

Executive Summary

People Working Cooperatively (PWC) is a non-profit organization that has been providing energy conservation, home repair, home maintenance, and mobility modification services to low-income, elderly, and disabled clients, since 1975. PWC seeks to help clients in: (1) reducing their energy consumption, (2) increasing their independence, and (3) remaining safely and comfortably in their homes.

In 2009, PWC contracted with Cadmus and the University of Cincinnati's Economics Center to conduct comprehensive evaluations of its services to Ohio families.

Overview of the Evaluation

Cadmus and the Economics Center, in order to evaluate the work of PWC and the effects of the program on low-income households, conducted: a billing and payment analysis on all 2009 clients receiving energy-conservation services; in-home interviews with 15 participants; a broader survey of 200 PWC participants from 2009; review of county assessor's data on 68 sold homes served by PWC in the last 10 years; an analysis of economic and environmental impacts; and interviews with PWC staff and volunteers.

Summary of Findings

Participant/Client Households

PWC services very vulnerable families in the Cincinnati metropolitan area. The average annual income of Ohio participants in 2009 was less than 30% of the area's median income, as shown in Figure 1. PWC serves a clientele facing not only poverty, but sometimes multiple other challenges.

Figure 1. Income Comparison

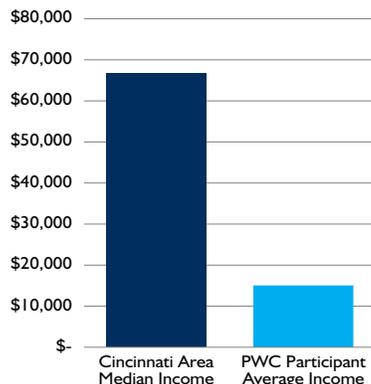
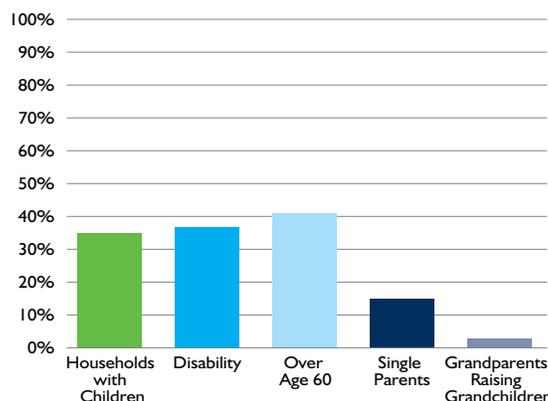


Figure 2. PWC Participant Demographics



PWC Operations

PWC delivers services under its "whole-house" approach. During the initial visit to a home, PWC staff members complete a broad assessment of a participant's needs by auditing energy consumption, identifying modifications for enhancing the resident's mobility (for senior and disabled clients), and identifying required home repairs.

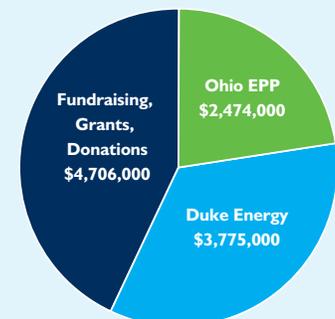
Many other agencies around the country provide energy conservation services to low-income households, however, most of these agencies do not offer as many services as are provided under PWC's whole-house approach. In particular, PWC offers:

- Extensive repair services (such as roof replacement);
- Modifications made to enhance residents' mobility (including ramps, bathroom modifications, and grab bars); and
- On-going service to customers for small repairs and seasonal clean-up/repair assistance.

PWC Funding

In 2009, PWC secured \$10 million to deliver services to 5,448 households in Ohio. These dollars came, in part, from the Ohio State's Electric Partnership Program, and Duke Energy to fund energy conservation services and energy-related home repairs. The remainder of PWC's funding came from grants and donations from a number of other organizations and individuals to help support PWC's repair work, volunteer services, and modifications for mobility services.

Figure 3. PWC Funding by Source



Participant Benefits

PWC helps its customers in a variety of ways. Many of PWC's clients would not be able to afford to undertake the repairs, modifications, or energy upgrades without substantial help. By providing the unique mix of services that PWC does, at no cost to participants, they not only make the services accessible, but they also impact many other areas of their customers' lives. The comprehensiveness of PWC's services is highlighted by the extensive benefits that the 2,747 participants receiving major services experience, which are shown in Table 2.

Table 2. Description of Benefits to Participants

PWC Services Impacts	Description of Benefit
Over \$800,000 saved on client utility bills.	Of the over 2,800 households receiving weatherization services, on average they saved \$284 annually on utility bills. Some households that received more comprehensive energy-efficiency retrofits saved more than \$400 annually on their utility bills.
Over \$20,000 saved on water and sewer bills.	PWC provides water-saving devices such as high-efficiency showerheads and faucet aerators for the kitchen and bathroom to help households reduce their water and sewer bills. PWC staff and volunteers also fix leaks and other plumbing issues for participating households.
Over 10% increase in average home sales price over 2009 values.	PWC provides on-going home repair assistance and major repairs, which help maintain a home's structural integrity and value. Property conditions play an important role in determining a home's value and PWC's improvements had a positive impact on home sale prices. Benefits accrued even to surrounding homes that did not receive any direct PWC services, which saw an average increase in sales price of nearly 2%.
Reductions in forced mobility help people remain in their homes.	PWC's mission is to help keep residents living safely and independently in their homes. All of the services PWC offers can help people maintain their homes and continue to live in them as they age or become disabled. Eighty-seven percent of respondents (equivalent to 2,390 of the 2,747 participants) receiving major services from PWC said PWC services helped them remain in their homes.
Helped customers maintain an independent living arrangement.	Seventeen percent of participants (equivalent to 406 of the 2,390) would have been forced to move without PWC services and would have been rendered homeless, had to move to subsidized housing, or been forced to transition in to a nursing home facility.
Reductions in forced mobility improve student test scores.	Students who moved often (described as "highly mobile") were less likely to score "proficient" on end-of-the-year standardized reading and math tests. Highly mobile students were found to be 15% less likely to be proficient in reading and 17% less so in math. PWC services that help reduce forced mobility for households with students also help maintain stronger test scores.
Increase in knowledge about how to save energy.	When PWC staff members were providing energy conservation services at the participant's home, they also gave energy-saving tips for households. 90% of participants (1,952 of the 2,169 receiving energy conservation services) recalled some of the energy saving tips they received, more than half of which said they were taking action to reduce their home energy use. Compared to other utilities that offer energy education, PWC customers showed a 12%-23% higher rate of recall.
Increased ability to move freely and safely inside—and in and out—of their homes.	Only a small portion (172 of 2,747) of our sample receiving major services had mobility modifications on their homes. Most all survey respondents (equivalent to 158 participants) indicated PWC services made their mobility "a lot better" than prior.
Improved health and increase in participant comfort in their homes.	PWC provides energy conservation measures and information that help keep people warm in the winter and cool in the summer, thus increasing occupant comfort. In addition to increased comfort, participants also reported improved health. Of the 44% of respondents (1,209 of 2,747) that said PWC services led to an improvement in their health, 15% (181 of 1,209) said that they needed to visit the doctor less as a result.
84% of survey respondents said that PWC services reduced their stress levels.	By completing maintenance tasks and helping in times of emergency (such as lack of heat or unusable bathrooms), PWC can reduce stress for participants. The organization also provides large repairs (such as roof replacements) for clients whose minimal income does not allow for home repairs.

Utility and Ratepayer Benefits

Saving energy does not just help the household that receives PWC services. By helping households save energy, PWC is also benefitting both the utilities and the ratepayers. Over half of PWC's \$10 million in 2009 funds came from utility programs or ratepayer funded conservation programs. Table 3 shows the benefits that utilities and ratepayers experience as a result of PWC services.

Table 3. Description of Benefits to Utilities and Ratepayers

PWC Services Impacts	Description of Benefit
Saved 2.7 Gigawatt hours of electricity and 401,959 therms of natural gas.	Enabling the utilities to reduce the generation, transmission, and distribution costs.
Over \$200,000 in additional payments made by customers on their Duke Energy accounts in 2010.	Improved payment patterns result in the utility sending fewer late notices and making fewer collection calls to customers.
\$147 decrease in energy assistance payments.	The billed amount declined for customers after receiving weatherization services from PWC. Energy assistance payments, provided through taxpayer dollars, decreased for customers served by PWC.
\$870,000 less in arrearages across all participants in 2010.	Lowering arrears (outstanding balances) lowers bad debt and reduces the ultimate rate impact and cost increase to ratepayers. After receiving services, PWC customers reduced their annual arrearage accrual.

Societal Benefits

The societal benefits that are a result of PWC's efforts are presented in Table 4.

Table 4. Description of Benefits to Society

PWC Services Impacts	Description of Benefit
Saves \$6,400 - \$8,600 per year in taxpayer money for each household that does not move to a subsidized housing arrangement.	Without PWC services, some participants would be forced to leave their homes. 3.5% of respondents surveyed (84 of 2,390) said they would have moved to subsidized or public housing, were it not for the help they received from PWC. By allowing individuals to remain in their own homes, PWC saves taxpayers more than \$6,400 annually for each household that might otherwise enter the Section 8 program. For households that might enter public housing were it not for PWC's efforts, \$8,600 of taxpayer money is saved annually.
Saves \$54,000 annually for each participant that does not need to move to a nursing home or assisted living facility.	Some respondents (13% or 310 of 2,390) indicated that without PWC services, they would have had to move to a nursing home or assisted living facility. PWC, by fixing homes and making them more accessible, saves participants and tax payer programs these expenses.
Creation of 353 net job-years in the local economy over the next 15 years.	The \$10.9 million in spending by PWC in 2009 generated a net \$3.6 million in additional economic activity in the local area, for a total economic impact of \$14.5 million. Of this, over \$9.8 million was in the form of local household earnings. Additionally, PWC's spending, along with increased spending by households that realize energy savings, created an additional 353 net job-years over the next 15 years in the local economy.
Reduced CO ₂ emissions by 2,103 tons, the equivalent of taking 372 cars off the road for one year.	The reduction in natural gas and electricity consumption between the pre- and the post-program periods decreased the overall emissions released into the atmosphere. The emissions generated through electricity production in the Ohio area are primarily carbon dioxide. However, PWC services also helped to reduce other greenhouse gases: Methane (50 lbs); Nitrous Oxide (69 lbs); Nitrogen Oxide (3,630 lbs); and Sulfur Dioxide (16,327 lbs).
Reduction in neighborhood blight as a result of abandoned homes.	The City of Cincinnati has struggled with a number of abandoned and blighted properties for several years. This leads to reduced value of neighboring properties; increased insurance costs for neighboring property-owners; decreased government revenue; and increased crime. Many homes would have been uninhabitable for their residents or vacated by their owners had PWC not provided services.