

COMMUNITY PARTNERSHIPS FOR ENERGY CONSERVATION

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ABSTRACT

Community based energy conservation projects are the new imperative for the 1980's due to the cutbacks in funding for energy conservation at the federal level. Establishment of public/private partnerships at the local level can provide an effective means to provide weatherization and energy conservation services to low income clients in light of declining public dollars. This paper was prepared for the 1986 Summer Study on an effective program that was developed in Kansas City, Missouri using private contributions and volunteers working in cooperation with community based not-for-profit organizations.

The Metropolitan Energy Information Center, a community based energy services center developed and coordinated a local weatherization program, that included local block clubs, a community based weatherization agency, the local Jaycee organization, a community based neighborhood support agency and a local building materials supplier. Funds were also provided by a local fundraising effort called Project Warmth.

The program weatherized 65 houses over three weekends using volunteer labor to complete all of the infiltration work. Project Warmth provided an average of \$500 per house for attic insulation, ventilation and furnace tune ups. The other materials were donated by Payless Cashways, Inc..

Initial study of the impact of the program indicates an average savings of 9.3% for the homes studied. For those experiencing decreases in energy use, the drop was 17%. This compares favorably with the local DOE weatherization program that investes nearly \$1,100 in homes and also reports a 17% reduction in energy use.

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INTRODUCTION

The 1980's have seen a marked decline in interest in energy conservation and this has resulted in marked decreases in federal support for conservation programs. The budget submitted by President Reagan for FY87 provided no funds for the conservation programs of the Department of Energy. The FY86 budget of \$200 million was reduced to \$0 for FY87. It was and is, based on testimony before Congress, the intent of the administration to use the Exxon Oil Overcharge funds as a replacement for federal support of conservation. The administration did recommend a continuation of the Low Income Energy Assistance Program (LIEAP) at the FY86 level of \$2.1 billion, although the congressional recommendation is to reduce the funding substantially. The Exxon funds, \$2.1 billion nationwide, are now in the hands of the individual states. How they will be used, within the five allowable program areas, is up to each of the states.

One means to enhance the value of the Exxon funds and expand federal energy conservation efforts, is the development of public/private partnerships, to leverage the Exxon dollars with local funds to create programs that provide more than the Exxon funds alone can support. Public/private partnerships is one of the buzz-word phrases of the 80's. The Department of Energy started investigating community based partnerships as a means to replace declining federal support in 1985. Funded programs have included efforts to create for profit weatherization programs in local Community Action Agencies as a means to develop local support for conservation efforts. DOE also provided a total of \$1 million to the New York Community Trust, The St. Paul Community Foundation and the Cleveland Community Foundation to develop community based conservation programs as a demonstration for other areas of the country. They also discussed the possibility of providing funds to state energy offices to create privately funded weatherization programs,

with the caveat that the program needed to provide services at the level of the current Weatherization Assistance Program.

Although there is substantial interest from the Department of Energy to replace federally funded program with privately funded community based efforts, this appears to be unrealistic. The need for conservation far exceeds the ability of the local community, particularly in the area of low income housing. A recent report of the National Task Force on Low-Income Energy Utilization and Conservation adopted by the National Association for State Community Services Programs on April 25, 1986, indicated that only 11% of federally eligible single family units have received weatherization services. Nearly 11 million units still need weatherization.

In Kansas City, Missouri, a local effort has been developed to provide weatherization services to low income families. Although only 65 homes were completed in the fall of 1985, this effort has provided the impetus for a continuing weatherization program supported by community donations using volunteers to provide the services. This paper will describe the program and provide some recommendation for other community based conservation efforts.

BACKGROUND

In 1983, during a particularly severe winter, when natural gas prices were inching toward \$6 per MCF, a local effort, Project Warmth, was initiated to raise private funds for helping low income families pay their utility bills. A telethon was held on Thanksgiving eve, and hundreds of thousands of dollars were raised. The effort was repeated in 1984 with similar success. The one big difference was that people were allowed to designate, if they chose to, how the funds would be used. Over \$30 thousand was designated for weatherization activities. The Metropolitan Energy Information Center, a community based not-for-profit energy services center was asked to develop and implement a weatherization program for the city's most needy clients using the Project Warmth funds.

The Center developed a program model incorporating the expertise and interest of other community based groups that would leverage the Project Warmth funds many times over. The

Neighborhood Weatherization Project was the result of these cooperative efforts. The basic program model was a block by block approach to meeting low income weatherization needs.

The Energy Center was the coordinator for the program and the various community based groups provided their expertise in managing various portions of the project. The different partners, and the services they provided included:

1. Kansas City Neighborhood Alliance - The Alliance provides training and technical assistance to neighborhood groups as well as providing funding for many community based groups and activities. Their excellent contacts with neighborhood groups and block clubs made them the ideal organization to select the weatherization model blocks. They also provided assistance to the individual blocks to organize the residents for the project and to ensure its eventual success.

2. Payless Cashways, Inc. - This building materials corporation takes a major interest in the improvement of low income housing. They became very interested in the project due to the audience to be served and the volunteer nature of the service. They agreed to provide all of the necessary caulk, weatherstripping, water heater insulation, pipe insulation and band joist insulation for the project.

3. Della C. Lamb Neighborhood House - This community based agency provides low income weatherization services as a contractor for the federally funded weatherization program. They agreed to provide attic insulation and ventilation, furnace tune-ups and follow up infiltration services for each of the homes at a very low cost. They also did pre-program audits and developed a work order for each of the homes in the program.

4. Greater Kansas City Jaycees - The Jaycees are a volunteer organization that provides many community services throughout the year. They took on the Neighborhood Weatherization Project, which they called "Infiltrate a

House", as their community service project of the year. They recruited nearly 200 volunteers who provided the labor to install all of the caulking, weatherstripping and miscellaneous insulation.

5. Neighborhood Groups/Block Clubs - The three identified blocks all organized their residents to provide assistance and support to the effort. This included planning and holding an introductory meeting and conservation training session, identifying members who would assist the volunteers and providing food and refreshments for the volunteers.

6. Metropolitan Energy Information Center - The Center provided overall program coordination, administration and evaluation of the project. It also provided energy conservation training to all of the homeowners and renters participating in the project. Through the identified partners, the work of the Center was spread among all of the participating groups, who really made the program work.

The actual project grew out of the cooperation of the participating agencies. Specifically, the Kansas City Neighborhood Alliance provided the Energy Center with 6 possible blocks, which, based on visits to each block, resulted in 3 blocks with a total of 65 homes being selected. Della C. Lamb inspected each home to determine their needs and an order was placed with Payless Cashways to obtain the needed materials. Della C. Lamb also lined up crews to work on the insulation portion of the program and selected a furnace company to inspect and tune up all of the furnaces. The Jaycees, at the same time, undertook a massive effort to obtain sufficient volunteers to complete all of the infiltration work on the homes. The Energy Center developed an application form for each of the participants, scheduled introductory meetings and low and no cost conservation workshops on each of the blocks and acted as the liaison between the other organizations. The result was that on three successive Saturdays in October and November 1985, the 65 homes were weatherized.

WEATHERIZATION

Due to the nature of the community based partnership, it was determined that the easiest way to complete the homes was to use a formula approach to the weatherization. After a number of meetings of the partners and discussion with other community energy conservation experts, a list of recommended items were identified to be completed on each home. These included the items that had proven to be most cost effective in the conservation studies the partners were familiar with. They included basic low cost conservation, including caulking and weatherstripping, water heater tank insulation, water pipe insulation, band joist insulation, attic insulation and furnace tune ups.

A simple audit form was developed for the Della C. Lamb staff members to use when inspecting a home. This form listed all of the infiltration items that would be completed and provided space for identifying the type needed, the placement in the home and any problems that might be encountered during installation. It also provided for an attic insulation analysis, the amount needed to bring it up to R-30, the recommended minimum for Kansas City. Attic ventilation was also figured in on the form as was a space for the amount and placement of band joist insulation. Finally, it was indicated on the form if a water heater wrap was both necessary and able to be installed. This inspection form also served as an order form for each home and a job sheet for the volunteers completing the work.

All activities were aimed at the abilities of the volunteers who would complete the work. Clear silconized latex caulk was used on each home as was jamb-up weatherstripping to ensure ease of application. Pre-cut water heater wraps were obtained to reduce the time necessary to prepare and install them. Foam pipe wrap was used due to its ease of installation. The attic insulation was blown cellulose installed by professional crews, who also installed the attic vents. The furnace work included cleaning, filter replacement, a general tune-up and any necessary minor repairs identified during the inspection.

The Jaycees identified a number of team leaders, people who would coordinate the work on each of the homes. These team leaders received training from the staff of Della C. Lamb and the Energy Center on the application of the materials that the volunteers would install. This was

provided in two evening sessions that showed them how to caulk, install the weatherstripping, wrap the hot water heater, insulate the pipes and install the band joist insulation. The purpose of the program, to reduce utility bills, was also emphasized and any questions about the actual implementation were answered.

Based on the work orders for each of the houses, materials were ordered from Payless Cashways, and picked up during the week before the first Saturday. The materials were delivered to the site by Della C. Lamb staff members. When the volunteers arrived, they were divided up into teams and each team received the job order for the house and they used that to pick up the materials needed for each home. Besides the trained team leaders, staff of the Energy Center and Della C. Lamb were on site, going from house to house to assist the crews and deal with any problems. By starting early in the morning, all of the houses on the block were completed by the middle of the afternoon.

The insulation work was completed in the weeks surrounding the Saturday volunteer efforts, as were the furnace tune-ups. Della C. Lamb staff also went back to the homes to complete any infiltration work that was not completed by the Jaycee volunteers. A final inspection, using the job sheets as a guide, was completed by Energy Center staff. This ensured that all of the work was completed to the specifications, that the resident understood everything that was done and that any problems were resolved.

The block club members assisted the volunteers in some cases where they were able to. They also provided refreshments for the Jaycees and generally helped to promote the day. In each of the three cases, the street was blocked off during the event and it took on the characteristics of a block party. On the final Saturday, a press conference was held to celebrate the project and to acknowledge all of the partners, particularly the contribution of the Jaycee volunteers. Proclamations from the Governor and Mayor were read, a presentation was made by Payless Cashways to the Mayor (a huge gold caulking gun) and the contribution of all of the partners was acknowledged.

FINDINGS

A simple analysis of the gas consumption of the homes was undertaken by the Energy Center. Permission was obtained

from all of the homeowners to look at their gas bills for a two year period. Based on billing cycles, the gas useage was examined for the period of approximately October 15 to March 15 for the 1984-85 heating season and the 1985-86 heating season. With climatic data provided by the National Weather Service, it was determined how many heating degree days occurred during the two time periods that were examined. The following general information was found for 54 homes that complete useage information could be obtained of the 65 homes completed:

<u>Year</u>	<u>Deg. Days</u>	<u>Av. MCF</u>	<u>MCF/DD</u>
1984-85	4622.6 DD	138.68 MCF	.030
1985-86	4566.6 DD	127.13 MCF	.028

The general finding, unadjusted for any other factors, found that general energy use declined by an average of 9.3% for all of the homes included in the study. 30 of the 54 homes experienced a decline in natural gas useage at an average of 17%. 19 of the 54 homes experienced an increase in natural gas useage at an average of 15%. 5 of the 54 homes experienced no change in useage. Since there was no control group, it is difficult to provide an in-depth analysis of the results to compare their useage to groups that received no services. It is interesting to note, however, that the City of Kansas City Missouri's Low Income Weatherization Program funded with DOE WAP monies reported an average 17% reduction in utility useage at an average \$1,100 investment during the same time period. It appears that in 56% of the homes, the 30 that used less natural gas, the percentage of reduction is the same as the City's experience, lending credance to our findings.

A simple payback analysis on the homes completed finds that the payback for the improvements is 7.7 years. This is based on 138.68MCF useage reduced 9.3% or 12.9MCF per year. At a cost of \$5 per MCF this represents an annual savings of \$64.50. Dividing this into an average investment of \$500, not counting volunteer labor, the payback is 7.7 years. If we look at the 30 homes that reduced consumption, we find the payback decreases to 4.2 years. [$\$500 / (138.68\text{MCF} \times 17\% \times \$5 \text{ per MCF})$] Further analysis, particularly comparison with other similar groups, could lend more information as to the value of the effort. But it appears that the weatherization was very beneficial for 30 homes.

RECOMMENDATIONS

Volunteer efforts and public/private partnerships are critical components of energy conservation efforts for the 80's and beyond. As declining federal support cuts off many of the traditional avenues for support of innovative efforts to conserve energy, particularly for low income families, it becomes even more critical for local areas to develop alternative delivery mechanisms. The Energy Center is one of the last not-for-profit community based energy service centers in major cities in the country. It has been fortunate to be able to identify community partners to work in cooperation with government agencies and programs. There needs to be one agency to coordinate efforts such as this one, and unfortunately, many cities are lacking such a resource. The typical case is that the current conservation program staff are short of time and resources to develop such a program.

In any case, the Energy Center did learn some lessons from this effort, and makes the following recommendations regarding any efforts to duplicate this project.

1. Clearly identify the program goals and the resources available in the community. We did not attempt to weatherize the entire city with this program, but we were able to identify resources, such as the Jaycees, who could make the program happen.

2. Have plenty of technical people available to assist any volunteers to complete the weatherization work.

3. Use a formula approach to weatherization. Although it can be argued that a specific energy audit on each home would improve the results, the cost in time and labor far exceeds the results. The comparison with the City's weatherization program seems to bear this out.

4. Provide adequate time to encourage the volunteers and coordinate the effort. Even though it rained on two of the three Saturdays, we still had excellent turnouts and participation by block club residents.

5. Provide for post work inspections to ensure quality work, explain the improvements to the clients and to correct any problems.

6. Include educational activities for the clients, either group workshops or one-on-one sessions to ensure proper use of the materials and provide information on no cost conservation measures such as turning down the thermostat or closing off unused rooms.

CONCLUSION

The Energy Center was very pleased with the results of the program both in terms of the cooperative effort that made the program work and the energy savings of the individual home owners. We believe that with further experience, further energy savings could be realized for the individual homes, although there will always be a limit when using volunteers.

The effort in Kansas City will continue, based in part on the success of this project. Project Warmth allocated enough money to complete 100 homes this year. The program now installs plastic interior removable storm windows, weatherstripping, water heater insulation, outlet gaskets and interior caulking. To date, 40 homes have been completed at an average cost of about \$50. Once again volunteers complete the weatherization work. Some significant changes have been made. Clients are referred by utility assistance agencies who are then screened for need. Volunteer auditors do a preliminary survey of the home and then the weatherization volunteers simply come to the Energy Center to pick up materials to complete the home. Groups as diverse as county government workers, led by the county executive, Kansas City Power and Light employees, high school students and church members have all completed homes.

We believe it is imperative for public/private efforts to continue. With limited government support for conservation, and due to the fact that low income people are continuing to pay a substantial portion of their income for energy costs, community based efforts seem to be a very important part of future conservation activities. Even with the Exxon and other oil overcharge funds, the need far exceeds the projected resources that might be available. Creating community wide efforts provides an excellent solution.