Assessment of the American Recovery and Reinvestment Act Upon the Department of Energy Weatherization Assistance Program

Bruce Tonn
Three[3], Inc., Knoxville, Tennessee

Beth Hawkins
Three[3], Inc., Knoxville, Tennessee

Erin Rose
Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee

Abstract

The Department of Energy (DOE) administers the national low-income Weatherization Assistance Program (WAP). Under this program, DOE provides grants to states (grantees), which then provide grants to local weatherization agencies (subgrantees), to weatherize income-eligible homes for free. The American Recovery and Reinvestment Act (ARRA) of 2009 allocated $5 billion in funding to WAP, a very significant increase from an annual appropriation that ranged in the $200–250 million range for many years. As part of a major evaluation of WAP, states and local weatherization agencies were surveyed, in part, to assess their experiences during the ARRA period. The substantial funding increase created a number of issues for the national weatherization network: the political visibility of their programs increased significantly, organizational responsibilities were shifted, new laws and regulations were passed that impacted their programs, media attention of their programs increased, federal oversight of their programs increased; and programmatic costs increased because of the increased oversight and because ARRA required WAP to operate under the provisions of the Davis-Bacon Act of 1931. There was some concern within the national weatherization network that the influx of ARRA funds would permanently damage nonfederal funding leveraging relationships. However, two-thirds of grantees and over 40% of subgrantees stated that they believe that the long-term impacts of ARRA on leveraging relationships will be positive.

KEY WORDS: energy, governance, civil society, national governance, low-income weatherization, American Recovery and Reinvestment Act (ARRA), United States

Introduction[1]

This paper documents the experiences of the national low-income weatherization network during the American Recovery and Reinvestment Act (ARRA) of 2009. Specifically, this research poses the question: What were the experiences of those receiving funding from the U.S. Department of Energy's (DOE) Weatherization Assistance Program (WAP) to weatherize low-income homes during this time period. Briefly, WAP was created by Congress in 1976 under Title IV of the Energy Conservation and Production Act. The purpose and scope of the Program as currently stated in the Code of Federal Regulations (CFR) 10 CFR 440.1 is "to increase the energy efficiency of dwellings owned or occupied by low-income persons, reduce their total residential energy expenditures, and improve their health and

Review of Policy Research, Volume 33, Number 2 (2016) 10.1111/ropr.12164
© 2016 Policy Studies Organization. All rights reserved.

safety, especially low-income persons who are particularly vulnerable such as the elderly, persons with disabilities, families with children, high residential energy users, and households with high energy burden" (Code of Federal Regulations, 2011).

WAP provides grants, guidance, and other support to grantees: weatherization programs administered by each of the 50 states, the District of Columbia, territories, and several Native American tribes. The grantees, in turn, oversee a network of 900+ local weatherization agencies (subgrantees) that offer weatherization to every community in the country: community action agencies, other nonprofit organizations, and local government agencies that are eligible to receive weatherization funding from DOE. These weatherization agencies qualify eligible households, assess their homes' energy efficiency opportunities, install energy-saving measures, and inspect the work. The work performed includes air sealing, insulation upgrades, furnace replacements, and other dwelling-specific measures found to be cost-effective, as well as home improvements needed to ensure the health and safety of household occupants. The work is done at no cost to the eligible participants. WAP is not an entitlement program. In most years, most subgrantees have lengthy waiting lists of homes waiting to be weatherized.

Included in the hundreds of billions of dollars of ARRA programs, initiatives, and investments was $5 billion for WAP. The national weatherization network was given approximately 3 years to spend these funds. Annually, this funding represents about six times more per year than Congress had been typically appropriating for WAP (e.g., funding for the year prior to ARRA was $236 million). The huge increase in funding was based on the assumption that weatherization was a "shovel-ready" program, capable of quickly ramping up production and, most importantly, employing significant numbers of individuals to weatherize low-income homes. Other energy efficiency programs also administered by DOE also received large ARRA funding allocations. For example, the State Energy Program received $3.1 billion, as compared to an annual budget pre-ARRA in the $40 million range, and the Energy Efficiency Conservation Block Grant program received a one-off allocation of $2.8 billion. For context, in normal funding years, funding for other low-income programs such as the Low Income Home Energy Assistance Program (LIHEAP) and the Temporary Assistance for Needy Families (TANF) are much larger than funding allocated to WAP. For example, LIHEAP was allocated $3.39 billion in FY 2015 and TANF's budget in FY 2013 was approximately $17 billion.

The Recovery Act also included some additional provisions specifically related to WAP:

- The income eligibility threshold for the program was raised from 150% of the Federal Poverty Level to 200%;
- The average DOE funding that could be spent per weatherized unit was raised from $2,500 to $6,500; and
- WAP grantees and subgrantees had to adhere to the provisions of the Davis-Bacon Act of 1931 with respect to prevailing wages and paperwork reporting.

The research reported herein was conducted as part of the ARRA period national evaluation of WAP. The evaluation and the design for this research are

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

addressed in the Research Design section. WAP during the Recovery Act is described in the following five sections. The Wap Funding, Jobs, and Production During the ARRA Period section presents descriptive statistics on funding, jobs, and production. The Weatherization Network Challenges During the Recovery Act section addresses challenges faced by the national weatherization network during the Recovery Act. The unintended consequences of Davis-Bacon on WAP are discussed next, followed by coverage of a set of miscellaneous topics before the paper concludes with an assessment of the Recovery Act on the national network's ability to leverage DOE WAP funding to attract additional funding for low-income weatherization.

Research Design

The research described below was conducted within the context of two national evaluations of WAP. One evaluation focused on the program as it operated just before the ARRA period and the other focused on the program during the ARRA period, referred to herein as the retrospective and ARRA period evaluations, respectively. The plans for these evaluations, which also include the surveys used in this research, are found in Ternes, Schweitzer, Tonn, Schmoyer, and Eisenberg (2007) and Tonn et al. (2011). The last time WAP was evaluated was in the early 1990s (Brown, Berry, & Kinney, 1994). A national committee of weatherization stakeholders was convened to help design the goals of the evaluations. The evaluation plans were peer reviewed by a panel energy program evaluators.

The evaluations addressed numerous topics. Energy savings attributable to the program were estimated from utility bills by home type (i.e., single family, mobile home, multifamily), fuel type (e.g., natural gas, electricity), and climate zone. Environmental and health and household related cobenefits were also estimated. A nationally representative set of homes were monitored preweatherization and postweatherization to assess the impacts of weatherization on indoor air quality. Nationally representative surveys of households that received weatherization services and individuals who delivered weatherization services were also conducted. Summaries of the evaluation results for the retrospective and ARRA periods can be found in Tonn, Carroll, Pigg, et al. (2014) and Tonn, Carroll, Rose, et al. (2015), respectively.

The evaluations also included a comprehensive process evaluation component. For example, a rigorous field process evaluation was conducted where weatherization experts and social scientists observed weatherization auditors and crews from subgrantees located around the country (Berger, Lenahan, & Carroll, 2014). A weatherization client survey was conducted (Carroll, Berger, Miller, & Driscoll, 2014). The research reported herein is drawn from surveys administered to the grantees and subgrantees during the retrospective and ARRA periods. The surveys were primarily designed to collect information about how the program was operated in specific program years (PYs), PY 2008 for the retrospective period and PY 2010 for the ARRA period. Thus, the surveys have questions related to homes weatherized, leveraged funds received (see the Leveraged Funding During the Recovery Act Period section for more discussion on this topic), training offered to staff, and oversight activities, among many topics. These surveys, like all of the

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

information-collection instruments used by the evaluations, were approved by the U.S. Office of Management and Budget.

Evaluation team interactions with DOE staff and individuals throughout the national weatherization network suggested early on that the experiences of the national network during the ARRA period needed to be documented. In response, the evaluation team added numerous questions to the ARRA period grantee and subgrantee surveys (Tonn, Rose, & Hawkins, 2015). All grantees and subgrantees were asked to complete the web-based surveys that contained these questions, which were administered in late calendar year (CY) 2011. The grantee response rate was 56 out of 58, 97%. The subgrantee response rate was 861 out of 934, 92%.[2] There do not appear to be any systemic biases associated with the research design and response rate.

WAP Funding, Jobs, and Production During the ARRA Period

In the 2008–2009 time period, the United States was in the midst of the Great Recession, possibly the worst economic situation the nation had faced since the Great Depression of the 1930s. One of the first priorities of the new Obama administration was to implement policies and programs to turn the economy around. Following classical Keynesian theory, one component of their plan was to stimulate the economy through federal spending and tax policy. In particular, the Recovery Act targeted "shovel-ready" project opportunities to increase employment. Major transportation infrastructure projects are the prototypical shovel-ready projects; there is always a backlog of infrastructure projects and spending on these projects directly supports job creation and retention.

Through the Recovery Act, the Obama administration also took the opportunity to further its clean energy agenda. The clean energy package in the Recovery Act had four components: efficiency, the Grid, transportation, and clean energy manufacturing and other related projects (Aldy, 2011). Weatherization was identified as a program that was both shovel ready (i.e., could ramp-up quickly to support job creation) and capable of meeting energy efficiency goals. Given this, the decision was made to allocate $5 billion of Recovery Act funds to DOE's WAP.

Figures 1–3 depict impacts that the Recovery Act had on WAP.[3] Figure 1 tracks DOE WAP expenditures from the beginning of the Recovery Act in April 2009 to when the funds were almost completely exhausted in late 2013. Expenditures peaked at over $500 million per quarter in CY Q1 2011. Direct employment supported by WAP ARRA funding peaked a quarter before that at over 15,000 jobs (see Figure 2). Figure 3 shows units weatherized peaked in CY Q4 2011 at almost 90,000 units. In comparison, for the entire 2008 Program Year DOE funds supported the weatherization of just under 100,000 units. It should be noted that during the Recovery Act, WAP continued to receive normal program appropriations from Congress. Jobs weatherized utilizing these funds are labeled "formula units weatherized" in Figure 3. Plotting both formula and ARRA period units weatherized clearly indicates how much production ramped up during the ARRA period.

Additionally, the plots indicate that formula units weatherized as of CY Q1 2014 were substantially below formula units weatherized pre-ARRA. This lack of

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

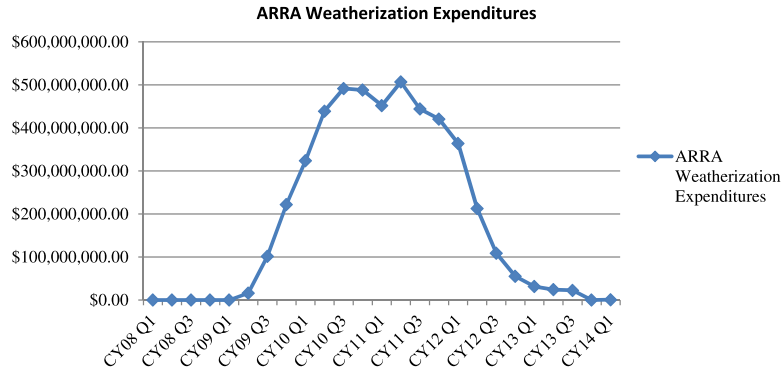

Figure 1. DOE WAP Expenditures During the Recovery Act Period

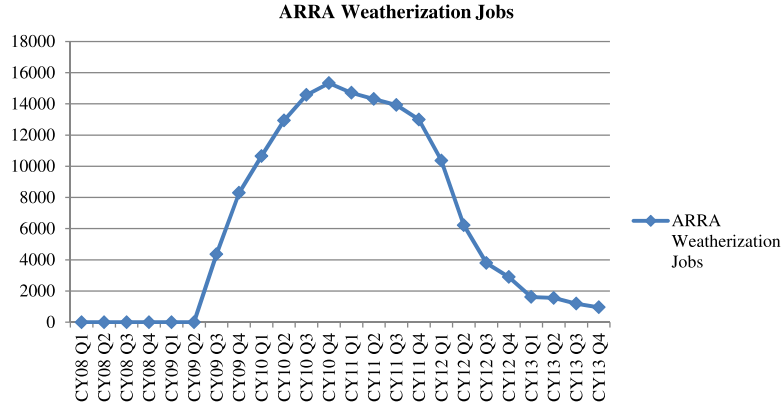

Figure 2. Weatherization Employment Supported by Recovery Act Funds

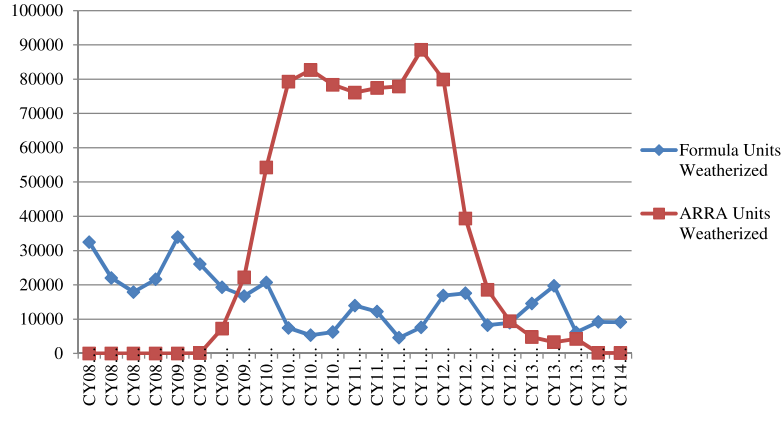

Figure 3. Units Weatherized Using ARRA and Normal Appropriations (Formula) Funding

production is due to sharp reductions in Congressional appropriations for WAP. This left many grantees and subgrantees scrambling to keep their programs in operation. As an example is testimony to the Vermont Senate and Welfare Committee by the state's weatherization program for funding to prevent the mothballing of

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Table 1. Weatherized Units in Program Years 2008 and 2010

Housing Type	2008	2008%	2010	2010%
Site built (1–4) units	62,835	64%	215,445	65%
Mobile homes	17,754	18%	48,267	14.5%
Large multi-family units (5+)	17,376	18%	68,153*	20.5%
Total	97,965	100%	331,865	100%

* This number excludes large multifamily units about which nothing is known and also excludes weatherized shelters. For completeness, had these been included, the total number of large multifamily units weatherized is 73,240.

weatherization equipment purchased during the Recovery Act period and to keep weatherization waiting lists from exceeding a year (Shollenberger, 2014).

Table 1 presents units weatherized by housing type for the year before the Recovery Act (PY 2008) and for one year during the Recovery Act (PY 2010). The program's character, that of focusing predominately on single family, small multifamily, and mobile homes, did not change appreciably during the Recovery Act, though the share of weatherized units being in large multifamily buildings increased somewhat.

Weatherization Network Challenges During the Recovery Act

In a recent report from the Centers on Public Service at George Mason University, the authors noted that in many cases the architects of the Recovery Act targeted pre-existing social networks to implement key provisions of the Act (Posner et al., 2013). They observe that ARRA was implemented largely through networks of states, counties, cities, nonprofits and private contractors. They state that depending on the networks involved, this could have been "a recipe often fraught with potential for goal conflict, program slippage and confusion."

Posner et al. (2013) did specifically address ARRA and the national weatherization network. Despite pre-ARRA assessments that the national weatherization network was shovel ready, it did not have the capacity to easily ramp up to a $5 billion program. They praised those in the weatherization network as being "heroic" and criticized the administration for ratcheting up accountability and inspections despite a lack of staffing at every level of the national weatherization network. Findings from surveys administered to grantees and subgrantees reported on in the next several subsections provide more detailed insights into these general observations.

The survey results presented in Tables 2 and 3 suggest that the experiences of the grantees and subgrantees differed substantially during the Recovery Act period. For example, a solid majority of subgrantees reported significant changes in their weatherization network (63%) whereas only one-third of the grantees reported significant changes. This result is not unexpected since the bulk of new hires and new contracting for weatherization happened at the local level. Grantees that reported significant changes were those who had small programs pre-ARRA (e.g., in hot climate states, see Figure 4) or territories like Puerto Rico that did not have a weatherization program pre-ARRA.

The huge funding increase did indeed draw the attention of state legislators and bureaucrats. Over 60% of subgrantees indicated that the visibility of their programs to elected officials increased during the Recovery Act period. Almost one-half of the

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Table 2. Recovery Act Changed Milieu Surrounding Weatherization Programs

	Grantees (%)	Subgrantees (%)
Significant change in Wx network	33	63
Change in organizational responsibilities for Wx program	45	48
Passage of new laws/regulations impacting program	31	50
Relationship with subgrantees/grantees negative to more negative	26	19
Visibility of program to general public increased	96	54
Quality of media attention: High to very high	14.6	24.4
Quality of media attention: Low to very low	12.4	14.5
Media attention: Positive to very positive	45	60
Media attention: Negative to very negative	20	4

Table 3. Topics the Media Mainly Focused On

	Grantees (%)	Subgrantees (%)
Jobs created	49.0	51.6
Energy saved	42.9	58.7
Helping low-income households	65.3	72.0
Waste, fraud, and abuse	34.7	12.4
Lack of energy savings	2.0	1.7
Organizational mis-steps	28.6	5.1

grantees and subgrantees alike reported that organizational responsibilities for overseeing their programs changed during the Recovery Act. Almost a third of the grantees reported that new laws and regulations were passed that impacted their programs, with a substantial majority of grantees believing that ARRA was the cause

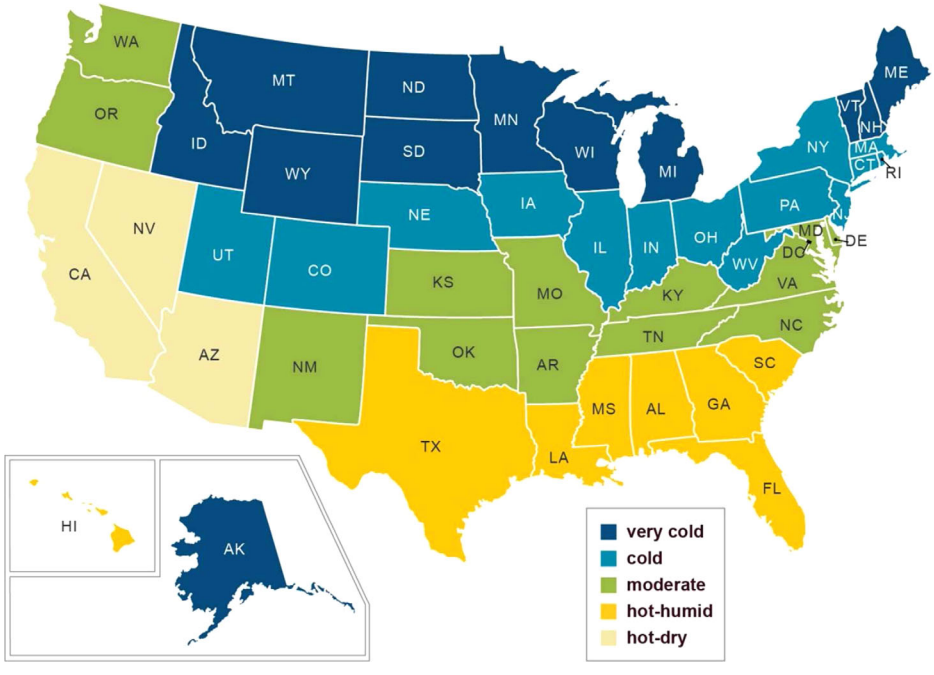

Figure 4. Climate Zones
Climate zones were assigned on a state-by-state basis based on heating degree days. A distinction was made between hot dry and hot humid climate zones because typical weatherization measures installed differ in these climates.

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

of these changes. These changes, in turn, impacted one-half of the subgrantees. 44% of the grantees felt that these new laws and regulations were not beneficial to their programs versus 31% that felt they were beneficial.

It needs to be noted at this point that the national weatherization network was under significant stress during the ARRA period. Not only did it ramp up production substantially, but it increased the ranks of its workers and suffered from additional administrative burdens caused by new management arrangements and laws and regulations targeted at their programs. These factors took a toll on some grantee–subgrantee relationships, as indicated in Table 2.

Questions concerning media attention were included in the grantee and subgrantee surveys. This was done in part to simply document the amount, quality, and type of media attention garnered during the ARRA period. It was also done because, at least at the national level, low-income weatherization appears to be a very partisan subject and media coverage can exacerbate partisanship (Arceneaux, Johnson, & Murphy, 2012; Barnidge and Rojas, 2014; Boukes, Boomgaarden, Moorman, & De Vreese, 2014) and influence public opinion. Favorable media coverage could ease pressure on grantees and subgrantees during this stressful period or add to it. Media coverage could also sow the seeds for changes in funding for weatherization for years to come.

The survey results suggest that the manner in which the media portrayed low-income weatherization during the ARRA period depended on the locus of the attention. As shown in Table 2, grantees felt that media attention was more negative than did the subgrantees. Not unexpectedly, a higher percentage of grantees also believed that the quality of the media attention was not very high, though the media did not receive glowing approval from the subgrantees either. Table 3 provides some insights into the grantees' dissatisfaction with media attention, as the media focused much more on waste, fraud, and abuse and on organizational missteps at the state level than on the local level. Fewer grantees than subgrantees reported that the media focused on the positive aspects of weatherization, such as energy saved, jobs created, and simply the benefit of WAP on income eligible households.

There are some patterns to the positive and negative media attention. The results presented in Tables 4 and 5 suggest that subgrantee programs' in the very cold and cold regions enjoyed more positive media attention than programs located within hot-humid and hot-dry regions of the United States (Figure 4 presents a map of the climate zones by state used in this work). One factor at play here is that programs in the hot regions did indeed receive a higher proportion of federal weatherization funding under ARRA than before ARRA due to a provision in the law that changes the funding formula to the advantage of such regions when funding exceeds a threshold of $275M per year. Thus, those grantees and subgrantees in the hot-humid and hot-dry states had a relatively higher hill to climb with respect to ramping up their weatherization programs and maybe some of the negative attention was warranted, at least toward the beginning of the ARRA period. Overall, 52% of subgrantees reported that the media attention would have no long-term impact on funding, 21% felt the attention would have a negative impact, and 27% felt the attention would lead to an increase in funding for weatherization.

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Table 4. Focus of Media Attention on Subgrantee Programs During the Recovery Act (1 = yes, 0 = no)

Climate Zone		Jobs Created	Energy Saved	Helping Low-Income Households	Waste/Fraud/ Abuse	Lack of Energy Savings	Organizational Mis-steps
Very cold	Mean	0.58	0.66	0.71	0.09	0.04	0.04
	N	100	100	100	100	100	100
	Std. Dev.	0.496	0.476	0.456	0.288	0.197	0.197
Cold	Mean	0.57	0.57	0.73	0.15	0.00	0.06
	N	230	230	230	230	230	230
	Std. Dev.	0.497	0.496	0.445	0.356	0.066	0.240
Moderate	Mean	0.48	0.62	0.77	0.07	0.02	0.03
	N	176	176	176	176	176	176
	Std. Dev.	0.501	0.487	0.420	0.253	0.130	0.167
Hot-humid	Mean	0.41	0.52	0.63	0.16	0.01	0.06
	N	116	116	116	116	116	116
	Std. Dev.	0.495	0.502	0.485	0.364	0.093	0.239
Hot-dry	Mean	0.51	0.56	0.72	0.23	0.05	0.10
	N	39	39	39	39	39	39
	Std. Dev.	0.506	0.502	0.456	0.427	0.223	0.307
Total	Mean	0.52	0.59	0.72	0.12	0.02	0.05
	N	661	661	661	661	661	661
	Std. Dev.	0.500	0.493	0.449	0.330	0.128	0.221

Table 5. Media Coverage of Subgrantee Weatherization Programs During the Recovery Act (1 = very negative, 5 = very positive)

Very cold	2.17	112	4.280
Cold	2.48	253	3.705
Moderate	2.22	187	4.363
Hot-humid	1.46	120	4.894
Hot-dry	2.21	43	4.172
Total	2.18	715	4.218

The survey respondents supported the George Mason's study (Posner et al., 2013) finding that accountability and oversight went hand-in-hand with ARRA funding. Referring to Table 6 almost all of the grantees and 80% of the subgrantees reported increased oversight.[4] For example, DOE's Inspector General was a constant presence during the Recovery Act. Before the Subcommittee on Regulatory Affairs, Stimulus Oversight, and Government Spending; Committee on Oversight and Government Reform; U.S. House of Representatives on November 2, 2011, Gregory H. Friedman, Inspector General (IG), U.S. Department of Energy testified that the IG found few shovel-ready projects and expectations for production were unrealistic. The IGs in-field inspections revealed problems, but the inspections were limited in number and scope. Another report also took the weatherization network to task (DOE OIG, 2011), though subgrantee responses suggests that the IG's criticisms, in many cases, were not warranted.

DOE's OWIP increased its in-field oversight, and in response, the grantees and subgrantees increased their oversight, too. Over one-half of the grantees and almost one-half of the subgrantees reported that the increased oversight increased their program costs moderately to extremely (see Table 4). Thirty-three percent of the states reported that these cost increases were a substantial or extreme burden. It should be noted that 24% subgrantees conducted more stringent program eligibility checks during the Recovery Act period.

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Table 6. Factors Influencing Program Costs During Recovery Act Period

	Grantees (%)	Subgrantees (%)
Reported increased oversight	96	80
Costs for increased oversight moderate to extreme	57	45
Davis-Bacon increased wages	92	76
Overall costs increased because of Davis-Bacon	94	80
Supply chain bottlenecks	22	21

Davis-Bacon: Unintended Consequences

The Recovery Act had a profound impact upon WAP at every level of its administration. In addition to ramping up to meet production goals, the national network also had to contend with the provisions of the Davis-Bacon Act of 1931.[5] This Act requires that all federal construction and public works projects need to pay "prevailing wages" for laborers and mechanics. The U.S. Department of Labor (DoL) is responsible for determining prevailing wages for all labor categories in these two job areas for every county in the United States. Because weatherization had not fallen under the provisions of Davis-Bacon before the Recovery Act, the DoL had to start from scratch in identifying specific weatherization jobs that did indeed fall within the purview of Davis-Bacon and then determining for those job categories the prevailing wages county-by-county.

After the first task was accomplished DoL collected data in order to determine the prevailing wages. This process took approximately 6 months. During this period of time, roughly one-half of the grantees advised their subgrantees to hold off on weatherizing any homes until the wage rates were set as there was a good deal of uncertainty concerning whether the wages paid to weatherization workers were less than the prevailing wages determined by the DoL. This delay caused a substantial amount of frustration throughout the weatherization community. It also led to unfavorable publicity in the media, which reported the delays but often did not report the bureaucratic red tape that was beyond the network's control that was the cause of the delay. In late fall 2009, DoL solved the weatherization-related prevailing wage questions and production began in earnest (see Figure 3).

The grantees and subgrantees were surveyed concerning the impacts of the prevailing wage provision on their weatherization costs during the ARRA period. Almost all of the grantees and two-thirds of the subgrantees reported that overall, Davis-Bacon lead to wage and other cost increases (see Table 6). These findings are in line with other research conducted over many years on the cost implications of Davis-Bacon (e.g., Bilginsoy & Phillips, 2000; Dunn, Quigley, & Rosenthal, 2005; Fraundorf, Farrell, & Mason, 1984; Vincent & Monkkonen, 2010) though some studies have found to cost impacts (e.g., Duncan, 2015). Discussions with over a dozen subgrantees held during case study visits suggest that DoL adopted most of the wage rates that the subgrantees were already paying their in-house staff but that wage rates for specialty jobs, such as for electricians working in multifamily buildings five floors or higher, rose quite substantially. From the survey, 32% of grantees reported an increase in 1–10%, 22% an increase of 11–20%, and 44% no change in costs for weatherizing multifamily buildings due to Davis-Bacon.

Davis-Bacon and the surrounding milieu of the Recovery Act period generally led to increased program costs. For example, Davis-Bacon required the

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Table 7. Employment Impacts of Davis-Bacon (%)

Which statement best describes changes in the level of employment in your ____ resulting from Davis-Bacon?	Grantees	Subgrantees	How much of an impact did your ____ experience while coordinating wages stipulated by Davis-Bacon for local weatherization agencies whose operations spanned multiple counties?*		Grantees	Subgrantees
			Grantees	Subgrantees		
Large number of jobs created	27.3	22.2	No impact	Very negative	8.0	3.3
Small number of jobs created	27.3	43.8	Small impact	Negative	18.0	17.8
No change in the number of jobs	36.4	30.2	Moderate impact	No impact	32.0	61.3
Small number of jobs lost	6.9	3.5	Large impact	Positive	20.0	15.0
Large number of jobs lost	2.3	0.3	Very large impact	Very positive	22.0	2.7

*The response categories for this question in the grantee and subgrantee surveys were inadvertently different.

subgrantees to submit weekly employment time and wage rate sheets not only for in-house staff whose jobs fell into the DoL job categories but for all of their contractor staff as well. From over a dozen in-person visits to subgrantees during the ARRA period, it was judged common for subgrantees to hire a new staff member whose sole job was to administer the Davis-Bacon paperwork (Tonn, Rose, & Hawkins, 2014). Seventeen percent of the subgrantees reported that the increased labor costs altered the costs of measures installed, and also ultimately altered the sets of measures installed in homes because some measures that would have had a savings-to-investment (SIR) ratio greater than 1.0 now failed the SIR test and could not be installed. Thus, the majority of grantees and subgrantees reported that Davis-Bacon increased their costs (Table 6).

Davis-Bacon had a mixed impact on employment. Table 7 indicates that the majority of grantees and subgrantees reported that Davis-Bacon created jobs, many hired simply to manage the extra paperwork.

An interesting challenge was posed to local weatherization agencies that worked in two or more counties. Prior to ARRA, the agencies paid their workers the same amount regardless of what county they worked in. However, the DoL determined prevailing wages at times could be different from county to county for agencies that worked in multiple counties. This complication impacted most states, almost one half in a major manner (see Table 7). It also impacted the subgrantees, sometimes negatively, sometimes positively. Typically, those affected agencies adjusted wages to the highest rate stipulated by DoL for their counties in a desire to reduce administrative recordkeeping burden. Some agencies viewed those adjustments negatively, others positively.

As noted above, Davis-Bacon required the completion of weekly time sheets. The sheets were required not only for in-house staff but also for contractors as well. Ad hoc comments provided during discussions with the case study agencies indicated that some of the smaller contractors opted to drop out of the low-income weatherization business because of this hassle (Tonn, Rose, et al., 2014). The subgrantees were asked whether Davis-Bacon had an impact on the overall experience levels of the contractors they hired. The results were mixed: 53% said there was no change in experience, 25% confirmed a decrease but 22% indicated an increase.

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Table 8. Quality of DOE Services Provided to Grantees (in %)

	Management Support	Training	Client Education	Technical Support
Very low quality	3.9	4.4	9.7	4.9
Low quality	5.9	6.7	16.1	9.8
Moderate quality	39.2	55.6	48.4	51.2
High quality	47.1	26.7	19.4	29.3
Very high quality	3.9	6.7	6.5	4.9

Table 9. Quality of Grantee Services Provided to Subgrantees (in %)

	Management Support	Training	Client Education	Technical Support
Very low quality	4.0	1.7	3.1	2.7
Low quality	11.8	7.5	8.8	9.5
Moderate quality	41.8	36.1	55.7	38.8
High quality	30.6	41.8	26.7	37.4
Very high quality	11.8	12.9	5.7	11.6

Table 10. DOE Guidance to Subgrantees During ARRA Period (in %)

How timely has DOE's guidance been during the ARRA period?	Subgrantee	How clear has DOE's guidance been during the ARRA period?	Subgrantee
Very timely	3.0	Very clear	4.8
Timely	48.2	Clear	49.6
Not very timely	40.3	Not very clear	39.5
Not timely at all	8.5	Not clear at all	6.1

Other Feedback from the Recovery Act Period

Before addressing the impact of WAP Recovery Act funding on program funding leveraging, this subsection addresses additional operational issues encountered during the Recovery Act period. These issues fall into these categories: technical assistance, staff management, program operations, and purchases.

Given the turmoil caused by changes in management reporting channels and program regulations to ramping up employment and production, the quality of technical assistance provided by DOE to the national weatherization network and from grantees to subgrantees are important topics to address. Table 8 reports that by-and-large, grantees found the technical assistance provided by DOE was moderate to very high in quality with respect to management support, training, client education, and other technical support. The same is true for the technical assistance provided by the grantees to their subgrantees, though the subgrantees gave their state offices higher marks in most assistance categories (see Table 9). From a third viewpoint, there were mixed beliefs concerning the timeliness and clarity in guidance DOE provided to Subgrantees. As reported in Table 10, large percentages of subgrantees did not find DOE guidance to be timely or clear. Technical assistance and guidance was particularly important because many grantees (45%) and subgrantees (68%) believed that DOE WAP rules were inflexible during this period of time.

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

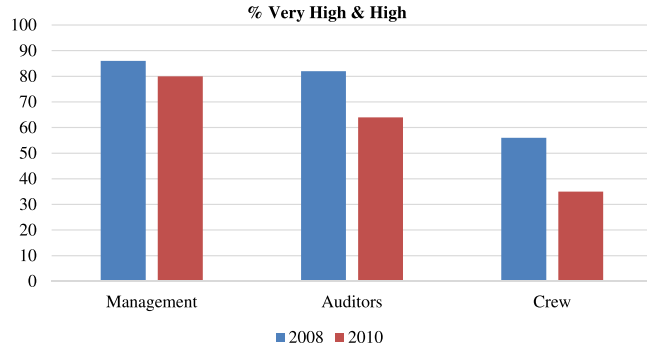

Figure 5. Impacts of ARRA Period: Local Agency Staff Experience

As indicated in Figure 2, direct employment in weatherization greatly increased during the Recovery Act. To manage this increase, just over 25% of subgrantees reported increasing their use of contractor crews (vs. 58% that reported no change in the relative share of in-house crews versus contractor work). As could be expected, the hiring of so many new employees decreased the percentage of managers, auditors, and crew that subgrantees judged to have high and very high levels of experience in weatherization from PY 2008 to PY 2010 (see Figure 5). It can be inferred from this figure that the subgrantees promoted experienced auditors to become managers and experienced crew leaders and members to become auditors, thereby leaving the crews with less experience, on balance.[6] Adding to this management challenge is that almost one-third of subgrantees reported higher staff turnover during the Recovery Act period. Last, 29% of subgrantees reported competing with other highly funded DOE Recovery Act programs (such as the State Energy Program and the Energy Efficiency and Conservation Block Grant Program) for labor.

Helping to balance these management issues is the finding that two-thirds of subgrantees reported at least some economies of scale benefits as their programs increased, with 9.1% reporting substantial benefits. Almost half (44%) of subgrantees were able to purchase new information technologies and 82% reported being able to purchase new field technologies. Almost two-thirds of the states (63%) also reported being able to purchase new information technology. These types of information could be seen as inputs into discussions concerning the optimal operating size for WAP nationally.

Leveraged Funding During the Recovery Act Period

The topic of this section is the funding that Grantees and Subgrantees were able to acquire beyond what DOE provided to support their weatherization programs. DOE strongly encourages grantees and subgrantees to leverage DOE funding to acquire additional funds. For example, grantees and subgrantees use DOE dollars to train auditors, crew leaders, and crew members. The benefits of this training accrue not only to weatherization jobs paid for by DOE funds but also to weatherization work supported by other sponsors (e.g., utilities) who do not bear the training costs. Other sponsors are attracted to the DOE-supported weatherization

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Table 11. DOE and Leveraged Weatherization Funding in PY 2010 and PY 2008 ($millions)

	2010				2008			
	Grantees		Subgrantees		Grantees		Subgrantees	
	N	$	N	$	N	$	N	$
DOE	51	$2,008	—	—	51	$236	—	—
LIHEAP	43	$401	5	$1	46	$319	11	$3
State public benefit	5	$46	52	$19	8	$83	50	$9
Other state programs	6	$37	104	$21	10	$31	145	$27
Utilities	13	$24	268	$94	14	$21	174	$52
PVE and other fed. programs	8	$10	78	$17	9	$12	90	$30
Program income, in-kind, nonprofit, third party, other	3	$22	171	$14	4	$20	106	$6
Total		$2,548		$167		$722		$128
State retained		$138				$50		
Pass through to subgrantees		$2,409				$672		
Total program funding		$2,715				$850		
Amount spent on DOE units		$2,316				$460		
Number of DOE units		340,158				97,965		

network because of its trained workforce and high quality of work. Years of experience in community social services allows the subgrantees to readily recruit homes for weatherization services either for standalone WAP, braided WAP, or non-WAP programs.

Leveraged funds provided to grantees and subgrantees are used in two ways. First, they can be braided with DOE funds to weatherize individual homes. All braided-funded homes are typically weatherized under DOE regulations, even if only $1 of DOE funds was expended on the home. Second, the funds can be used separately. This is often the case if the leveraged funds come with their own stipulations. For example, funds from an electric utility company may only be used on electricity measures and then maybe even only for new compact florescent light bulbs. Funds from a natural gas utility company may only be used to reduce natural gas use (e.g., through a furnace replacement program).

Table 11 presents DOE and leveraged funding received by grantees and subgrantees in Program Years 2010 and 2008. Again, this table demonstrates the dramatic increase in the national weatherization program in only a couple of years. Total funding for weatherization, DOE plus leveraged funding, increased by just under $2 billion. The percent of DOE funds invested in DOE units increased from 54 to 85%. The largest source of non-DOE funds is the federal Low Income Home Energy Assistance Program (LIHEAP). Administered by the U.S. Department of Health and Human Services (HHS), LIHEAP assists eligible low-income households with paying their energy bills. HHS allows states to allocate up to 10% of their LIHEAP funding to their weatherization programs with the understanding that these funds would be used to reduce the energy bills of households that have relatively high energy burdens and/or high rates of energy consumption. It is easy to target these households because the subgrantees that are Community Action Agencies usually administer LIHEAP locally and have access to their clients energy bills. State public benefit funds, other state programs, and utilities provide the majority of the remaining leveraged funding.

It is important to note the amount of leveraged funds flowing directly to the subgrantees. Subtracting the LIHEAP funds from the grantee side of the ledger shows

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

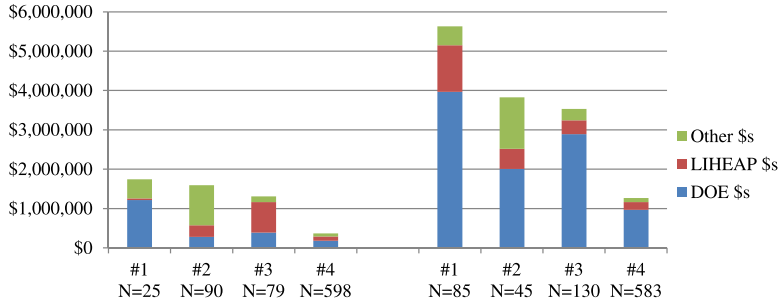

Figure 6. Clusters of Subgrantees Based on Spent DOE and Leveraged Funds

Table 12. Clusters of Subgrantee Weatherization Funding by Climate Zone

	Count	Very Cold (%)	Cold (%)	Moderate (%)	Hot-Humid (%)	Hot-Dry (%)
PY 2008						
1. Moderate; mostly DOE and other funding	25	28	68	4	0	0
2. Moderate size; high other funding	90	34	32	21	1	11
3. Moderate; mostly LIHEAP funding	79	13	48	11	9	19
4. Small; mostly DOE and LIHEAP	598	13	37	28	18	4
PY 2010						
1. Very large; mostly DOE and LIHEAP	85	14	39	8	18	21
2. Large; mostly DOE and other funding	45	33	31	27	2	7
3. Large; mostly DOE	130	36	35	10	15	3
4. Moderate; mostly DOE	583	12	42	29	10	7

Table 13. Grantees and Subgrantees: Importance of Leveraged Grants

	Grantees 2008	Grantees 2010	Subgrantees 2008	Subgrantees 2010
Not important at all	10.2	18.4	Na	11.1
Not very important	8.2	16.3	Na	14.5
Important	26.5	28.6	Na	32.6
Very important	55.1	36.7	Na	41.8

that subgrantee leveraged funding increased during the Recovery Act period and even exceeded the non-LIHEAP leveraged funding received by the grantees. Many subgrantees are the nodal point for numerous funding streams related to weatherization and social services, which are braided into a one-stop shopping experience for their clients. The large amount of utility leveraged funding that flows to the subgrantees supports the contention that subgrantees are entrepreneurial.

Figure 6 and Tables 12 and 13 provide three additional perspectives on leveraged funding. Both Figure 6 and Table 12 present the results of a funding profile cluster analysis for subgrantees by amount of DOE, LIHEAP, and other leveraged funding received. The analysis resulted in four groups ranging in funding amounts from small to very large. These groups are presented from largest average amount of funding to smallest. One can see, for example, that the PY 2008 and PY 2010 groups with the smallest amount of funding were the largest groups, having 598 and 583 subgrantees in each group, respectively. Still, for the smallest programs, total funding increased by $1 million on average. The larger programs' funding levels increased by several

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

million dollars. The histogram bars also again indicate how DOE funding came to greatly overshadow leveraged funding in the Recovery Act period.

Table 12 presents the groups by program year by climate zone. This table shows the impact of the change in funding formula, as the relative percentage of the largest subgrantee-level programs shifted from the cold to the hot regions during the Recovery Act period. Last, the results presented in Table 13 confirm that leveraged funding was less important during the Recovery Act, at least to grantees. The percentage of grantees that indicated that leveraged funding was very important dropped from 55% in PY 2008 to 37% in PY 2010 and the percentage reporting that leveraged funding was not important at all increased by 8% during this period. Reports from the subgrantees in PY 2010 are similar to those from the grantees in PY 2010, except that it is clear that more subgrantees find leveraged funding to be of some importance.

Anecdotally and toward the beginning of the ARRA period, interactions between the national weatherization network and the evaluation team suggested that the blast of funding provided to the network by the Recovery Act would have negative impacts on leveraged funding and the relationships built up over the years between grantees/subgrantees and other weatherization funders. Thus, the evaluation team developed a hypothesis that the Recovery Act may ultimately have a negative impact on leveraged funding. The results presented in the rest of this subsection provide mixed support for this hypothesis.

To begin this discussion, please refer to Table 14. Both grantees and subgrantees were asked when their leveraging relationships began with the ten different leveraging sources and then how many years it took to establish the relationship. Many of the leveraging relationships date back many decades. This is especially the case with the important LIHEAP relationships with the grantees. The preponderance of the leveraging relationships involving both the grantees and subgrantees are much more recent, having evolved since the year 2000. One could hypothesize that those relationships might be at most risk due to the deluge of Recovery Act funding.

Most of the leveraging relationships appear to be hard won. For example, on average it took grantees and subgrantees over a decade to cement LIHEAP leveraged funding. It took the subgrantees on average 13 years to establish leveraging relationships with their utilities. It should be noted that it is possible that much time was needed for the overseeing Public Utility Commissions to act to direct their regulated utilities to fund low-income efficiency programs, and then more time for the subgrantees to convince utilities to work with them as opposed to commercial firms. Subgrantees also devoted a good deal of time to foster in-kind leveraging relationships.

With these thoughts in mind, 14 (27%) of grantees reported that leveraging relationships were damaged or lost during the Recovery Act period. Of these grantees, seven felt that relationships could be rebuilt, one said the relationship was lost, and six were uncertain if the relationship could be rebuilt after the Recovery Act. With respect to the subgrantees, 15.8% said that leveraging relationships were damaged or lost, 34.8% said that these relationships could be re-built, 12.7% said no, and 52.5% were uncertain. These results suggest that the Recovery Act had a negative impact on leveraging.

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Table 14. Leveraging Sources and History by Grantee and Subgrantees PY 2010

	Grantees			Subgrantees		
	% Received	Year First Received	Years to Achieve—Mean and (Std)	% Received	Year First Received	Years to Achieve—Mean and (Std)
LIHEAP	84%	1970s/1980s: 54% 1990s: 31% 2000+: 15%	11.0 (12.7)	1%	1970s/1980s: 39% 1990s: 18% 2000+: 43%	16.0 (11.2)
PVE and other federal programs	14%	1970s/1980s: 20% 1990s: 2000+: 80%		9%	1970s/1980s: 27% 1990s: 11% 2000+: 62%	10.5 (10.3)
State public benefit funds	10%	1970s/1980s: 1990s: 25% 2000+: 75%		6%	1970s/1980s: 8% 1990s: 29% 2000+: 63%	5.6 (4.9)
Other state programs	12%	1970s/1980s: 1990s: 25% 2000+: 75%		12%	1970s/1980s: 12% 1990s: 30% 2000+: 58%	5.8 (7.2)
Utilities	30%	1970s/1980s: 11% 1990s: 11% 2000+: 78%		31%	1970s/1980s: 19% 1990s: 23% 2000+: 58%	13.4 (11.6)
Program income	2%			20%*	1970s/1980s: 13% 1990s: 8% 2000+: 79%	9.3 (8.8)
In-kind	2%			—	1970s/1980s: 20% 1990s: 10% 2000+: 70%	12.2 (12.0)
Nonprofits	0%			—		
Third party	0%			—	1970s/1980s: - 1990s: - 2000+: 100%	1.1 (0.85)

*Includes program income, in-kind, nonprofits, and third party.

The results contained in Tables 15 and 16 begin to present a mixed picture. For example, Table 15 indicates that the percentage of grantees that sought leveraged funds but were unsuccessful increased from 20% in PY 2008 to 33% in PY 2010, though the percentage of grantees that did not seek leveraged funds in PY 2010 also increased by over 15%. Table 16 indicates that more grantees felt that ARRA had a negative impact on existing leveraging that a positive impact (26% to 20%) whereas the subgrantees generally believed the opposite (16% to 30%). It should also be noted that Table 11 indicates that total leveraged funding was higher in PY 2010 than in PY 2008. Thus, on balance, it is hard to argue that ARRA had a negative impact on leveraging, at least with respect to PY 2010.

What do the grantees and subgrantees think concerning the future of their leveraged funding? Here is a summary of their survey responses:

- Grantees: 22.5% said they forecast post-ARRA leveraged funds to be below PY 2008, 30.6% increased, 46.9% same level.
- Subgrantees: 34.5% said they forecast post-ARRA leveraged funds to be below PY 2008, 29.3% increase, 36.2% same level.

This is a mixed message in that in the short run, the positive and negative impacts of ARRA may cancel each other out. Somewhat surprisingly, the message for the long term is quite positive as:

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Table 15. Grantees and Subgrantees: Success at Acquiring Leveraged Funds (in %)

	Grantees 2008	Grantees 2010	Subgrantees 2008	Subgrantees 2010
Not successful	3.9	5.9	Na	4.3
Not very successful	13.7	17.6	Na	13.6
Successful	45.1	31.4	Na	48.3
Very successful	19.6	13.7	Na	11.1
State does not seek leveraged funds	13.7	29.4	Na	22.7

Table 16. Grantees and Subgrantees: Impact of ARRA on Existing Leveraging (in %)

	Grantees	Subgrantees
Extremely negative impact	0.0	1.0
Negative impact	26.0	15.2
No impact	54.0	54.0
Positive impact	16.0	24.7
Extremely positive impact	4.0	5.1

- Grantees: 12% see ARRA as unbeneficial for leveraging long term, 56% no long-term impact, 32% beneficial.
- Subgrantees: 14.2% see ARRA as unbeneficial for leveraging long term, 44.1% no long-term impact; 41.7% beneficial

Table 17 presents results for the most important source of leveraged funding, LIHEAP. As noted in Table 11, LIHEAP funds actually increased in PY 2010, which is reflected in the survey results below. However, a substantial number of grantees (most importantly) and subgrantees forecast decreases in LIHEAP post-ARRA and most attribute the expected decrease to ARRA. From Figure 7, one can see that LIHEAP is the most problematic leveraging source for the grantees going forward. All the others, and even the utilities, seem to present a stable picture. The leveraging picture for the subgrantees is different. While most leveraging sources contributed more funds to more subgrantees during ARRA, more subgrantees forecast declines than increases in leveraging across the board immediately post-ARRA.

As a final point, in the midst of evaluating a program that operated within a few years with an annual budget an order of magnitude different, there were no discussions during the ARRA period or even after the ARRA period concerning what level of funding WAP should receive to optimize its performance. Some survey results suggest that higher levels of funding produced some economies of scale. Higher levels of funding supported more training and technical assistance and provided more subgrantees with steadier work over the year, which, in turn, could also act to improve and retain expertise in the weatherization workforce. From a zero-based budgeting perspective, it now appears that the pre-ARRA budget and certainly the post-ARRA budget is close to a minimum level needed to maintain sound program operations, and maybe below if one chooses to argue that hot climate states require additional funding for their programs. This is not to argue that funding of $2 billion per year is optimal from a performance standpoint (Gilmour & Lewis, 2005; Young, 2003), a topic that has been addressed for other federal programs (e.g., welfare-to-work [Pavoni & Violante, 2007] and tax collection [Slemrod & Yitzhaki, 1987]). It is only argued that the national weatherization network has

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Table 17. LIHEAP Related Results from PY 2010 Surveys of Grantees and Subgrantees: Leveraging

		Grantees	Subgrantees
Change in LIHEAP funding during ARRA	Extremely negative	0% ($N = 41$)	1.3% ($N = 522$)
	Negative	12.2%	8.8%
	No change	65.9%	50.0%
	Positive	19.5%	25.9%
	Extremely positive	2.4%	14.0%
Forecast change in LIHEAP funding post-ARRA	Increase	7.3% ($N = 41$)	19.3% ($N = 519$)
	Stay the same	63.4%	34.7%
	Decrease	29.3%	46.1%
If forecast decrease, attributable to ARRA?	Yes	57.1% ($N = 14$)	70.5% ($N = 258$)
	No	42.9%	29.5%

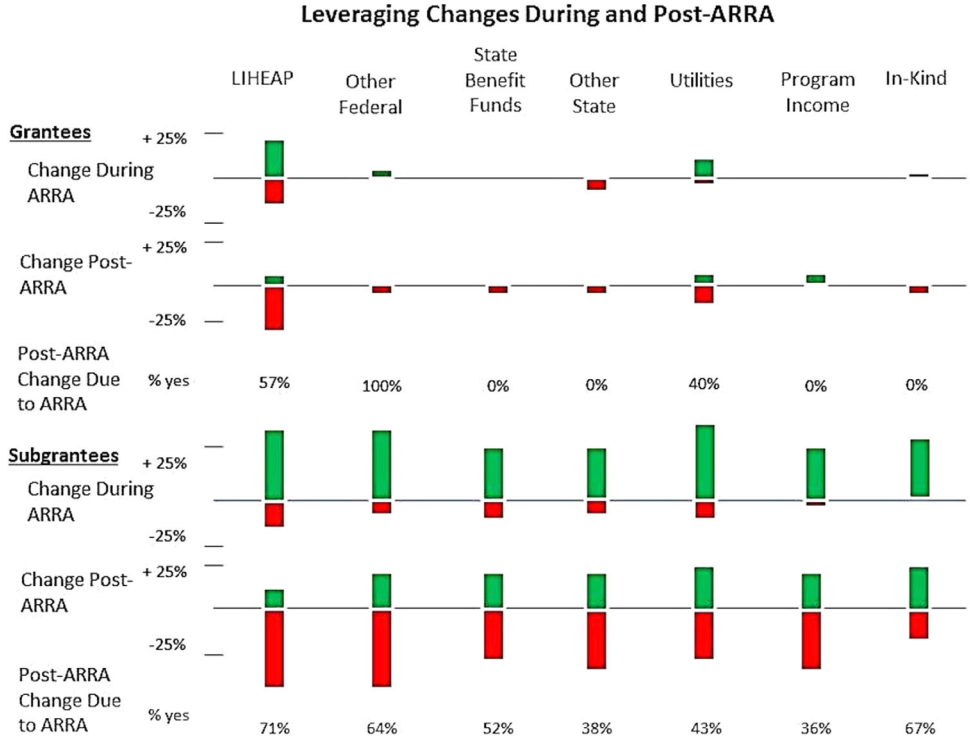

Figure 7. Leveraging Changes During and Post-ARRA by Leveraging Source

demonstrated its ability to function at a higher level of funding and expectations and that from a performance perspective, a funding level somewhere between historic levels and ARRA-period levels could improve overall program performance.

Summary

The results presented in this paper describe the experiences of the grantees and subgrantees of the national weatherization network during the Recovery Act period. A huge increase in DOE funding for weatherization led to an

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

unprecedented ramp up in production and employment. In the midst of the Recovery Act crucible, many grantees and subgrantees dealt with increased attention not only from their elected officials and fellow bureaucrats but also from the media. Despite all of the stresses involved with the Recovery Act and issues surrounding media coverage, 44% of grantees felt that the added attention to weatherization during the Recovery Act was beneficial, only 12% felt it was unbeneficial. Amongst subgrantees, 51% felt the attention was beneficial, and only 7% felt it was unbeneficial. Almost half of the subgrantees felt the public's support for weatherization increased; only 3% felt support decreased. These beliefs undoubtedly underlie the mostly positive outlook that the respondents have with respect to the future of their leveraged funding.

Thus, with respect to lessons learned, from the viewpoint of the national network and from a national policy perspective, it cannot be argued that allocating $5 billion of Recovery Act funding to WAP was a mistake. The program did ramp up. Jobs were created. Over a million homes were weatherized. Energy was saved and the program generated a wide range nonenergy benefits.

However, it can be argued that more appreciation was due to the program both before and after the Recovery Act period. For example, policy makers could have appreciated that the program was not shovel ready in the traditional sense that it had idle human resources available to deploy to substantially increase the number of homes it could weatherize. The program is actually composed of over 50 grantees and over 900 subgrantees. Over the years, the network developed a workforce and process for recruiting homes and workers to match expected funding levels. While the program could have increased its output somewhat in the short term without stress, it did not have the existing workforce to triple its output.

It can be argued that the complexity of weatherization was underappreciated by policy makers. It was assumed that weatherization capacity could be quickly increased because new workers could be employed quickly and almost immediately sent into the field. However, weatherization work does require training to do tasks such as air sealing, blowing insulation, and conducting energy audit. Workers need training on health and safety diagnostics and in many cases lead safe weatherization.

It can also be argued that the potential disruptive impact of the Recovery Act funding on the national weatherization network was also underappreciated. ARRA funding stressed the social fabric of the national weatherization network. In response to the vast increase in ARRA funding, political and media attention increased, organizational reporting was changed, new laws were passed, and hard-won leveraging relationships were put at risk. Media attention increased. All of these things were happening as the local programs were ramping up their workforces and production.

It appears that the negative impacts of imposing Davis-Bacon requirements on the national weatherization network were underappreciated or simply neglected. When a federal program and national social network are being asked to quickly ramp up activities in a potentially disruptive political environment, policy makers really ought not to place even more barriers in the program's path. In this light, having WAP adhere to the provisions to the Davis-Bacon Act during the Recovery

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Act was an unnecessary barrier that delayed production, increased reporting requirements, and increased administrative costs.

Based on these observations, an important lesson learned is that it could have been prudent to give the national weatherization network at least one extra year to deal with disruptions and training issues to expend the majority of its Recovery Act funds.

A final takeaway from the ARRA period is that the WAP could operate at a level of funding in the $2 billion range, way above its pre-ARRA appropriation of $236 million, which in turn is above its post-ARRA appropriations, which have yet to exceed $200 million. One question that needs to be addressed is this: setting aside political considerations, from a public administration perspective, what is the optimal size of WAP?

During the Recovery Act period, the program had more training and technical assistance funding to support the expansion of a network of national weatherization training centers, improved quality assurance, and ongoing program evaluation. For the most part, the local weatherization agencies had enough funding to ensure a steady stream of weatherization work year round, which is important for job retention and work quality. A larger program could support increased expenditures for health and safety and for the installation of renewable energy and advanced energy efficiency technologies. A larger budget allocation would allow more homes to be weatherized in the hot-humid and hot-dry climate zones. Increases in low-income weatherization training and the associated workforce could accelerate the market transformation for nonlow-income home retrofit. Weatherizing more homes would produce more nonenergy benefits, such as emissions reductions and health benefits. These and other considerations could be used construct an analysis of the optimal funding for WAP.

Notes

1 This research was conducted by Oak Ridge National Laboratory and supported by the Office of Weatherization and Intergovernmental Programs (OWIP), U.S. Department of Energy.
2 It should be noted that to meet the higher production goals, the number of subgrantees increased from PY 2008 to PY 2010. Among grantees, 35% reported adding new subgrantees. Also, no subgrantees were allowed to opt out of the ARRA funding and just offer normal weatherization funding services. Also, any subgrantees that discontinued providing DOE funding weatherization services were replaced by other subgrantees to ensure that every community in the country was eligible for the service.
3 Data contained in Figures 1–3 and Table 1 were drawn from DOE's Performance and Accountability for Grants in Energy (PAGE) system.
4 It should be noted that WAP had not been the subject of previous large-scale instances of "waste, fraud and abuse."
5 See http://en.wikipedia.org/wiki/Davis%E2%80%93Bacon_Act
6 Visits with over a dozen subgrantees supports this observation (see Tonn, Rose, et al., 2014).

About the Authors

Bruce Tonn, Ph.D., is President of Three[3], Inc., and a Professor in the Department of Political Science at the University of Tennessee, Knoxville. Dr. Tonn was ORNL's PI for the WAP evaluations.

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Beth Hawkins, MSLA, is the Vice President for Sustainability at Three[3], Inc. Ms. Hawkins was part of the WAP evaluation research team at ORNL.

Erin Rose, MSSW, is a researcher in the Environmental Sciences Division of ORNL and Vice President of Social Development at Three[3], Inc. Ms. Rose was also part of the WAP evaluation research team.

References

Aldy, J. (2011, December). *A preliminary review of the American Recovery Act's clean energy package. RWP11-048*. Cambridge, MA: Kennedy School of Government, Harvard University.

Arceneaux, K., Johnson, M., & Murphy, C. (2012). Polarized political communication, oppositional media hostility, and selective exposure. *Journal of Politics*, *74*(1), 174–186.

Barnidge, M., & Rojas, H. (2014). Hostile media perceptions, presumed media influence, and political talk: Expanding the corrective action hypothesis. *International Journal of Public Opinion Research*, *26*(2), 135–156.

Berger, J., Lenahan, T., & Carroll, D. (2014, September). *National Weatherization Assistance Program process field study: Findings from observations and interviews at 19 local agencies across the country.* ORNL/TM-2014/304. Oak Ridge, Tennessee: Oak Ridge National Laboratory.

Bilginsoy, C., & Phillips, P. (2000). Prevailing wage regulations and school construction costs: Evidence from British Columbia. *Journal of Education Finance*, *24* (Winter), 412–432.

Boukes, M., Boomgaarden, H., Moorman, M., & De Vreese, C. (2014). News with an attitude: Assessing the mechanisms underlying the effects of opinionated news. *Mass Communication and Society*, *17*(3), 354–378.

Brown, M., Berry, L., & Kinney, L. (1994, September). *Weatherization works: Final report of the national weatherization evaluation.* ORNL/CON-395. Oak Ridge, TN: Oak Ridge National Laboratory.

Carroll, D., Berger, J., Miller, C., & Driscoll, C. (2014, September). *National weatherization assistance program impact evaluation—Client satisfaction survey: WAP service delivery from the client's perspective*. ORNL/TM-2014/335. Oak Ridge, Tennessee: Oak Ridge National Laboratory.

DOE OIG. (2011, September 19). The Department of Energy's Weatherization Assistance Program under the American Recovery and Reinvestment Act in the state of Tennessee. OAS-RA-11-17. accessed September 05, 2014.

Duncan, K. (2015). The effect of federal Davis-Bacon and disadvantaged business enterprise regulations on highway maintenance costs. *Industrial & Labor Relations Review*, *68*(1), 212–237.

Dunn, S., Quigley, J., & Rosenthal, L. (2005). The effects of prevailing wage requirements on the cost of low-income housing. *Industrial & Labor Relations Review*, *59*(1), 141–157.

Fraundorf, M., Farrell, J., & Mason, R. (1984). The effect of the Davis-Bacon act on construction costs in rural areas. *Review of Economics and Statistics*, *66*(1), 142–146.

Friedman, G. H. (2011, November 2). Statement of Gregory H. Friedman, Inspector General, U.S. Department of Energy, Before the Subcommittee on Regulatory Affairs, Stimulus Oversight, and Government Spending, Committee on Oversight and Government Reform, U.S. House of Representatives.

Gilmour, J., & Lewis, D. (2005). Assessing performance budgeting at OMB: The influence of politics, performance, and program size. *Journal of Public Administration, Research and Theory*, *16*, 169–186.

Pavoni, N., & Violante, G. (2007). Optimal welfare-to-work programs. *Review of Economic Studies*, *74*, 283–318.

Posner, P., Abramson, A., Benjamin, L., Conlan, T., Edner, S., Regan, P., & Toepler, S. (2013, February). The implementation of the recovery act: Networks under stress. Arlington, VA: Centers on the Public Service, Department of Public and International Affairs, George Mason University.

Shollenberger, A. (2014, April 16). Testimony of Amy Shollenberger, Representing the weatherization assistance programs to Senate Health and Welfare Committee, State of Vermont. Retrieved from http://www2.leg.state.vt.us/CommitteeDocs/2014/Senate%20Health%20and%20Welfare/Budget%20Discussion/W~Amy%20Shollenberger~Weatherization%20Assistance%20Program%20Written%20Testimony~4-16-2014.pdf

Slemrod, J., & Yitzhaki, S. (1987). The optimal size of a tax collection agency. *Scandinavian Journal of Economics*, *89*(2), 183–192.

Ternes, M., Schweitzer, M., Tonn, B., Schmoyer, R., & Eisenberg, J. (2007, February). *National evaluation of the Department of Energy's Weatherization Assistance Program (WAP): Program year 2006 experimental plan*. ORNL/CON-498. Oak Ridge, TN: Oak Ridge National Laboratory.

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Tonn, B., Carroll, D., Pigg, S., Blasnik, M., Dalhoff, G., Berger, J., Rose, E., Hawkins, B., Eisenberg, J., Umar, F., Bensch, I., & Cowan, C. (2014, September). *Weatherization works—Summary of findings from the retrospective evaluation of the U.S. Department of Energy's Weatherization Assistance Program*. ORNL/TM-2014/338. Oak Ridge, Tennessee: Oak Ridge National Laboratory.

Tonn, B., Carroll, D., Rose, E., Hawkins, B., Pigg, S., Bausch, D., Dalhoff, G., Blasnik, M., Eisenberg, J., Cowan, C., & Conlon, B. (2015, March). *Weatherization works II—Summary of findings from the ARRA period evaluation of the U.S. Department of Energy's Weatherization Assistance Program*. ORNL/TM-2015/139. Oak Ridge, Tennessee: Oak Ridge National Laboratory.

Tonn, B., Rose, E., & Hawkins, B. (2014, September). *Weatherization beyond the numbers: Case studies of fifteen high-performing weatherization agencies—Conducted May 2011—July 2012*. ORNL/TM-2014/317. Oak Ridge, Tennessee: Oak Ridge National Laboratory.

Tonn, B., Rose, E., Schmoyer, R., Eisenberg, J., Ternes, M., Schweitzer, M., & Hendrick, T. (2011, December). *Evaluation of the national Weatherization Assistance Program during program years 2009–2011 (American Recovery Act and Reinvestment period). ORNL/TM-2011/87*. Oak Ridge, TN: Oak Ridge National Laboratory.

Tonn, B., Rose, E., & Hawkins, B. (2015, March). *Characterization of the Weatherization Assistance Program during the Recovery Act period. ORNL/TM-2014/593*. Oak Ridge, TN: Oak Ridge National Laboratory.

Vincent, J., & Monkkonen, P. (2010). The impact of state regulations on the cost of public school construction. *Journal of Education Finance*, *35*(4), 313–330.

Young, R. (2003, January). Performance-based budget systems. USC Institute for Public Service and Policy Research, Public Policy & Practice, 2 (2).

15411338, 2016, 2, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/ropr.12164 by The University Of Tennessee, Knoxville, Wiley Online Library on [02/11/2026]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License