.

"... if we can keep seniors in their home instead of going into assistant living or into a hospital because we are providing a safe and healthy environment for them ..."

4.5.2 Disadvantages of Potential Budget Cuts

When asked about potential budget cuts for WAP (i.e. program elimination as proposed by the current administration), CAAs described the

consequences to be catastrophic for people in need for weatherization. They mentioned different ways that potential budget cuts could hurt people. Discussed consequences on the household/individual level included increased burden on low-income people as well as an increase in homelessness as WAP was described by the CAAs as a homelessness diversion program.

“...there is no safety there for low-income people or people that are vulnerable if these programs are cut.”

“Just people aren’t going to be able to afford their bills.”

“I just foresee a lot of homelessness, a lot more homelessness than what we already have.”

It holds true that all these household-level consequences would have repercussions across the society. On top of that, job loss was another point mentioned as a direct societal impact of potential budget cuts. It was argued during the interviews that simply having numbers based on economic models will result in losing human portion or personal end of the situation.

5. Conclusions and Policy Implications

There has been little discussion on institutional barriers faced by the U.S. Department of Energy Weatherization Assistance Program (WAP). Based on the results from the interviews with four local Community Action Agencies in Southeast Michigan, insufficient program funding, cumbersome guidelines, and high rate of walk-aways or client deferrals were mentioned as major barriers in implementing WAP. Briefly, walk-away or client deferral happens when the household is income eligible to receive WAP, but their housing structure is in a condition that prevents agencies from performing weatherization. This typically happens due to maintenance or health and safety issues in the house. Although there are other reasons behind walk-aways or client deferral, only deferral due to physical barriers in the housing structure is subject of discussion in this paper. Lack of sufficient financial resources on behalf low-income households, lack of sufficient minor home repair dollars for agencies as well as cumbersome guidelines in handling these physical issues increase the rate of walk-aways/ client deferrals especially in areas with higher concentration of poverty. Based on the interviews, there are opportunities to remove barriers in implementing WAP. These opportunities include collaboration and coordination, program innovation and integration as well as opportunities to reduce walk-aways. Positive impacts of WAP as well as negative impacts of potential budget cuts were discussed later in the paper. Among policies affecting WAP, ARRA

funding created positive impacts in the WAP network. However, WAP needs higher and constant federal appropriation to avoid the hurdles caused by huge but temporary increases in the funding.

Conclusively, an increase in WAP funding, increase in CAAs' access to minor home repair dollars, and more importantly, some flexibility with guidelines could be practical ways to assist CAAs in implementing WAP. There are policy nuances in guidelines that could further assist agencies rather than becoming barriers for them. Through removing institutional barriers, agencies would be assisted in implementing Weatherization as the federal low-income energy efficiency policy with potential long-term impacts.

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