

PROFILE OF A NONPARTICIPANT

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ABSTRACT

The Hood River Conservation Project is a residential weatherization program, designed to analyze the conservation retrofit potential of an entire community. High levels of participation were achieved by this special weatherization program that provided all cost-effective measures virtually free to participants. This study identifies and profiles those individuals who decided against participating in the Hood River Conservation Project, even when economic barriers were virtually absent and the community was mobilized to support weatherization.

Three types of nonparticipants are categorized: (1) Customers who had no contact with the project; (2) Customers who contacted the project, yet refused the home energy audit; and (3) Customers who received a home energy audit but refused weatherization. All electric homes were eligible for project weatherization.

In order to develop a profile on these individuals a telephone survey was administered to all eligible nonparticipants in the study area. Demographics, attitudinal characteristics, and kilowatt-hour energy data of the nonparticipants were analyzed. A direct comparison was then made between nonparticipants and participants. This profile of Hood River nonparticipants will enable conservation planners to develop a better understanding of what motivates individuals not to participate in weatherization programs and to use this information in future program planning and research.

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INTRODUCTION

This study examines those individuals who decide, for one reason or another, against participating in the Hood River Conservation Project (hereinafter referred to as the "project"). Even though there were relatively few nonparticipants (approximately 11%), we were able to gather sufficient data which should provide guidance to program planners on future weatherization projects.

The primary objectives of this study are:

1. To compare demographic and household characteristics of nonparticipants with participants;
2. To compare attitudinal characteristics of nonparticipants with participants;
3. To examine and compare kilowatt usage patterns of nonparticipants and participants; and
4. Most importantly, to provide program planners with information to facilitate greater participation in conservation programs.

BACKGROUND

The project is a residential weatherization program designed to analyze the conservation retrofit potential of an entire community. This project was unusual in that most economic barriers were absent since cost-effective measures were provided virtually free for all electrically heated households in the study area.

The project, which is the result of the collaborative contributions of several organizations involved in conservation and electrical energy planning, began in May 1983. The weatherization portion of the project was initiated in February 1984. Research studies were undertaken at the beginning of the project and are planned to continue through April 1987.

A high level of participation was obtained on the project¹. As a result, 85% of all qualifying electrically heated homes in Hood River were weatherized (n=2,987).

METHODOLOGY

Data was obtained through a survey administered to nonparticipants. A 10-minute telephone survey was undertaken by a marketing research firm based in Portland, Oregon. The questionnaire covered the following areas: Demographic characteristics, attitudinal characteristics, housing characteristics, and reasons for nonparticipation.

For purposes of the survey, nonparticipants were categorized into three groups for the survey: (1) customers who had no contact with the project (n=123); (2) customers who contacted the project, yet refused a home energy audit (n=29); and (3) customers who received a home energy audit but refused weatherization (n=28).

The sample frame was obtained from the project's database and billing data. All eligible homes which did not participate in the project were included in this sample². The sample frame consisted of 344 nonparticipants. A response rate of 62% was achieved (179 households)³.

In addition to the nonparticipant survey data, three other databases were used in this study. Demographic data on participants was obtained from a subset of the project's database. The subset includes only those homes which were weatherized as a result of the project (n=2989).

The second database, used for its attitudinal information, was obtained from baseline survey data on the project's study area. The Community Baseline Survey was developed and administered to provide measurement of conservation awareness for Hood River and three comparison groups⁴. Attitudinal information for those households weatherized as a result of the project was extracted from the survey's database⁵. The Baseline Survey was administered by mail in Hood River, Oregon, in January and February of 1983 by a state university research center.

The third database, used for its tabulation of monthly kilowatt usage (KWH) for Hood River, was obtained from Pacific Power & Light Company monthly billing data which encompassed both participant and nonparticipant households, for the years of 1980 through October, 1985⁶. All KWH data was weather normalized. Z Tests were conducted to test for differences among participants and nonparticipants average consumption. KWH data was weather normalized to 30 year average heating degree days using NOAA data obtained from the OSU Experiment Station in Hood River. Weather adjustment for this analysis was calculated using the following formula:

Weather Adjusted KWH=

$$(0.401)(\text{monthly KWH}) \left\{ \frac{\text{actual base } 65^{\circ}\text{F HDD}}{\text{30-year average base } 65^{\circ}\text{F HDD}} \right\} + (0.599)(\text{monthly KWH})$$

Where: HDD = heating degree days

0.401= percentage of monthly bill due to space heat in electrically heated homes.

For this study, the nonparticipants will be categorized into 2 groups. Group 1 (no contact) consists of those households who never had contact with the Project. Group 2 (refusals) consists of those households who refused an energy audit or weatherization. The distinction between the two nonparticipant groups is contact with the project.

RESULTS

Reasons For Nonparticipation

When respondents were asked (unaided) why they did not participate in the Hood River Conservation Project (Nonparticipant Study), four major reasons for nonparticipation prevailed. Respondents overwhelmingly responded that their homes did not need weatherization (44%). Other respondents felt they would not qualify for the project (14%). Another segment of the respondents reported the reason for nonparticipation was that they were never contacted by the project (13%). Missing the project's deadlines was another reason given for nonparticipation (10%). (See Table I).

The two nonparticipation groups, Group 1 (no contact) and Group 2 (refusals) had similar distributions.

Interestingly, although these households did not participate, 57% of those who made comments about the project reported that it was a "worthwhile" program. Other respondents, however, made comments focussing on poor workmanship, problems with others incurring the cost of the project, unfair qualifiers, and never having been contacted by the project.

Demographics and Housing Characteristics

In this section, analysis is based on nonparticipant data obtained from the Nonparticipant Survey, and participant data extracted from the project's database.

Education. Nonparticipants tend to be better educated than participants. Almost half of the nonparticipants reported some college education. The lesser degree of education among participants is exemplified by the large segment of households where the respondent lacked even a high school diploma (23%). (See Table II).

Respondents from both nonparticipant groups, Group 1 (no contact) and Group 2 (refusals) reported similar levels of education. No significant differences were noted with respect to education levels for spouses or housemates of both participants and nonparticipants.

Income. Nonparticipants tended to have higher income levels in comparison to participants. Forty-two percent of the nonparticipants reported household incomes of greater than \$30,000, which is almost double the percentage of participants within this income category. No significant differences were noted between the two nonparticipant groups. (See Table III).

Household Fuel Type. Nonparticipants have an unusually high wood usage rate. One half of the survey respondents reported wood as the primary fuel used to heat their homes. Another 31% of the households used wood as an additional source of heat. Although all qualified nonparticipants have electric heating equipment installed in their homes, only 43% use electricity as their primary fuel type.

Participants have a lower wood usage rate than nonparticipants. Wood was used as a primary fuel in 37% of the participant homes. An additional 35% of the homes use wood as an additional fuel source. The percentage of participant households using electricity as a primary fuel was higher than those households using wood (47%). (See Tables IV,V).

Group 1 nonparticipants (no contact) use more wood and less electricity in their homes than the Group 2 nonparticipants (refusals).

Own/Rent. An unusually high percentage of home ownership is prevalent among nonparticipants. Close to 90% of the survey respondents reported owning or buying their residences. In comparison, only 65% of the participants own their homes. There tends to be differences between the two nonparticipant groups; Group 1 (no contact) reported lower levels of ownership (85%) than Group 2 (refusals) (94%). (See Table VI).

Years Lived In Home. For this variable (the number of years lived in the home), participants and nonparticipants show relatively similar distributions. Approximately 50% of the households in both groups have lived in their current residences for six years or less. (See Table VII).

Group 1 nonparticipants (no contact) tend to have lived in their homes for shorter time periods than group 2 (refusals).

Type of dwelling. A high percentage of nonparticipants live in single family dwellings (80%). Although the majority of the participant households are also single family dwellings, the percentage is lower than nonparticipant households (63%). (See Table VIII).

There are differences between the two nonparticipant groups. Multi-family dwellings are more prevalent among Group 1 (no contact) than group 2 (refusals). The percentages are 25% and 9% respectively.

Year home built. Nonparticipant and participant households were built around the same time periods. The noted exception revealed was that a greater percentage of nonparticipants live in homes built after 1979 (23% versus 10%)⁷. The two nonparticipant groups have similar distributions. (See Table IX).

ATTITUDES

The attitudinal data used in this analysis was obtained from the Nonparticipant Survey (nonparticipant data), and the Baseline Survey (participant data).

"I've Done All I Can To Cut Down On Energy Use". Differences in distribution were significant between the two surveys. Nonparticipant respondents overwhelmingly agreed that they have done all they could do to cut down on energy use (73%). Participants, however did not share the same opinion. Only 29% of the respondents agreed to the above statement. (See Table X).

Nonparticipants who shared this view tended to be in the upper income brackets and better educated than those who disagreed. Also, most of the nonparticipant home renters agreed to that they have done all they could to cut down their energy costs.

There were only slight differences in the level of agreement between the two nonparticipant groups. Group 1 (no contact) respondents reported higher levels of agreement than Group 2 (refusals).

"American Homeowners Have Little Choice But To Take Steps In Home Energy Conservation". Interestingly, most nonparticipants reported that they agreed that steps needed to be taken toward home energy conservation (74%). Participants were also in high agreement with this statement (81%). No significant differences appeared between the two nonparticipant groups. Nonparticipants who were in agreement with this statement tended to be better educated and have higher income levels than those who disagreed. (See Table XI).

"I Can't Do Anything About Rising Energy Costs". Approximately 50% of the participants and nonparticipants were in agreement with above statement. However, there tends to be more indecision among participants, which is reflected by the 15% that reported they could neither agree nor disagree with the statement. (See Table XII).

A greater percentage of Group 1 nonparticipants (no contact) were in agreement to this statement than group 2 (refusals), 57% vs. 47% respectively.

Those nonparticipant respondents who were in the lower income brackets and those respondents with lower levels of education were more likely to agree with the above statement than those respondents in the upper income and higher educated categories.

"Energy conservation is a fad that people are making money on". Both nonparticipants and participants disagreed with the statement that energy conservation is a fad that people are making money on (72% and 62% respectively). (See Table XIII).

Group 2 (refusals) nonparticipants were in higher agreement with the above statement than group 1 (no contacts), 25% versus 16% respectively.

Nonparticipants who reported lower income levels and lower levels of education were more likely to agree with this statement than those respondents in the higher income and education categories.

"Conserving energy saves money". Most nonparticipant respondents reported that they agree with the statement that conserving energy saves money (90%). Interestingly, a greater percentage of nonparticipants were in agreement than participants (68%). The two nonparticipant groups had similar levels of distribution. (See Table XIV).

"Wasting energy is a thing of the past". One half of the nonparticipants reported that they agree that wasting energy is a thing of the past. No significant differences between the two nonparticipants groups were apparent. (See Table XV).

KWH Analysis

Data used for participant and nonparticipant KWH consumption was obtained from PP&L customer billing data. For the purpose of this analysis both nonparticipant groups are combined into one group.

Participant KWH data show a slightly higher level of electricity consumption in 1980 and 1981 in comparison with nonparticipants (See Figure I). In 1982, participants' consumption rate was significantly higher ($Z=2.74$) than nonparticipants. Prior to the project (1983), there was a negative trend in energy consumption for both groups.

Participant consumption during program weatherization remained higher than nonparticipant consumption. However the participant KWH usage declined at a faster rate, whereby in 1985 usage for both groups became statistically equal ($Z=1.36$).

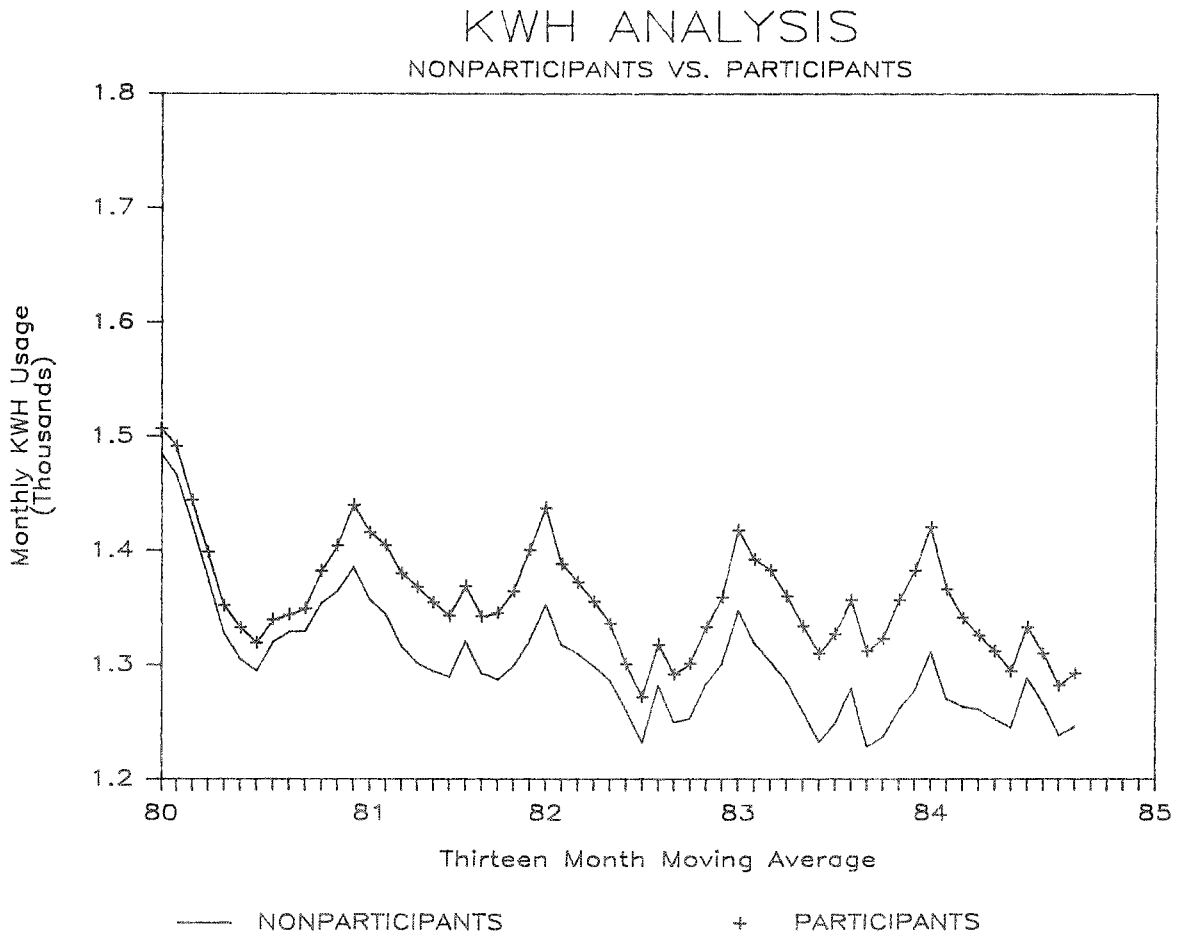


Figure 1. KWH consumption 1980-1985.

CONCLUSION

Previous research in the area of weatherization suggests that household income and education are correlated with program participation. The higher the household income, the greater the likelihood one will participate. The more educated household breadwinners are the higher the probability of program participation. Only in cases where the household's income is at extremely high levels does the relationship between income and weatherization participation not hold true.

The findings of this study contradict the relationship between demographics and participation found in previous research. Nonparticipants tend to be more educated and in higher income brackets than participants. There can be numerous reasons for these divergent findings. For one, virtually all cost barriers were absent from the project. This most likely increased project participation of lower income households. In many weatherization programs lower income households are not able to participate due to cost barriers. Also, it should be noted that lower income households tend to spend a greater percentage of their disposable income on energy costs in comparison to higher income households⁸. The prospect of spending even more money to weatherize their homes may be an added barrier limiting participation.

Based on the knowledge gained from the Hood River Project, lower income participation can be dramatically increased by removing the cost barriers and a community approach.

The profile of the nonparticipant and his/her reason for nonparticipation developed from this analysis offers the project planner guidance for future weatherization efforts. In contrast with the participants, the foregoing research reveals nonparticipants as homeowners who are in the higher income brackets and who have obtained high levels of education. These homeowners reside in single family dwellings and likely to burn wood as a source of space heat.

Respondents stated four major reasons for nonparticipation: (1) homes did not need weatherization; (2) their home would not qualify; (3) they were never contacted by the project; and (4) they missed the project deadline. Moreover, nonparticipants generally stated they believed they had already done all that could be done to reduce energy usage. To overcome these obstacles confronting more intensive participation, the authors recommend greater marketing efforts emphasizing the effectiveness and need for home weatherization. One strategy that could be utilized is to increase the customer knowledge about weatherization and its benefits through advertising and promotion. Another recommendation is to improve the methods used in contacting prospective participants in order to supply them with appropriate information regarding project qualifications and deadlines.

Marketing profiles are important in the design of residential energy conservation programs. Profiles enable the program planner to increase participation rates by highlighting those households needing increased marketing efforts. Based on the findings of this study greater emphasis needs to be placed on reaching highly educated, upper income, wood heat consumers who are satisfied with their home's level of weatherization.

If greater emphasis is placed on identifying and profiling nonparticipants and appropriate marketing strategies are developed and implemented for this group, energy program planners should detect noticeable participation increases in future weatherization programs.

Table I. Reasons For Nonparticipation

Why was home not weatherized by HRCP	Nonparticipants	
	n	%
Did Not Need It	39	.44
Missed Deadline	13	.10
Not Qualify	18	.14
No Contact	17	.13
Other	26	.19

Table II. Education

Education	Nonparticipants		Participants	
	n	%	n	%
Elementary	12	.07	254	.10
High School	15	.08	308	.13
High School Gd.	57	.32	743	.30
Trade school	12	.07	195	.08
College	38	.21	467	.19
College Degree	45	.25	477	.20

Table III. Household Income.

Income	Nonparticipants		Participants	
	n	%	n	%
Under \$10,000	20	.12	553	.24
\$10,000 to \$15,999	24	.15	449	.20
\$16,000 to \$19,999	21	.13	266	.12
\$20,000 to \$29,999	30	.18	516	.22
\$30,000 to \$39,999	38	.23	325	.14
\$40,000 to \$59,999	21	.13	149	.06
\$60,000 or over	9	.06	44	.02

Table IV. Primary household fuel.

Primary Household Fuel	Nonparticipants		Participants	
	n	%	n	%
Electric	77	.43	125	.47
Wood	90	.50	100	.37
Other	12	.07	43	.16

Table V. Other fuels to heat home.

Other Fuels Used To Heat Home	Nonparticipants		Participants	
	n	%	n	%
Electric	92	.60	135	.58
Wood	49	.32	80	.35
Other	13	.08	16	.07

Table VI. Home ownership.

Own / Rent	Nonparticipants		Participants	
	n	%	n	%
Own	158	.88	1954	.65
Rent	20	.11	1033	.35
Other	1	.01	----	---

Table VII. Years lived in home.

Years Lived in Home	Nonparticipants		Participants	
	n	%	n	%
Less than 6	83	.46	1326	.53
7 through 15	66	.37	812	.32
16 through 25	14	.08	210	.08
More than 25 Years	16	.09	178	.07

Table VIII. Dwelling type.

Hometype	Nonparticipants		Participants	
	n	%	n	%
Single Family Home	143	.80	1806	.63
Multi-Family Homes	14	.04	513	.18
Mobile Homes	12	.16	532	.18

Table IX. Year home built.

Year Home Built	Nonparticipants		Participants	
	n	%	n	%
Before 1940	37	.22	551	.19
1940 to 1949	14	.08	304	.10
1950 to 1959	12	.07	268	.09
1960 to 1969	14	.08	453	.15
1970 to 1974	27	.16	598	.20
1975 to 1978	27	.16	504	.17
1979 or later	39	.23	305	.10

Table X. "I've done all I can to cut down energy cost"

I've done all I can to cut down energy use.	Nonparticipants		Participants	
	n	%	n	%
Strongly Agree	50	.28	24	.09
Agree	80	.45	51	.20
Neither	2	.01	72	.28
Disagree	44	.25	102	.40
Strongly Disagree	2	.01	6	.02

Table XI. "American homeowners have little choice but to take steps in home energy conservation".

American homeowners have little choice but to take steps in home energy consv	Nonparticipants		Participants	
	n	%	n	%
Strongly Agree	40	.23	74	.30
Agree	88	.51	128	.51
Neither	5	.03	25	.10
Disagree	27	.16	20	.08
Strongly Disagree	11	.06	2	.01

Table XII. "I can't do anything about rising energy costs".

I can't do anything about rising energy costs	Nonparticipants		Participants	
	n	%	n	%
Strongly Agree	30	.17	50	.20
Agree	55	.32	73	.29
Neither	7	.04	38	.15
Disagree	61	.35	78	.31
Strongly Disagree	19	.11	10	.04

Table XIII. "Energy conservation is a fad that people are making money on".

	Nonparticipants		Participants	
	n	%	n	%
Energy conservation is a fad that people are making money on				
Strongly Agree	13	.08	12	.05
Agree	25	.15	32	.13
Neither	10	.06	51	.20
Disagree	70	.42	124	.50
Strongly Disagree	50	.30	31	.12

Table XIV. "Wasting energy is a thing of the past".

	Nonparticipants	
	n	%
Wasting energy is a thing of the past		
Strongly Agree	23	.13
Agree	49	.28
Neither	2	.01
Disagree	75	.43
Strongly Disagree	26	.15

Table XV. "Conserving energy saves money".

	Nonparticipants		Participants	
	n	%	n	%
Conserving energy saves money				
Strongly Agree	75	.42	47	.19
Agree	84	.47	123	.49
Neither	6	.03	50	.20
Disagree	9	.05	26	.10
Strongly Disagree	3	.01	5	.2

NOTES

1. For purpose of this analysis, participation is defined as: Those qualified households which had their homes weatherized by the project. Those households which solely took part in a HRCF energy audit are excluded from this definition.
2. All electrically heated homes with electrical heating equipment installed prior to June 1983, were eligible for program participation. Eighty four nonparticipant homes were eliminated from the sampling frame due to sampling barriers such as not being able to identify the household resident.
3. Fifty-eight respondents were eliminated due to project barriers such as non electric households.
4. Pendleton, and Grants Pass, Oregon and a random sample of PP&L customers in the BPA region were the three comparison groups.
5. A sample of 264 participants was taken from the Baseline Survey database.
6. This analysis does not include Hood River Electric Cooperative data. The Coop billing tape was not usable by publication deadline. analysis of the Coop KWH data will be made available in the next few months.
7. Oregon residential building codes changed in 1979 to include higher insulation. (See Schoch, et al).
8. Lower income households devote 25-40% of their income to household energy costs, compared to about a lower level of 5-10% for the general population.

REFERENCES

Ferrey, Steven, Pulling a Rabbit Out of The Hat: **Innovative Financing for Low-Income Conservation**, ACEEE 1984 Summer Study on Energy Efficiency in Buildings.

Schoch, Karen, Muhannad Khawaja and H. Gil Peach, **Are We Fighting a Battle We've Already Won**, ACEEE 1986 Summer Study on Energy Efficiency in Buildings

Verhallen, T.M., and R.W. Fred, **Household Behavior and Energy Use**, International Conference on Consumer Behavior and Energy Use, Sept. 1980.

Wilk, W.R. and H.L. Wilhite, **Why Don't People Weatherize their Home? An Ethnographic Solution**, Energy, New York: Pergamon Press, May 1985.

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