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CHARACTERIZATION OF THE WEATHERIZATION ASSISTANCE PROGRAM NETWORK

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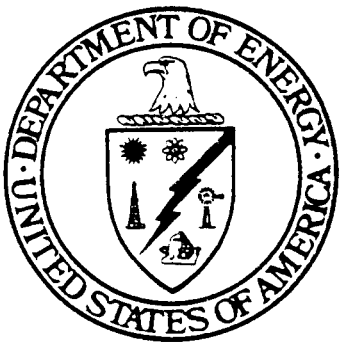

Weatherization Assistance Program

MANAGED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

WAP NETWORK CHARACTERIZATION SURVEY RESULTS
At A Glance (Program Year 1989)

Number of State WAP Agencies Responding to Survey:	49 out of 49 (100%)*
Number of Local WAP Agencies Responding to Survey:	920 out of 1,148 (81%)
Total Housing Units Weatherized by Local WAP Agencies Reporting in PY 1989:	243,268
Types of Housing Units Weatherized	
Single-Family Owner Occupied:	62%
Single- and Multifamily Renters:	38%
Percentage of State WAP Agencies Operating Energy Programs** Other Than WAP & LIHEAP:	51%
Percentage of Local WAP Agencies Operating Energy Programs Other Than WAP & LIHEAP:	40%

WAP/Direct Energy Program Funding
(Exclusive of HHS-LIHEAP Fuel Assistance/Crisis Intervention):

	State WAP Agencies	Local WAP Agencies***
DOE/WAP:	$162.6 million	$149.7 million
PVE Oil Overcharge:	$253.5 million	$136.2 million
HHS-LIHEAP Weatherization:	$120.0 million	$ 84.5 million
Utilities:	$ 1.1 million	$ 37.3 million
Other:	$ 53.4 million	$ 64.7 million
TOTAL:	$590.6 million	$472.5 million

	WAP	Other	Total
State WAP Agency In-House Staff Working on Energy Programs:	390	297	687 FTEs
Local WAP Agency In-House Staff Working on Energy Programs:	6,723	1,863	8,586 FTEs

Percentage of Local WAP Agencies Conducting Continuing Technical Staff Training:	79%
Reported Use of Selected Techniques by Local WAP Agencies	
Blower Door for Leak Detection:	31% of completions
Heating/Cooling System Safety Inspections:	53% of completions
Reported Use of Selected Measures by Local WAP Agencies	
Wall Insulation:	36% of completions
Heating System Tune-Ups:	40% of completions
Percentage of State WAP Agencies Who Implemented New Energy Programs in Past Five Years:	71%
Percentage of Local WAP Agencies Who Implemented New Energy Programs in Past Five Years:	48%

* Alaska and Hawaii were not surveyed. State WAP agencies were surveyed in the coterminous 48 States and the District of Columbia, in order to be consistent with the impact evaluations.

** Rather than a formal definition of "energy program," examples were provided to survey respondents (e.g., compact fluorescent light bulb installation) to attempt to capture the scope of all energy-related activities performed by State and local WAP agencies. "Energy Programs" might therefore represent services and funding other than DOE's.

***This is 80.8 of the value reported by State WAP agencies. This difference could be explained by the 81 percent local WAP agency response rate. Local figures differ due to State program costs, response rate, undifferentiated funding, and local funding.

ORNL/CON-324

Energy Division

Characterization of the Weatherization Assistance Program Network

February 1992

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Preface

The analysis described in this report represents an initial effort to use two databases (one of grantees and another of subgrantees) to describe the Weatherization Assistance Program network. The two databases offer opportunities for insights that go beyond the results reported here. The authors intend to further analyze the data and publish subsequent reports. Therefore, we welcome your ideas about what should be explored.

Recognizing the potential that the two databases hold for further exploration and insights, we are making public access copies of the databases available to users. These public access databases do not disclose the identity of the respondents, but otherwise they contain all of the numeric data collected.

The only condition we place upon access to the databases is that you send copies of any resulting reports or publications to Dr. Brown, and that you include the caveats associated with the data as indicated in Chapters 1 and 2. If you want a copy of the databases, please write to:

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EXECUTIVE SUMMARY

BACKGROUND

The Weatherization Assistance Program (WAP) was established by Title IV of the Energy Conservation and Production Act of 1976 (PL 94-385). The WAP is administered by the U.S. Department of Energy (DOE), and is designed to provide financial assistance for the "weatherization" of qualifying low-income households in order to reduce energy consumption and corresponding expenditures. DOE provides financial grants to State WAP agencies which in turn administer the program and fund local WAP agencies to perform the actual weatherizations.

The most recent national level evaluation of the WAP was completed in 1984, and was based on data for 1981. WAP regulations and operations have changed substantially since then. In addition, new initiatives, incentives, opportunities, methods, and technologies are on the horizon. For these reasons, DOE with the support of Oak Ridge National Laboratory (ORNL) has initiated an updated and comprehensive national evaluation of the WAP to provide policy makers and program implementers with up-to-date, credible, and reliable information needed for effective decision making and cost-effective program operations.

The National WAP Evaluation is designed to accomplish seven program goals: (1) estimate energy savings; (2) assess non-energy impacts, (3) assess cost-effectiveness; (4) analyze influencing factors; (5) describe the network's characteristics and innovations; (6) characterize the population and resources; and (7) identify future opportunities.

To meet the above goals, the National WAP Evaluation has been divided into five "studies." Three of the studies focus on the impacts of the program and address key WAP markets: (1) fuel-oil heated homes, (2) single-family and small multifamily homes (using gas and electricity for heating), and (3) high-density multifamily buildings (using all fuels for heating). Two supporting studies address additional aspects of the program: (1) a characterization of the WAP network, and (2) a profile of eligible clients and resources applied to weatherization beyond appropriated funds.

OVERVIEW OF THE WAP NETWORK CHARACTERIZATION

This report documents the first of the supporting studies (characterization of the WAP network), and begins to address the fifth and seventh goals of the National WAP Evaluation listed above.

Objectives of the WAP Network Characterization

The Characterization of the WAP Network was designed to describe the breadth, depth, technical resources, and innovations of the national network of State and local WAP agencies. Major network features to be analyzed include: the relationships between State and local WAP agencies; the extent of their external relationships; the interest and availability of potential partners for future

energy-efficiency efforts; the level of technical assistance and training; the range of experience and technical expertise; the ability to provide market information and performance; and the array of innovations and initiatives in the field.

Research Methodology

The Characterization of the WAP Network was based on national surveys of State and local WAP agencies. The State WAP agency survey was mailed to 48 State WAP agencies (representing the coterminous 48 States) plus the District of Columbia, and the survey response rate was 100 percent. The local WAP agency survey was mailed to 1,148 local WAP agencies, and the survey response rate was 81 percent. Both surveys focused on activities during PY 1989 and were conducted during the Fall and Winter of 1990/1991. Interpretation is subject to several caveats including response rate and respondent interpretation of the questions.

KEY FACTS AND FIGURES

Housing Units Weatherized

Overall 243,268 units were reported weatherized by 893 local WAP agencies in Program Year (PY) 1989 with all sources of funds. The median number of units weatherized per local WAP agency in PY 1989 was 184. The mean number of units weatherized per local WAP agency, 271 in PY 1989, is substantially larger than the median, reflecting the highly skewed distribution of weatherization completions across agencies: 23 local WAP agencies reported more than 1,000 weatherization completions in PY 1989. On average, approximately two-thirds of the units weatherized in PY 1989 by each local WAP agency were owner-occupied single-family residences.

Other Programs and Services

Many State and local WAP agencies operate energy programs* other than WAP and refer nearly 20 percent of their clients to other service providers. These are funded by other federal agencies, States, utilities, and other sources. Fifty-one percent of State WAP agencies report operating energy programs other than WAP and the Low-Income Home Energy Assistance Program (LIHEAP). Forty percent of local WAP agencies operate energy programs other than WAP and LIHEAP.

Financial Resources

State and local WAP agencies receive financial support for energy programs from a variety of sources. State WAP agencies report receiving financial support for all energy programs (aside from fuel assistance) in PY 1989 of $590.6 million, or on average approximately $12 million per State WAP agency. DOE/WAP appropriations account for approximately 28 percent of this total ($162.6 million). State disbursement of PVE "Oil Overcharge" funds were the single largest source

* Rather than a formal definition of "energy program," examples were provided to survey respondents (e.g., compact fluorescent light bulb installation) to attempt to capture the scope of all energy related activities performed by State and local WAP agencies. "Energy Programs" might therefore represent services and funding other than DOE's.

of State WAP agency funding in PY 1989 at $253.5 million (or 43 percent). HHS-LIHEAP weatherization made up 20 percent of State WAP agency energy program funding. State, utility, and other federal funding comprised less than 10 percent in PY 1989.

Direct energy program financial support in PY 1989 received by local WAP agencies responding to the survey comes from a broad range of sources, including DOE/WAP funds. The total received by local WAP agencies on a national level in PY 1989 was $477.5 million. DOE/WAP accounts for 31 percent of this total ($149.7 million), the single largest source of financial support, followed by PVE oil overcharge funds. The mean level of financial support per local WAP agency was approximately $530,000, and the median was approximately $357,000. A total of 890 local WAP agencies reported obtaining funding for energy programs from sources other than DOE/WAP in PY 1989.

Staff Resources and Training

State WAP agencies reported a total of 687 full-time equivalent (FTE) staff working on all energy programs (including WAP) in PY 1989. State WAP agency staff (390 FTE) are concentrated in the management/administrative/fiscal, clerical, and field monitor/auditor categories.

Local WAP agencies report a total of 8,586 FTE staff. The majority of local WAP agency staff (6723 FTE) are directly involved with the installation of energy conservation measures (e.g., as envelope chiefs, crew members, or home auditors). Approximately 30 percent of local WAP agencies augment their staff using contractors to provide envelope crew and envelope crew chiefs, and approximately 20 percent of local WAP agencies use contractors to provide HVAC crew chiefs and crew members.

A significant amount of training occurs in the WAP network. The majority of State WAP agencies train their staff on a continuing basis (defined in the survey as at least once per year), in all areas of program responsibility. Technical skill training is available in most State WAP agencies. It appears several opportunities remain, for example roughly one-third of the State WAP agencies do not report training in program management skills.

Local WAP agencies also indicate a high incidence of staff training, with much of this training being on an ongoing, or continuing basis. The extensive training in blower door technology (reported by 84 percent of local WAP agencies) indicates a training base for use of this technology for more advanced diagnostics, screening, cost-effectiveness, and quality control. One key opportunity for enhanced training appears to be in the area of client education.

Innovative Techniques and Measures

The WAP network is involved with a variety of innovative and advanced diagnostic and screening techniques and weatherization measures for energy-efficiency retrofits. For example, determining investment levels based on current energy consumption or anticipated savings is employed by local WAP agencies, on average, on almost 40 percent of their completions. In PY 1989, on average, blower door procedures to test for leakage were employed on 31 percent of a local agency's weatherization completions, and heating/cooling system safety inspections were conducted on 53

percent of the weatherization units. Significantly, local WAP agencies anticipate utilizing these innovations more often in PY 1991 than they did in PY 1989.

Energy-Efficiency Demonstration and Analysis

The WAP network has been involved in a variety of new energy-efficiency programs and demonstration and analysis activities, and the network indicates a great deal of interest in an expanded involvement in such activities. The majority of State WAP agencies have implemented new programs and provided test sites for new technologies over the past five years. Approximately 80 percent of State WAP agencies are interested in performing these activities as well as more analytic projects, such as test site monitoring and end-use metering. A significant percentage (50 percent for site monitoring) expressed a willingness to cost-share this work.

Over 30 percent of local WAP agencies have implemented new programs or provided test sites for new technologies and approaches over the past five years. Over 90 percent of local WAP agencies are interested in promoting these programs. They express some willingness to cost share, but at a level lower than State WAP agencies. Also, over 70 percent of local WAP agencies are interested in either providing test sites for new technologies and approaches or monitoring test sites as part of a demonstration program.

Programmatic Initiatives

Over 90 percent of State WAP agencies are involved in health, safety and environmental initiatives and energy education initiatives. Over 80 percent of State WAP agencies are involved in implementing some form of WAP partnership with utilities. Technology transfer is also a significant area of State WAP agency initiatives. Fifty-nine percent of State WAP agencies have prepared program packages to leverage funds, and 39 percent are actively marketing to improve program impact.

Potential Service Improvements

As part of the survey process State and local WAP agencies were asked to rank the importance of several different factors that might improve the delivery of low-income weatherization services. The four most important factors (improved training, stable weatherization funding, ability to use housing rehabilitation funds from other federal agencies, and enhanced client education) were the same for both State and local WAP agencies.

CONCLUSIONS RELATIVE TO WAP NETWORK CHARACTERIZATION OBJECTIVES

Relative to the objectives established for the WAP network characterization, the following broad conclusions can be drawn:

- Based on its services to a quarter of a million households in PY 1989, the WAP network would appear to provide an excellent vehicle for obtaining market information on low-income client needs.

- Many innovations and cutting edge initiatives are being implemented or tested throughout the WAP network.

- Overall, based on the range of techniques and measures being employed the WAP network exhibits a solid base and a wide range of experience and technical expertise for diagnosing weatherization needs and delivering retrofit services.

- State and local WAP agencies have extensive interactions in such areas as training and management practices. Further, the WAP network exhibits a significant degree of interaction with external programs and organizations, such as utilities.

- The WAP network appears to be an experienced and highly willing potential partner for future energy-efficiency efforts.

- The WAP network is active in training and client education and considers them a high priority for the future.

SUMMARY

In summary, the WAP network represents a large and experienced resource for delivering energy-efficiency to the nation's housing sector. The network is interacting closely with other energy-related programs and organizations. It is involved in the field implementation of a range of advanced diagnostic and screening methods, techniques, and energy-efficiency measures. It is also involved in housing rehabilitation, safety, and client education.

Significant opportunity remains for effecting broader applications of proven methods, training in new and emerging areas of program focus, determining impact of innovations/initiatives, and moving those that are most cost-effective into the network.

ABSTRACT

The Characterization of the Weatherization Assistance Program (WAP) Network was designed to describe the national network of State and local agencies that provide WAP services to qualifying low-income households. The most recent national evaluation of the WAP was completed in 1984 utilizing data from 1981. Since 1984 there have been changes in the structure and operation of the WAP. The objective of this study was to profile the current WAP network. To achieve the objective, two national surveys were conducted: one survey collected data from 49 State WAP agencies (including the coterminous 48 States and the District of Columbia), and the second survey collected data from 920 (or 81 percent) of the local WAP agencies.

The specific goals of this study included collecting data for analysis of: (1) the relationships between the WAP network and non-network programs and the extent of these relationships; (2) the interest and availability of potential partners for future energy-efficiency efforts; (3) the level of technical assistance, client education and training skills; (4) the range of experience and technical expertise for diagnosing weatherization needs and installing retrofit measures; (5) the ability of the network to provide market information on client needs and to provide feedback on the performance of new technologies; and (6) the array of innovations and cutting-edge initiatives being implemented or tested in the field.

Subject to certain caveats, the report catalogues the total network financial support for energy programs and the total network program staff working on energy programs of both State ($590.6 million, 687 FTE) and local WAP agencies ($486.6 million, 8586 FTE). The total number of network weatherization completions for local WAP agencies in Program Year 1989 was 243,268. A complete breakdown of financial support by source and type is provided, as well as a complete breakdown of program staff by source and type. An interpretation of the results is provided utilizing both network means and medians. Other analyses performed as part of this report include: an assessment of the type and frequency of network staff training; the interaction of network agencies with non-network energy programs; and an analysis of recommended service improvements based upon respondents' recommendations from the two surveys. A particular focus of the study is on innovations and initiatives being implemented by the WAP network.

1. EXECUTIVE OVERVIEW

1.1 BACKGROUND

The Weatherization Assistance Program (WAP) was established by Title IV of the Energy Conservation and Production Act of 1976 (PL 94-385). The WAP is administered by the U.S. Department of Energy (DOE), and is designed to provide financial assistance to qualifying low-income households for the "weatherization" of their housing units in order to reduce energy consumption and corresponding expenditures. DOE provides financial grants to the State WAP agencies who in turn administer the program and fund local WAP agencies to perform the actual weatherizations.

The most recent national level evaluation of the WAP was completed in 1984, and was based on data for 1981. WAP regulations and operations have changed substantially since then. In addition, new initiatives, incentives, opportunities, methods, and technologies are on the horizon. For these reasons, DOE with the support of Oak Ridge National Laboratory (ORNL) has initiated an updated and comprehensive national evaluation of the WAP to provide policy makers and program implementers with up-to-date, credible, and reliable information needed for effective decision making and cost-effective program operations.

The National WAP Evaluation is designed to accomplish seven goals:

1. estimate energy savings due to the program--one, two, and three years after participation;
2. assess non-energy impacts, e.g., comfort, safety, and housing affordability;
3. assess program cost-effectiveness;
4. analyze factors which influence energy savings, non-energy impacts and cost-effectiveness;
5. describe the WAP network's characteristics and innovations;
6. characterize the WAP-eligible population and resource expansion; and
7. identify promising WAP opportunities for the future.

To meet the above goals, the National WAP Evaluation has been divided into five "studies." Three of the studies focus on the impacts of the program and address key WAP markets. These three studies will perform energy cost-effectiveness evaluations of:

- fuel-oil heated homes;
- single-family and small multifamily homes (using gas or electricity for heating);
- high-density multifamily buildings (using all fuels for heating).

Two supporting studies address additional aspects of the program, but are not designed to provide cost-effectiveness evaluations:

- a characterization of the WAP network; and
- a profile of eligible clients and characterization of resources applied to weatherization beyond appropriated funds.

1.2 OVERVIEW OF THE WAP NETWORK CHARACTERIZATION

This report documents the first of the supporting studies (characterization of the WAP network), and begins to address the fifth and seventh goals of the National WAP Evaluation listed above. As such, it provides the framework for the remaining studies. This report is the first to be issued as part of the National WAP Evaluation. Other reports addressing the remaining goals will be issued over the next two years as data from the other four studies become available.

The purpose of this report is to characterize the WAP organization which is being evaluated. In particular we wished to characterize the network so the reader, whether policy maker, program manager, or analyst, has a clear grasp of the nature of the organization being studied, its make-up, its skills, its scope, its needs, its potential, and its resources beyond those described in program legislation, regulation, and literature.

1.2.1 Objectives of the WAP Network Characterization

The Characterization of the WAP Network was designed to describe the breadth, depth, technical resources, and innovations of the national network of State and local WAP agencies. Major network features to be analyzed include:

- the relationships between State and local WAP agencies, and the extent of external programs relationships;
- the interest and availability of potential partners for future energy-efficiency efforts;

- the level of technical assistance, client education, and training skills;
- the range of experience and technical expertise for diagnosing weatherization needs and installing retrofits measures;
- the ability of State and local WAP agencies to provide market information on client needs and to provide feedback on the performance of new technologies; and
- the array of innovations and cutting-edge initiatives being implemented or tested in the field.

Conclusions about each of these features are summarized in Section 1.4. Other sections of this overview provide supporting data and background information.

1.2.2 Research Methodology

The Characterization of the WAP Network was based on the design and implementation of a national survey of State WAP agencies and a national survey of local WAP agencies. These surveys represent the first attempt by DOE in over a decade to inventory and survey the entire population of State and local WAP agencies. The State WAP agency survey was mailed to 48 State WAP agencies (representing the coterminous 48 States) plus the District of Columbia. (Alaska and Hawaii were excluded to be consistent with the impact evaluations. They are being excluded from the three impact evaluations for logistical reasons.) A total of 1,148 local WAP agencies were identified and mailed a questionnaire. Both the State and local WAP agency surveys were conducted during the Fall and Winter of 1990/1991. A Phase II WAP Network Characterization effort is planned for the near future to analyze in more depth selected features of the WAP network. Responses to this report will be used to guide this second phase.

The State WAP agency survey response rate was 100 percent. By the local WAP agency survey cutoff date, 920 (or 81 percent) of the local WAP agencies had returned completed questionnaires. The WAP network statistics presented in this report are based on the 49 State and 920 local WAP agency survey responses.

We believe it necessary to describe the limits of this work before presenting its findings. This will help the reader take full advantage of the material provided and avoid conclusions that go beyond the study's scope. The reader should recognize these caveats in any conclusions or reports generated as a result of this study.

- This work is primarily a snapshot of a program. It asked questions related primarily to one point in time--the WAP Program Year (PY) 1989*. It would be incorrect to assume reported data and relationships accurately describe other program years.

- The local WAP agency response rate, while extraordinarily high (81 percent) is a self-selected sample, subject to response bias. It is not a complete census.

- The accuracy of the data and the report's statistics are limited by the individual respondent's accuracy and interpretation of the questions posed. Data accuracy may vary widely by respondent.

- State and local WAP agencies vary widely. This should be kept in mind when interpreting broad national and regional averages. Specific State or local WAP agencies may differ significantly from the average. For this reason, medians as well as means are reported to better approximate "average" characteristics.

- In many cases, agencies report that a particular practice or approach is used. This does not necessarily mean that this practice or approach is used in all cases (e.g., all weatherization jobs).

- The quantity of weatherizations, training, personnel, etc., are reported. Because no qualitative data were collected, no inferences concerning impact or quality can be made.

1.2.3 Perspective: A Prototypical State WAP Agency and Local WAP Agency

To illustrate the wide range of characteristics discussed in this report we have reviewed the data and used several statistical measures to create a "prototypical" local WAP agency in a prototypical State receiving WAP funds. The two prototypes were developed around the central tendencies of the two data sets, following the direction provided by the means and medians. These prototypical agencies are profiled in Exhibits 1.1 and 1.2.

* Program Year (PY) 1989, for most WAP agencies, is April 1, 1989 through March 31, 1990. PY 1989 was selected as the study year for the impact evaluations, and is used here for consistency.

Prototypical State WAP Agency in PY 1989

The "prototypical" State WAP agency (ProtoState) is located in the central United States. ProtoState received approximately $2 million of DOE/WAP funds for its WAP PY 1989. Overall, it administered energy programs* with an annual budget of approximately $6 million (exclusive of fuel assistance programs). ProtoState attracted and managed an energy program funding level three times the size of its basic WAP grant. The majority of non-DOE/WAP funding (aside from fuel assistance) came from PVE (Petroleum Violation Escrow) "Oil Overcharge" and HHS-LIHEAP Weatherization funds.

ProtoState administered these funds and programs with a staff of 11 full-time equivalent (FTE) employees, over half of whom were managers/administrators and clerical support and a quarter of whom were field monitors/auditors. ProtoState conducted a variety of training activities for in-house staff as well as local WAP agency staff, most often focusing on blower-door procedures and other technical issues

ProtoState had frequent contact with DOE and local WAP agency staff, relied on books and periodicals for information, and had considerable interaction with utilities operating in the State. ProtoState placed high priority on several advanced diagnostic and screening techniques and measures for weatherization, including use of blower doors, heating and cooling system safety inspections and performance testing. The determination of investment levels and measures to be installed in a weatherization job was based on energy savings per dollar invested. ProtoState also placed high priority on heating system tune-ups/component retrofits, wall insulation, client education, and workmanship quality review.

From a management perspective ProtoState maintained a computerized management information system, and participated in several recent WAP initiatives, including addressing health, safety, and environmental issues, targeting priorities, energy education, and local WAP agency training and technical assistance. ProtoState also used its authority and non-WAP resources to implement State practices which augment the DOE/WAP. These afford local WAP agencies the opportunity to enhance program performance and meet local needs. Over the past several years, ProtoState implemented several innovations, demonstrated new energy conservation programs, and also provided test sites for new technological approaches to energy-efficiency.

Exhibit 1.1 Prototypical State WAP Agency

* Rather than a formal definition of "energy program," examples were provided to survey respondents (e.g., compact fluorescent light bulb installation) to attempt to capture the scope of all energy related activities performed by State and local WAP agencies. "Energy Programs" might therefore represent services and funding other than DOE's.

Prototypical Local WAP Agency in PY 1989

ProtoLocal (the prototypical local WAP agency) is a private, non-profit Community Action Agency. Community Action Agencies are public organizations serving the economically disadvantaged with State, federal and local funding. ProtoLocal weatherized approximately 200 housing units in PY 1989, of which two-thirds were single-family owner-occupied. The remainder were single-family or multifamily renter-occupied. ProtoLocal maintained a waiting list of more than 50 housing units awaiting weatherization; this represents a production planning schedule of about three months of work.

ProtoLocal provided weatherization and other energy services (excluding fuel assistance) with approximately $363,000 of funding in PY 1989 from all sources. The DOE/WAP component of this was approximately 31 percent, or about $112,500.

ProtoLocal maintained an in-house staff of 7 full-time equivalents, with energy auditors, envelope crew chiefs, and envelope crew comprising the majority. The energy auditor was likely to be licensed or certified. The agency's staff was provided on-going technical and management training.

ProtoLocal's State WAP agency allowed the use of numerous advanced techniques and measures. In addition to the standard diagnostic and screening measures, ProtoLocal placed priority on determining investment levels based on current energy consumption or anticipated savings but did not do so in every weatherization (78 of its 200 weatherized housing units). It also used selected advanced diagnostic techniques, including blower doors to find leakage areas for sealing (62 housing units) and heating and cooling system safety inspections (106 housing units). With respect to energy-efficiency measures, ProtoLocal placed high priority on in-person client eduation (144 housing units), heating system tune-ups (80 housing units), and high-density wall insulation (26 housing units). These largely mirrored the priorities of ProtoState.

ProtoLocal might have recently implemented a new energy-efficiency program in its area. It was very interested in continuing to implement new programs and in participating in energy-efficiency research, including the provision and monitoring of test sites.

Exhibit 1.2 Prototypical Local WAP Agency

1.3 KEY FACTS AND FIGURES

This section provides an overview of the key data collected from the State and local WAP agency surveys. In most cases more detail is provided in the body of the report.

1.3.1 Housing Units Weatherized

Overall 243,268 units were weatherized by 893* local WAP agencies providing weatherization data for PY 1989. The median number of units weatherized per local WAP agency in PY 1989 was 184. The mean number of units weatherized per local WAP agency was 271 in PY 1989. This reflects a distribution of weatherizations per local WAP agency that is highly skewed: 23 local WAP agencies reported more than 1,000 weatherization completions in PY 1989, while the majority reported fewer than 200 completions in PY 1989.

On average, approximately two-thirds of the units weatherized in PY 1989 by local WAP agencies were owner-occupied single-family residences (Figure 1.1). Figure 1.1 reports the means of estimates for each housing segment given in percent by local WAP agencies. Only half of the low-income population, however, lives in housing units which they own. There is no program preference given to owners over renters: the questionnaires did not explore reasons why this service mix occurs.**

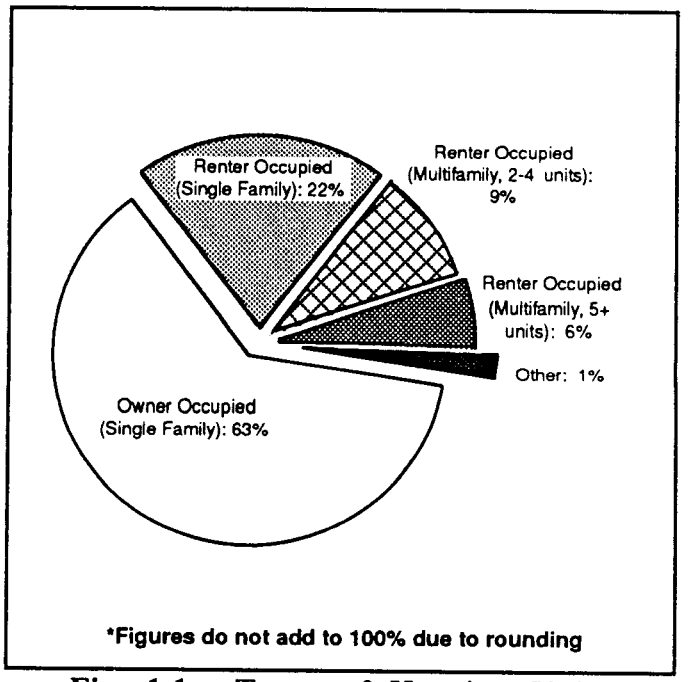

Fig. 1.1. Types of Housing Units Weatherized in PY 1989.

* Twenty-seven responding local WAP agencies did not provide weatherization totals and are treated as "missing" in the dataset.

** Calculations of weighted means by segment percent and total weatherization by each local WAP agency suggest a smaller owner occupied segment and larger renter segments, smaller single-family segments and larger multi-family segments.

The length of the income- and not income-qualified waiting lists maintained by local WAP agencies for weatherization services varies widely from one local WAP agency to another (Figure 1.2). The greatest percentage of local WAP agencies maintained waiting lists of more than 50 low-income households in both categories. Income-qualified and not income-qualified waiting lists are not mutually exclusive; some agencies maintain both types of lists. The not-income qualified list is an in-house waiting list of not-as-yet screened applicants for weatherization services. Once applicants are income qualified, they are added to the income qualified waiting list. Approximately 13 percent of local WAP agencies report maintaining waiting lists of over 500 income-qualified households. Very few local WAP agencies maintain no income-qualified waiting lists. In general, local WAP agencies maintain waiting lists approximately equal to a production planning schedule of about three months of work. At the time of this survey, therefore, more than 107,000 housing units (income and not-income qualified) were estimated to be awaiting weatherization. Housing units which are not-income qualified are not weatherized with DOE or PVE "Oil Overcharge" funds.

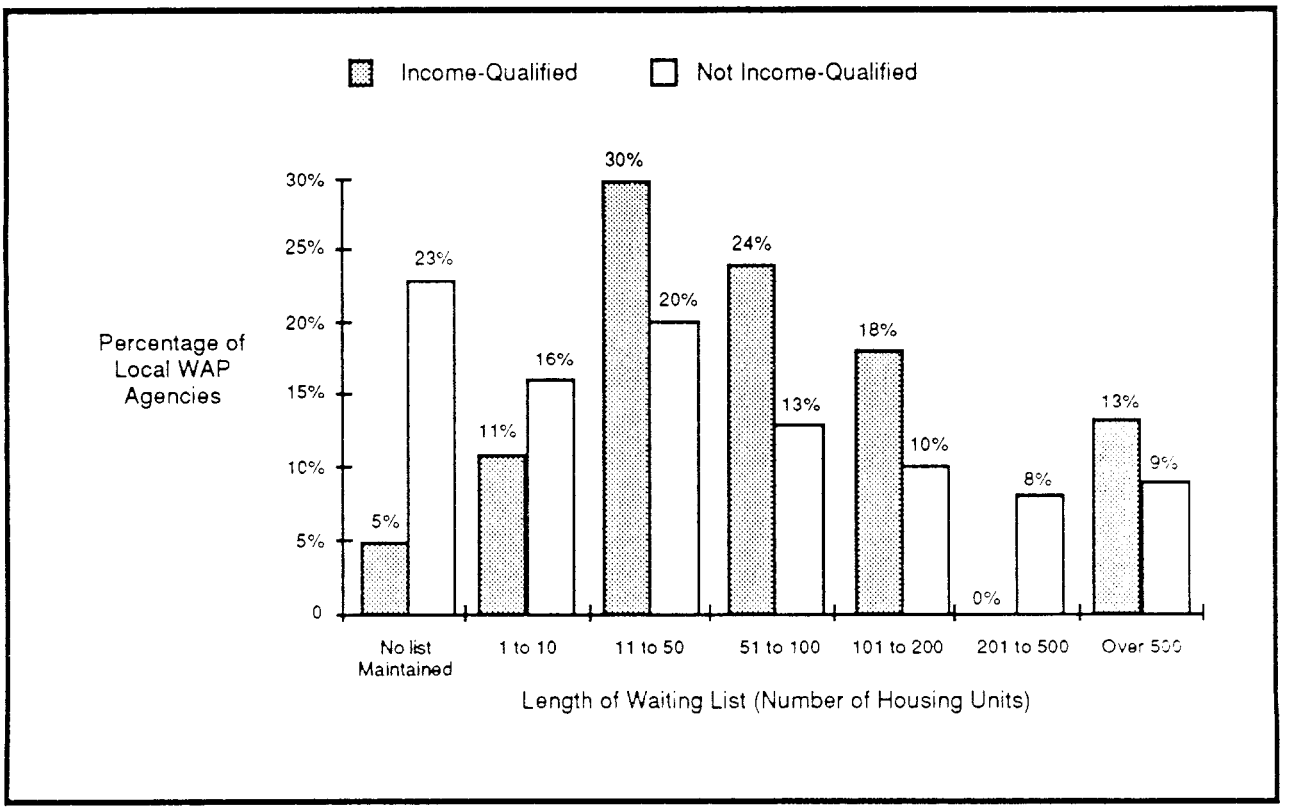

Fig. 1.2. Average Length of Local WAP Agency PY 1989 Waiting List.

1.3.2 Other Programs and Services

Many State WAP agencies (51 percent) and local WAP agencies (40 percent) support energy programs in addition to WAP and LIHEAP (Figures 1.3 and 1.4). Example programs include replacing incandescent light bulbs with compact fluorescent bulbs, installation of pipe wraps and shower aerators, conducting energy audits for commercial buildings, and emergency repairs. This indicates significant network experience in a variety of non-WAP areas, as well as an opportunity for the remaining network members to expand their energy services.

The WAP network delivers a wide array of services to its low-income clients. For example, 25 percent of weatherization applications received by local WAP agencies result in referrals to other programs (e.g., human service agencies) which offer different types of services such as food assistance and elderly services (Figure 1.5). Eighteen percent of local WAP agencies combine other resources to provide client households with on-site services in addition to weatherization (Figure 1.6). Examples include installation of smoke detectors, dead bolt locks in high crime areas, radon testing, and minor home repairs. In PY 1989, these local WAP agencies brought expanded services to more than 40,000 households.

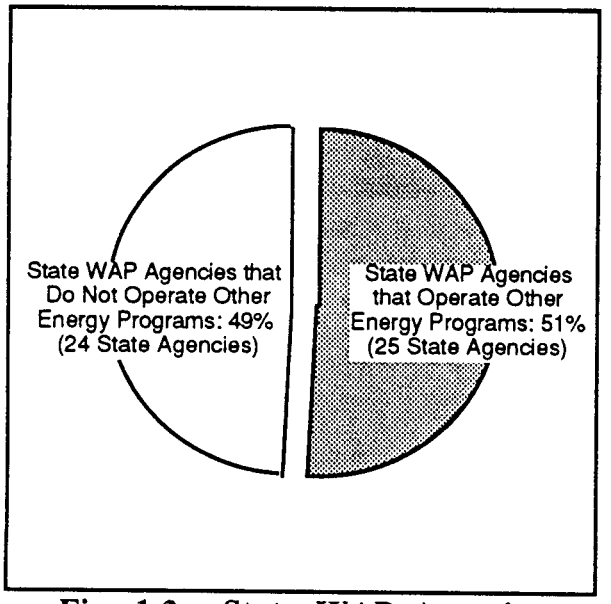

Fig. 1.3. State WAP Agencies Operating Additional Energy Programs.

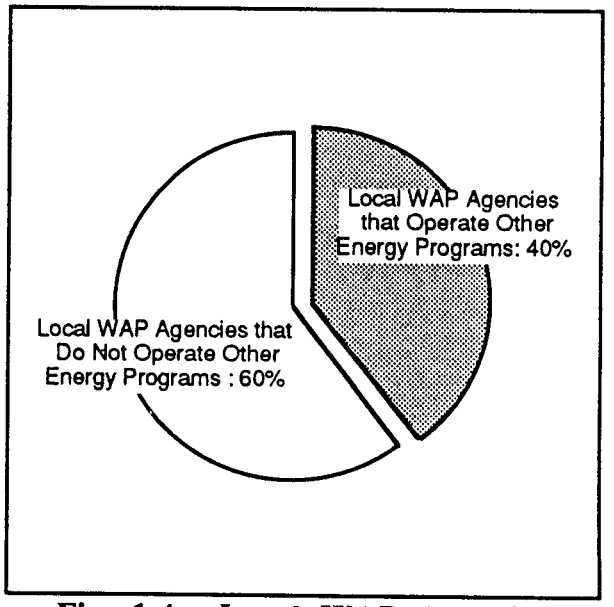

Fig. 1.4. Local WAP Agencies Operating Additional Energy Programs.

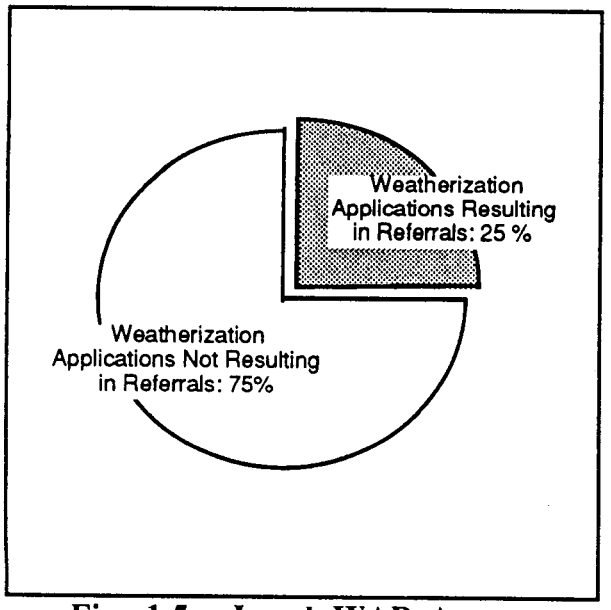

Fig. 1.5. Local WAP Agency Weatherization Applications Resulting in Referrals.

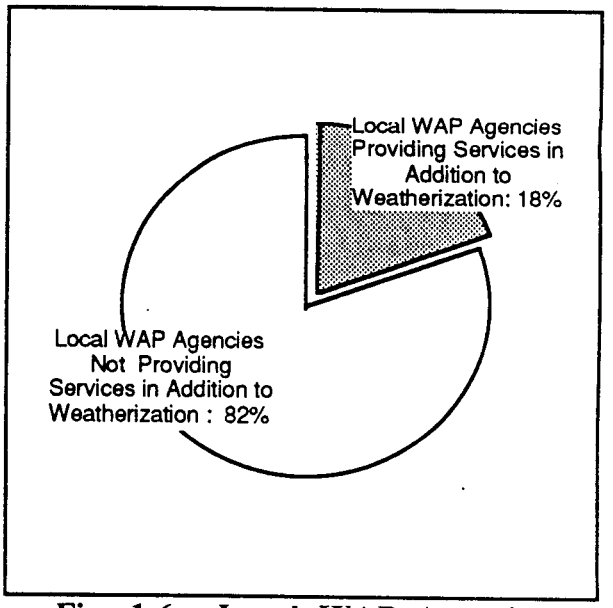

Fig. 1.6. Local WAP Agencies Providing Additional On-Site Services.

1.3.3 Financial Resources

State and local WAP agencies receive funding from a variety of sources to increase the number of weatherizations and support a wide array of energy programs. State WAP agencies report receiving financial support for energy programs (aside from fuel assistance) in PY 1989 of $590.6 million, or on average approximately $12 million per State WAP agency (Figure 1.7) with a median of $5.9 million. DOE/WAP financial support accounts for approximately 28 percent of this total ($162.6 million) as reported by survey respondents. This expenditure is consistent with the actual FY 1989 grant amount distributed by DOE of $159.6 million on a national basis. PVE "Oil Overcharge" accounts for the single largest source of State WAP agency funding, at $253.5 million (43 percent of total) in PY 1989. Three-fourths of State WAP agencies report receiving LIHEAP weatherization funds as do 62 percent of local WAP agencies. Overall, federally appropriated funding (exclusive of PVE) made up half of State WAP agency funding while State and utility funding comprised less than 10 percent in PY 1989.

Most local WAP agency direct support for energy programs is passed through the State WAP agency from federal agencies. Because of this pass-through, several local WAP agencies report that they are unaware of the ultimate sources of funding other than the State WAP agencies. Financial support in PY 1989 received by local WAP agencies responding to the survey comes from a broad range of sources, including DOE/WAP funds (Figure 1.8). The total on a national level is $477.5 million.* In addition, State agencies which have both WAP and non-WAP responsibilities may allocate funds to organizations other than local WAP agencies to perform their non-WAP energy programs. This, coupled with the 19 percent local WAP agency non-response to the survey, could account for most of the difference in funding reported between State and local WAP agencies ($590.6 million vs. $477.5 million).

DOE/WAP accounts for 31 percent of the local WAP agency total ($149.7 million), the single largest source of financial support, followed by PVE "Oil Overcharge" funds. The mean funding level per local WAP agency was approximately $530,000, and the median was approximately $363,000. Local WAP agencies received non-DOE/WAP funds from a variety of sources, including PVE "Oil Overcharge" funds, as well as directly from sources such as landlords and utilities. Eight hundred and ninety local WAP agencies (97 percent) reported obtaining funding from sources other than DOE/WAP in PY 1989, which may or may not have been passed through the State WAP agency. Thus, there is an opportunity for the experience of local WAP agencies who have been successful in obtaining various non-DOE/WAP funds to be transferred to other local WAP agencies who have not been as successful at securing these additional funds.

* This is 80.8 percent of the value reported by State WAP-agencies. This difference could be explained by the 81 percent local WAP agency response rate. Local figures differ due to State program costs, response rate, undifferentiated funding, and local funding.

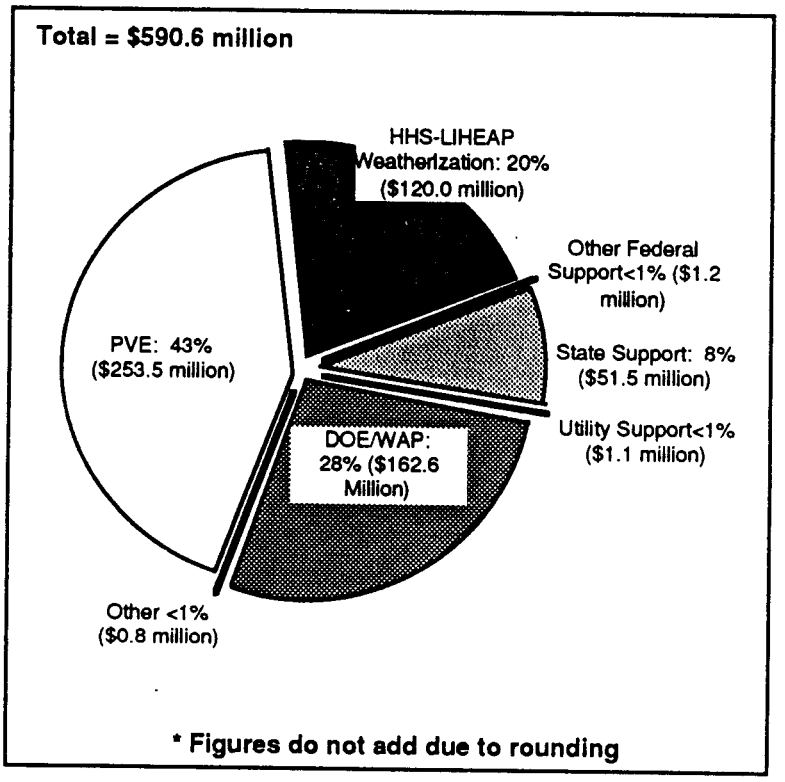

Fig. 1.7. State WAP Agency Financial Support.

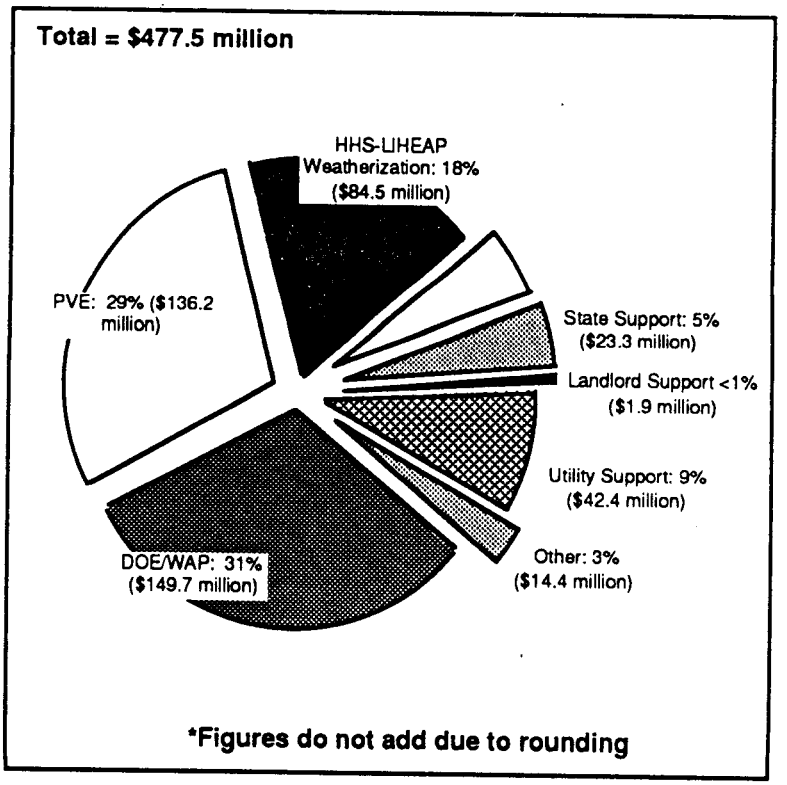

Fig. 1.8. Local WAP Agency Direct Financial Support.

1.3.4 Program Interactions

The WAP network reports a variety of ways in which it interacts with the energy initiatives of other organizations (Figure 1.9). Over 30 percent of local WAP agencies report attempting to implement energy initiatives in each of three areas: (1) serving on advisory committees, (2) interacting with utilities, and (3) contributing to magazine and newspaper articles. Work on professional or technical committees, as energy consultants, and with product/equipment manufacturers, though limited, does indicate recognition of some local WAP agencies as subject experts.

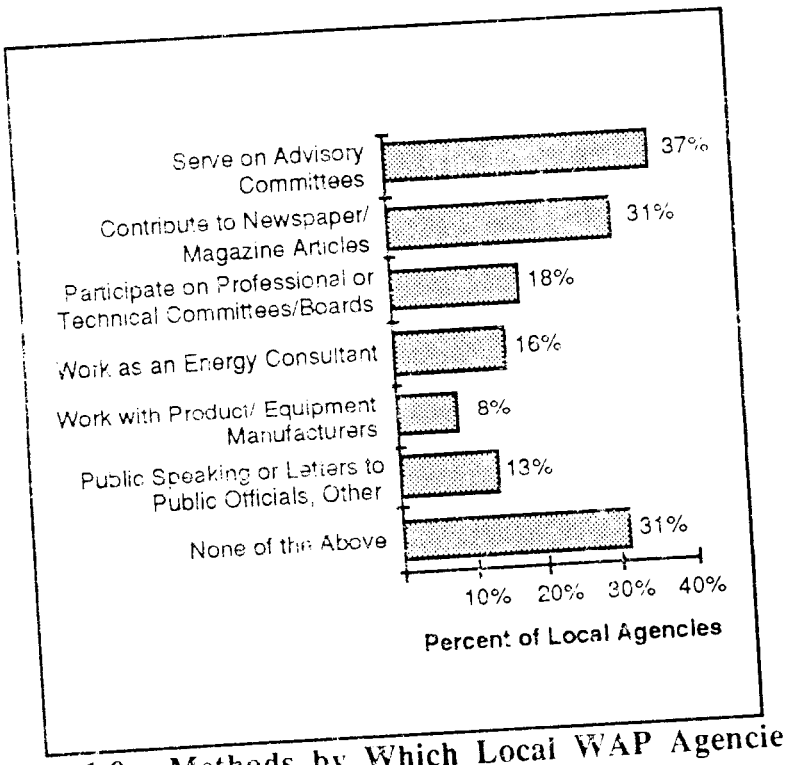

Fig. 1.9. Methods by Which Local WAP Agencies Report Influencing Energy Initiatives of Others.

1.3.5 Staff Resources and Training

State WAP agencies reported a total of 687 full-time equivalent in-house staff working on all energy programs (including 57 percent, or 390 FTEs performing WAP functions) in PY 1989 (Figure 1.10). A major role of State WAP agencies is the administration and disbursement of network resources. The average State WAP agency employee is responsible for administering a program resulting in an average 600 households weatherized per year. State WAP agency staff are concentrated in the management/administrative/fiscal, clerical, and field monitor/auditor categories.

Local WAP agencies report a total of 8,586 full-time equivalent in-house staff (including 78 percent, or 6,723 FTEs performing WAP functions) in PY 1989 (Figure 1.11). A major role of the local WAP agencies is to provide the delivery of weatherization services. The majority of local WAP agency staff are directly involved with the installation of energy conservation measures (e.g., envelope chiefs and crew, or home auditors). Approximately 30 percent of local WAP agencies use contractors to provide envelope crew and envelope crew chiefs. Approximately 20 percent of

local WAP agencies use contractors to provide HVAC crew chiefs and crew members. These contractors provide manpower to local WAP agencies in addition to their 8,586 in-house employees.

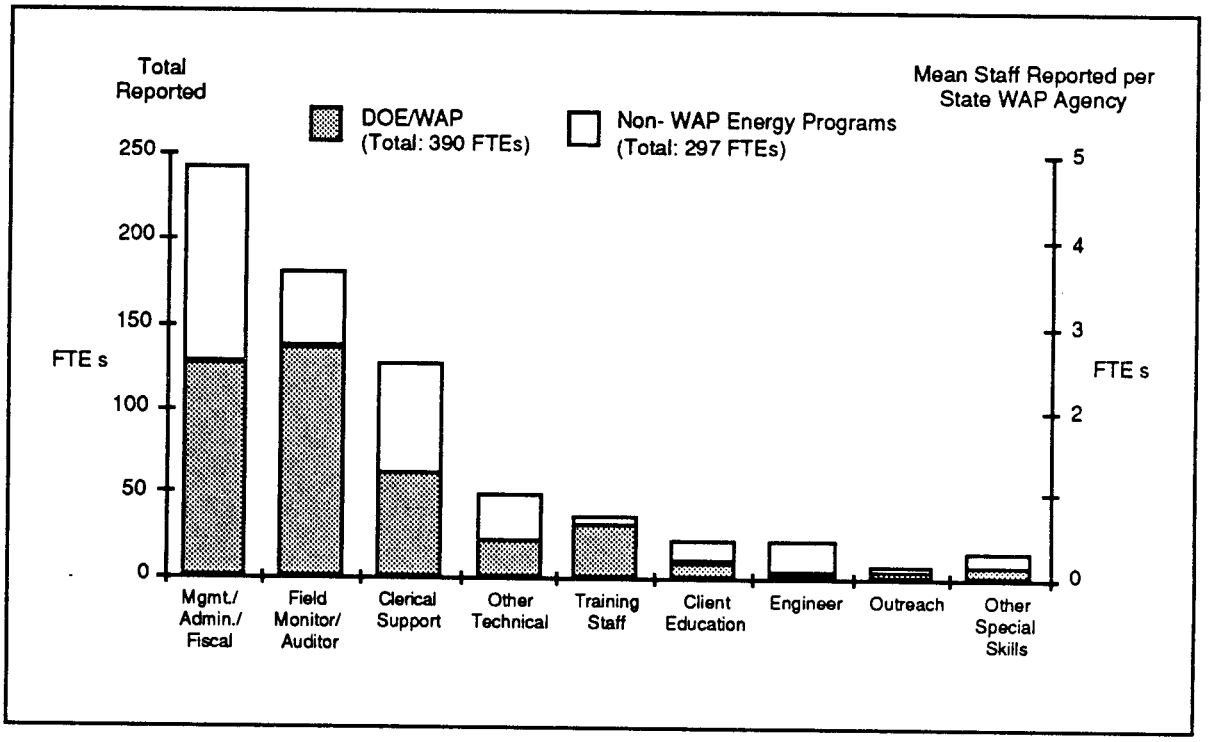

Fig. 1.10. State WAP Agency In-House Staff Resources.

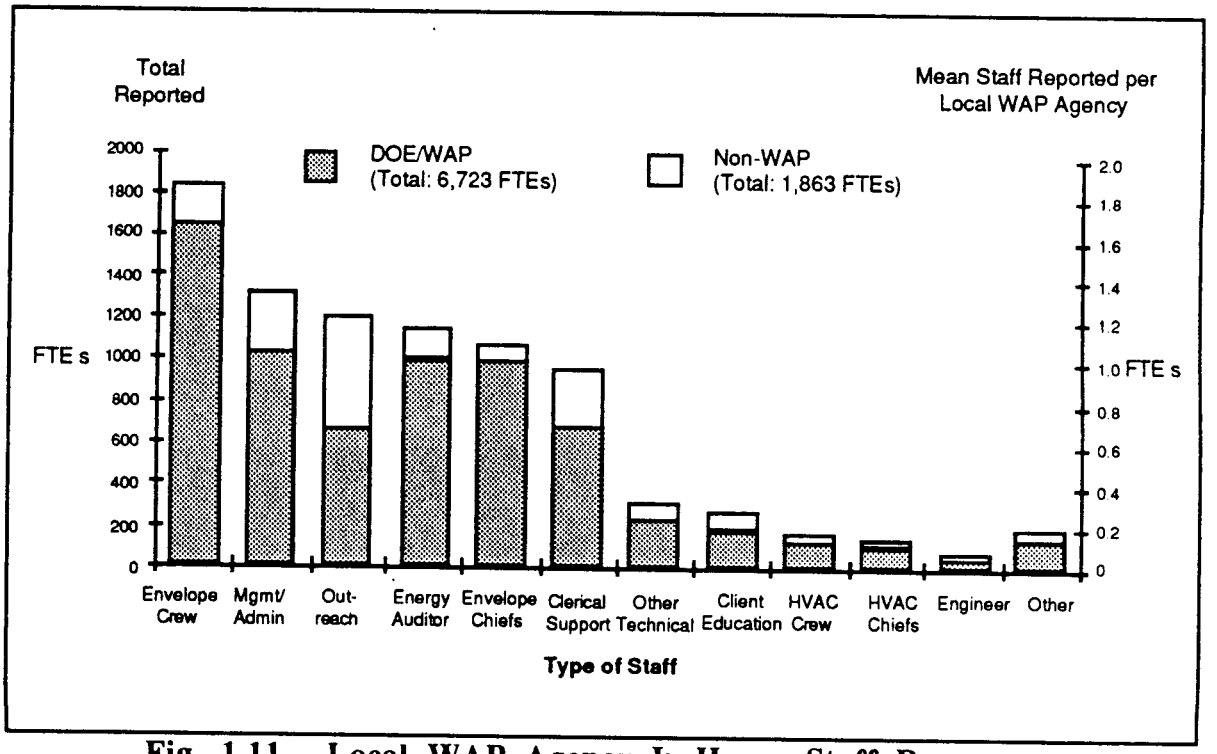

Fig. 1.11. Local WAP Agency In-House Staff Resources.

The majority of State WAP agencies train their staff on a continuing basis (defined in the survey as at least once per year) in major areas of program responsibility (Figure 1.12). Local WAP agencies also indicate a high incidence of staff training, with much of this training being on an ongoing, or continuing basis (Figure 1.13).

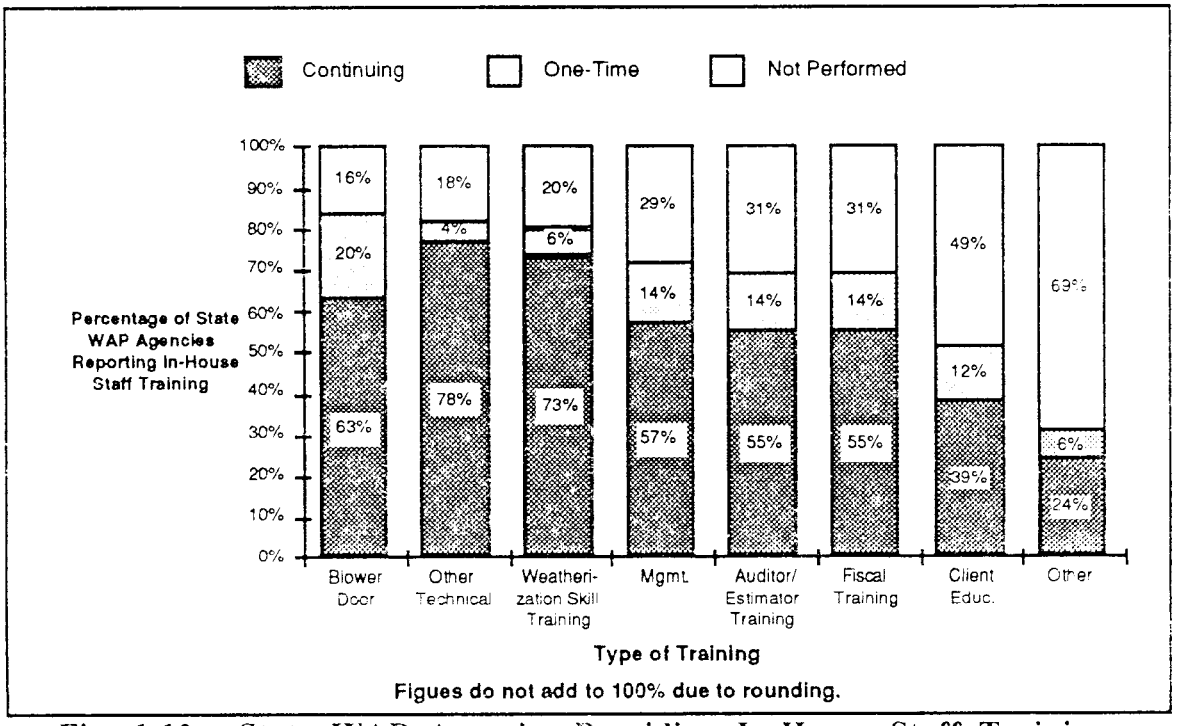

Fig. 1.12. State WAP Agencies Providing In-House Staff Training.

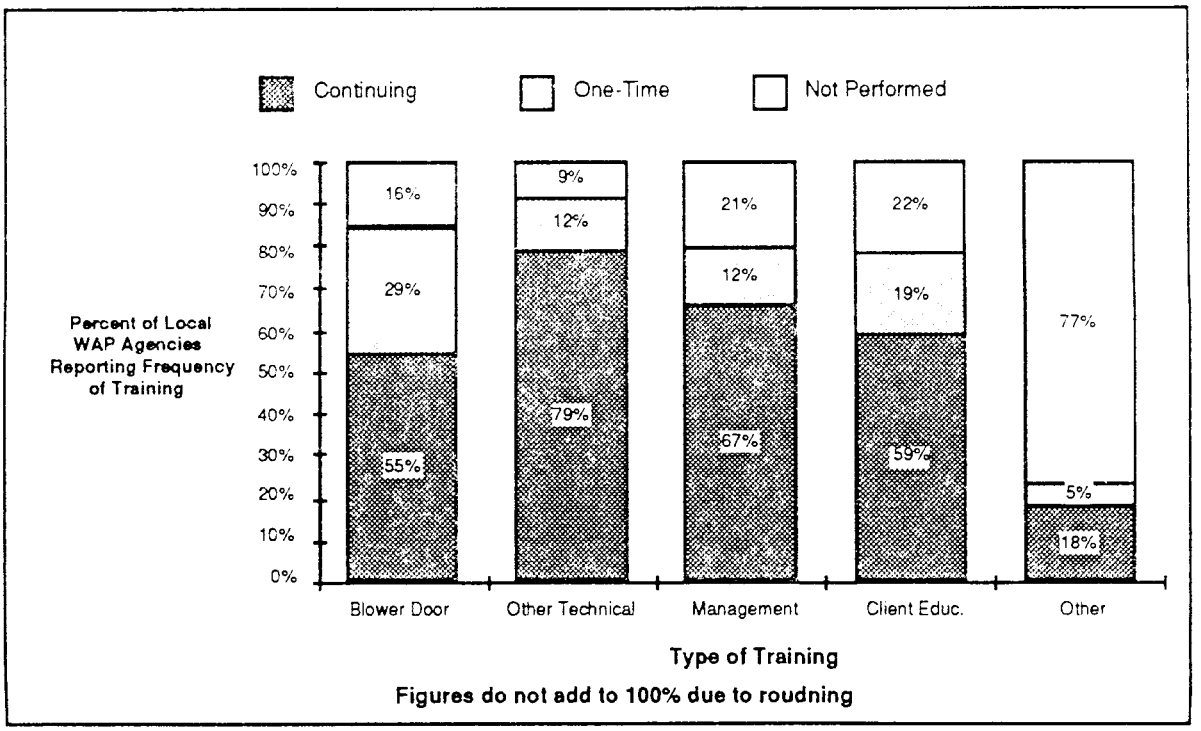

Fig. 1.13. Staff Training Reported by Local WAP Agencies.

1.3.6 Innovative Techniques and Measures

The WAP network utilizes a wide variety of methods, defined by our survey as innovative and advanced diagnostic and screening techniques for energy-efficiency retrofits (Figure 1.14). For example, many State WAP agencies require determination of investment level based on current energy consumption or anticipated savings, and blower door procedures to test for leakage areas. In their comments some State WAP agencies indicated a high priority for innovative techniques and measures but do not require them because existing funding resources are not sufficient to allow for their use.

Local WAP agencies also utilize a wide variety of innovative measures and techniques. For example, determination of investment level based on current energy consumption or anticipated savings is used on average on nearly 40 percent of their completions (Figure 1.15). In PY 1989, on average, blower door procedures to test for leakage were employed by each local WAP agency on 31 percent of weatherization completions, and heating/cooling system safety inspections were conducted on 53 percent of the weatherized units. Significantly, local WAP agencies anticipate utilizing the indicated diagnostic and screening techniques more often in PY 1991 than they did in PY 1989.

State WAP agencies require or allow a variety of approaches to building weatherizations completions. Most require quality control as part of their management practices (Figure 1.16). Almost half of State WAP agencies require client education, while less than 10 percent require water-heating measures.

The average percent of completions employing selected building energy-efficiency measures utilizing any funding source was reported by local WAP agencies (Figure 1.17). In-person client education is performed on a majority of weatherization completions. Heating system tune-ups which were first encouraged in 1985 federal legislation are now done on average in 40 percent of completions. Cooling measures and efficient lighting and appliances, though small in PY 1989 usage, will at least double by PY 1991 according to the expectations reported by local WAP agencies. It appears that certain measures which are not currently permitted by WAP regulations, such as appliances and lighting, are being installed with other sources of funds available to local WAP agencies.

Future WAP evaluation reports will identify agencies that have implemented innovative techniques and measures, and will examine in more detail their impact and how they accomplished this.

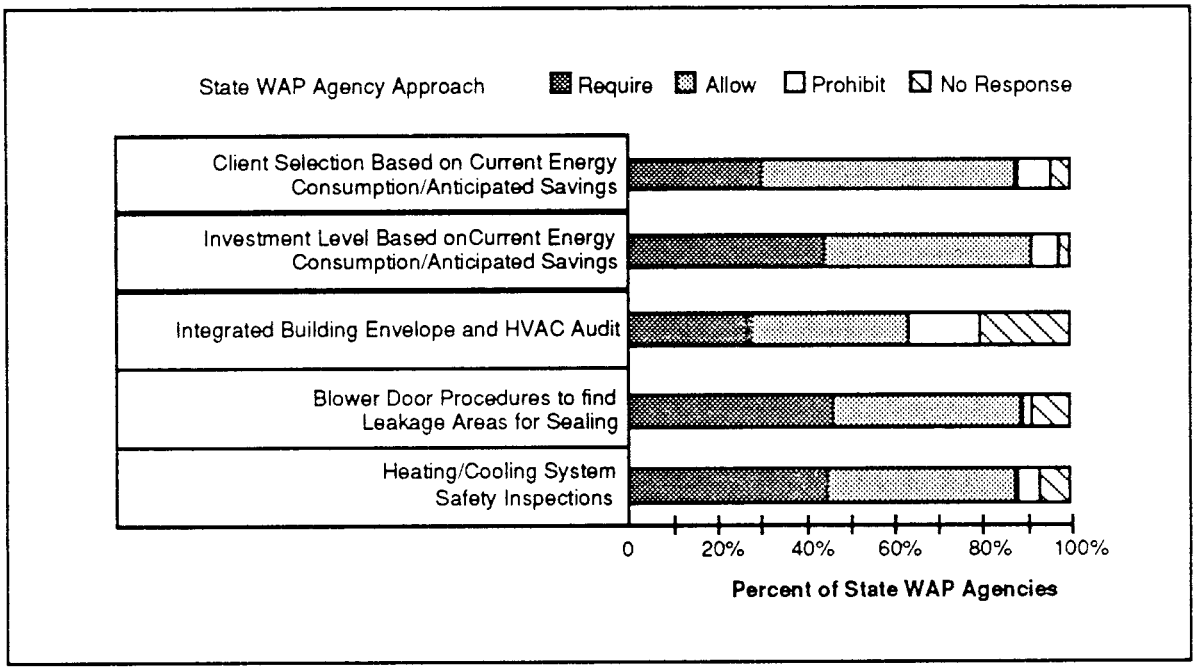

Fig. 1.14. State WAP Agency Approach to Selected Diagnostic and Screening Techniques.

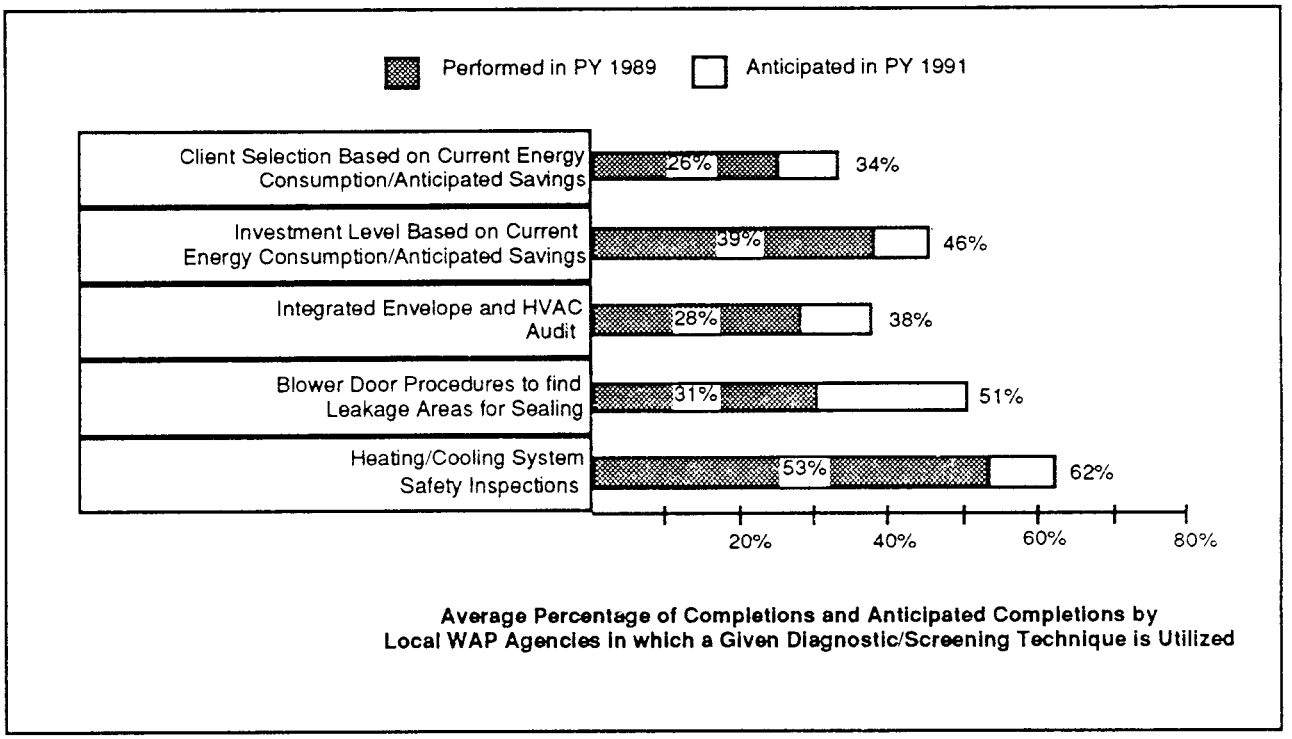

Fig. 1.15. Completions in Which Local WAP Agencies Reported Use of Energy-efficiency Diagnostic and Screening Techniques.

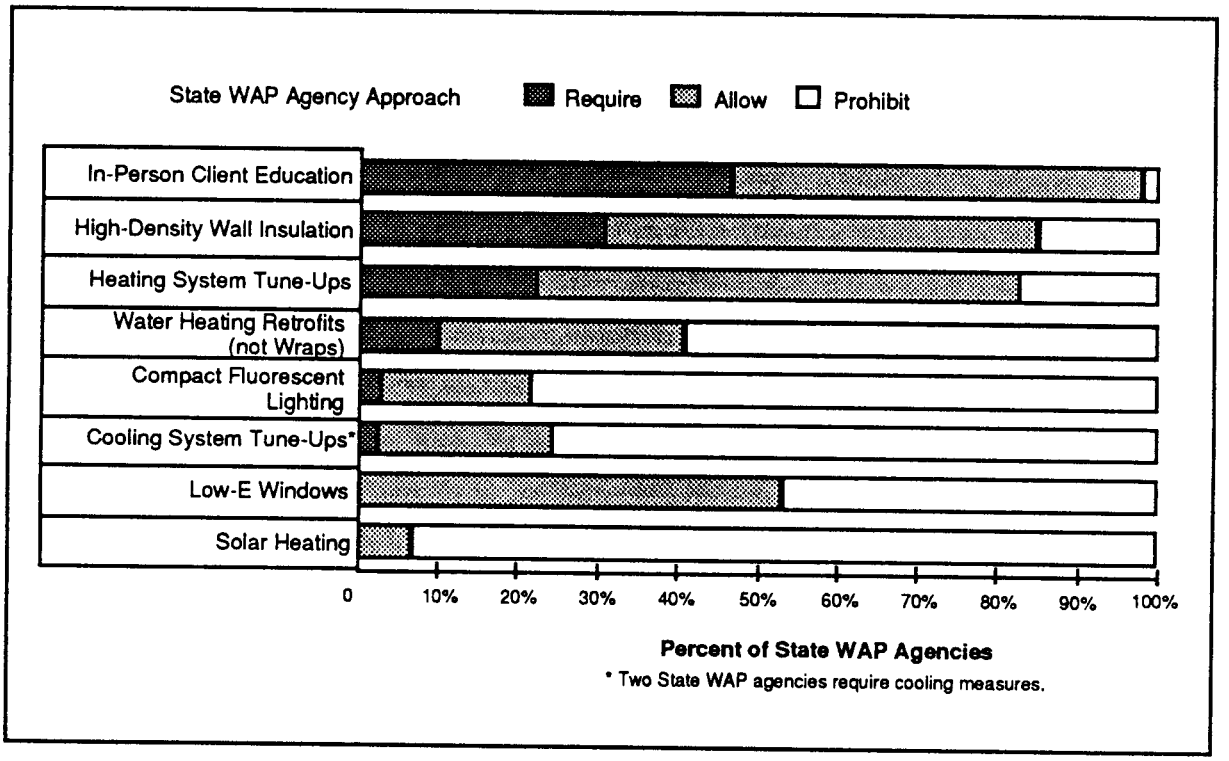

Fig. 1.16. State WAP Agency Approach to Types of Energy-efficiency Measures.

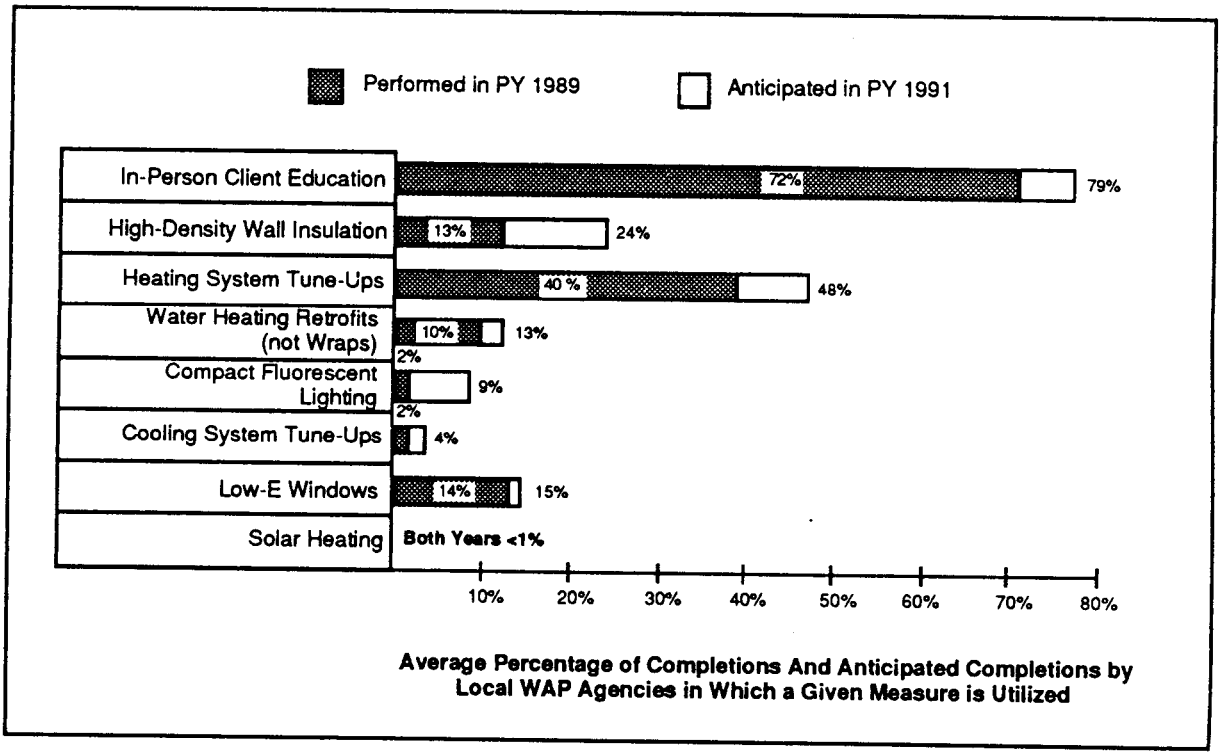

Fig. 1.17. Percentage of Completions in Which Local WAP Agencies Reported Use of Selected Energy-Efficiency Measures Utilizing Any Funding Source.

1.3.7 Energy-efficiency Demonstration and Analysis

The WAP network has had significant involvement in energy-efficiency demonstration and analysis activities and indicates a great deal of interest in an expanded involvement in such activities (Figure 1.18). The majority of State WAP agencies have implemented new programs and provided test sites for new technologies over the past five years. Examples include a landlord participation program and energy education programs in conjunction with utilities. Approximately 80 percent of State WAP agencies are interested in performing these activities, as well as more advanced demonstration and analysis projects, such as test site monitoring and end-use metering. A significant percentage (50 percent for site monitoring) expressed a willingness to cost-share this work.

Similar information on energy-efficiency demonstration and analysis activities was also collected in the local WAP agency survey (Figure 1.19). Over 30 percent of local WAP agencies have implemented new programs or provided test sites for new technologies and approaches over the past five years. Approximately 90 percent of local WAP agencies are interested in implementing these programs. Also, over 70 percent of local WAP agencies are interested in monitoring test sites as part of a demonstration and analysis program. This suggests substantial interest by the WAP network in advancing building energy-efficiency technologies and practices. However, more than 75 percent of local WAP agencies indicate a need for full outside funding; the remainder are willing to consider cost-sharing arrangements.

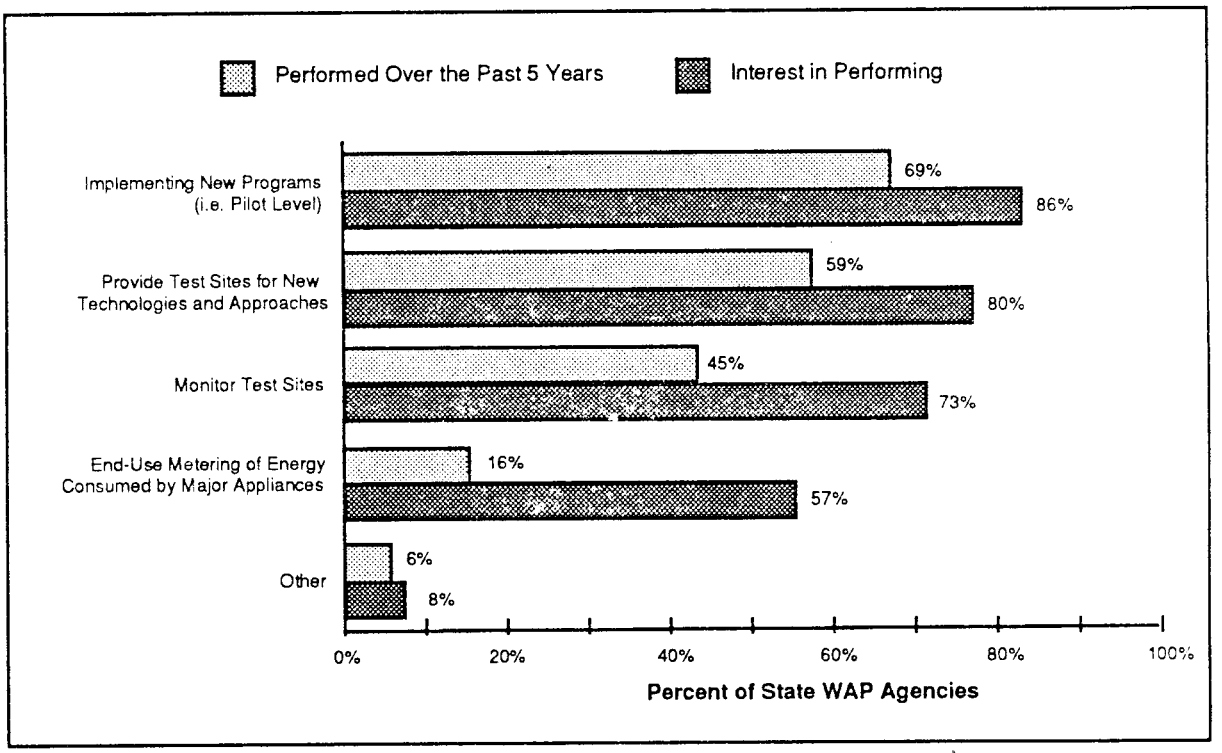

Fig. 1.18. State WAP Agency Participation and Interest in Energy-Efficiency Demonstration and Analysis Activities.

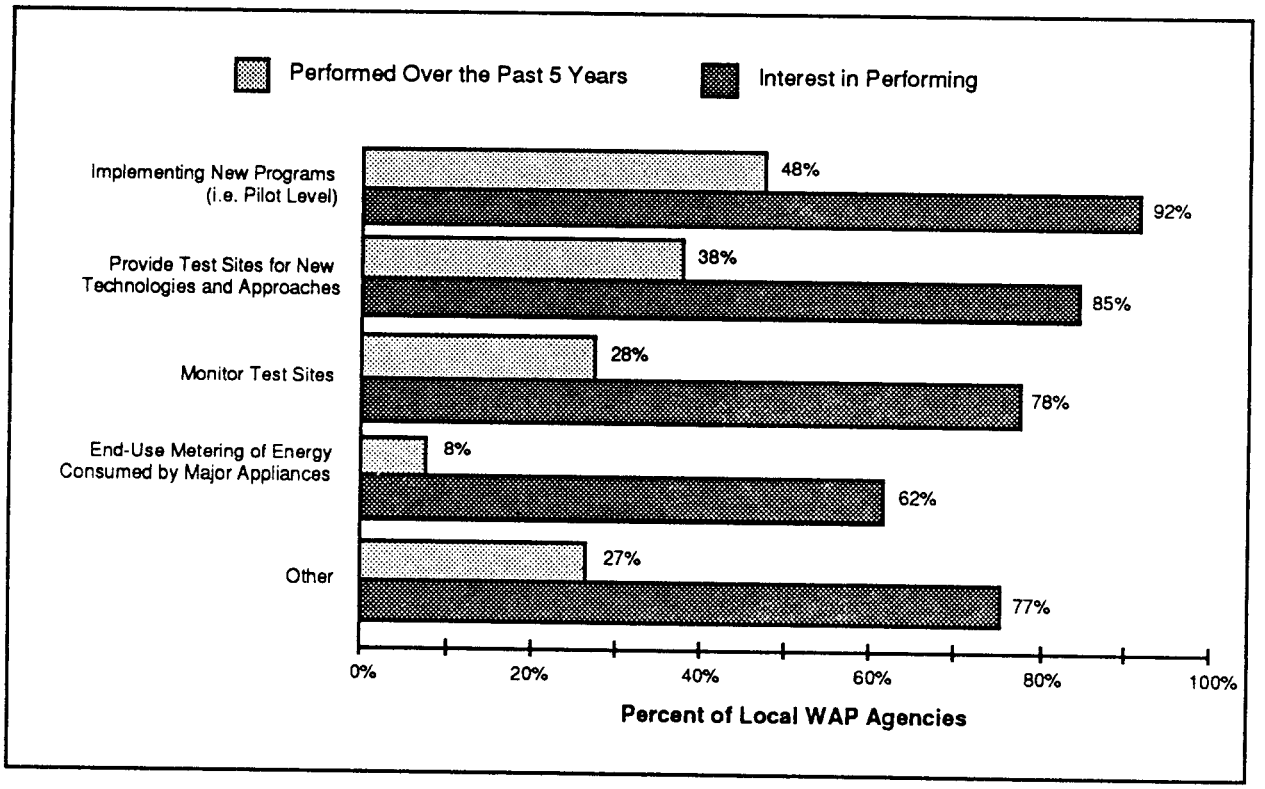

Fig. 1.19. Local WAP Agency Participation and Interest in Energy-Efficiency Demonstration and Analysis Activities.

1.3.8 Programmatic Initiatives

Based upon their response to survey descriptions of weatherization initiatives State WAP agencies have been active in using the discretion provided in the program rules to adopt these enhanced weatherization approaches (Figure 1.20). Over 90 percent of State WAP agencies are involved in health, safety, environmental issues, and energy education initiatives. This includes training of local WAP agency staff and preparation of client education materials. Over 80 percent of State WAP agencies are involved in implementing some form of WAP partnership with utilities. Examples of cooperative efforts with utilities include data sharing, cost sharing, utility performance of free weatherization audits, and utility assistance in weatherization of rental units. Technology transfer is also a significant area of State WAP agency involvement. This includes provision of information on new techniques and methods, participation in conferences, and publication of new findings. Fifty-nine percent of State WAP agencies have initiated efforts to attract non-WAP funds, and 39 percent are actively marketing to improve program impact.

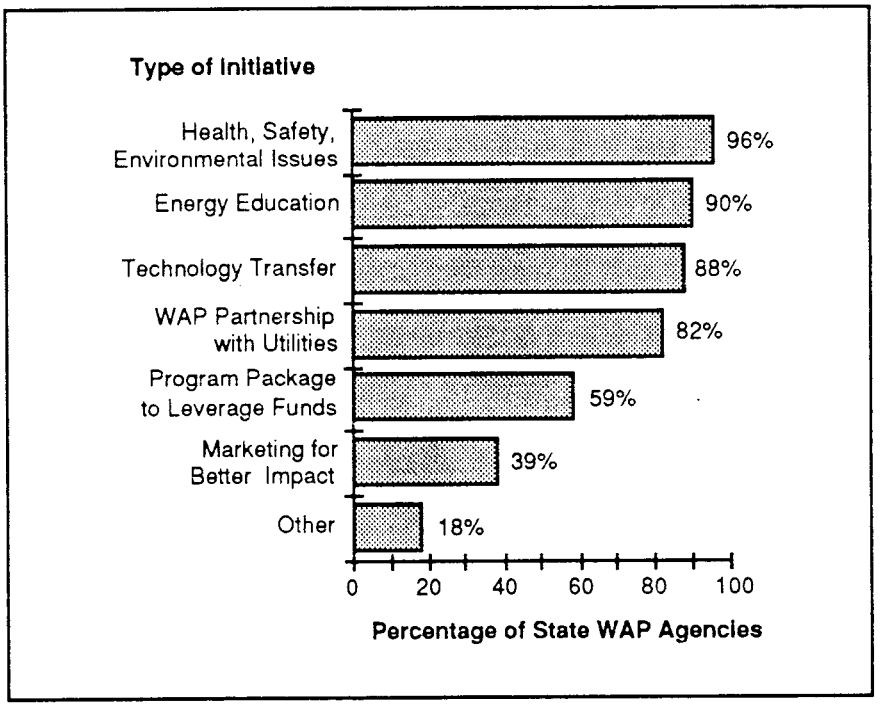

Fig. 1.20. State WAP Agency Performance of Weatherization Initiatives.

Nearly 60 percent of State WAP agencies report that they have used techniques, measures, and standards, within the discretion of the program rules, that take advantage of outside resources. For example, 43 percent of the State WAP agencies adopted HHS income qualifications. Several of their initiatives may provide useful models for the implementation of the new WAP legislation (e.g., State Energy Efficiency Programs Improvement Act, 1990, PL 101-440).

Examples of other modifications which have been adopted by State WAP agencies include:

- blower door standards;
- field standards of workmanship;
- health and safety guidelines;
- higher material standards;
- higher average cost per unit;
- higher monitoring standards;
- installation standards;

- owner investment requirements;
- payback period standards;
- resources and authority to use alternative labor/materials ratio; and
- State certification of specific materials and suppliers.

1.3.9 Potential Service Improvements

As part of the survey process State and local WAP agencies were asked to rank the importance of several different factors that they believe might improve the delivery of low-income weatherization services. They were also given an opportunity to provide general comments on the direction and priorities for the WAP. The four most important factors were the same for both State and local WAP agencies. These four factors were:

- improved training;
- stable weatherization funding;
- ability to use housing rehabilitation funds from other federal agencies; and,
- enhanced client education.

1.4 CONCLUSIONS RELATIVE TO WAP NETWORK CHARACTERIZATION OBJECTIVES

Relative to the objectives established for the WAP network characterization report, the following broad conclusions can be drawn.

- Overall the WAP network would appear to provide an excellent vehicle for obtaining market information on low-income client needs. The network delivered on-site weatherization services to nearly a quarter of a million households in PY 1989. Local WAP agencies in particular, as community based organizations, are familiar with the energy conditions and needs of their constituencies, as well as the particular characteristics of their local housing stock. Some State and local WAP agencies also appear to have the technical capability to provide feedback on the performance of new technologies and techniques.
- Many innovations and cutting-edge initiatives are being implemented or tested throughout the WAP network. State and local WAP agencies are involved in new technological initiatives, such as the use of blower doors and low-e windows, as well as new programmatic initiatives, such as health, safety and environmental

considerations, energy education, and increasing partnerships with utility programs. Many State and local WAP agencies are also involved in extensive exchange of information to and from a wide variety of sources.

- Overall the WAP network has extensive experience in diagnosing weatherization needs and installing retrofit measures. Many innovative management, diagnostic and screening techniques, and building energy-efficiency measures are currently being utilized throughout the network. This experience is not uniformly distributed.

- State and local WAP agencies interact extensively between themselves and among their peers and colleagues in such areas as training, technical assistance, and management practices. Further, the WAP network exhibits a significant degree of interaction with external programs and organizations, such as utilities.

- The WAP network appears to be an experienced and highly willing potential partner for future energy-efficiency efforts. WAP staff on average receive extensive training and have experience with a variety of innovative techniques and measures (e.g., blower doors). There is evidence of opportunities for further training and technical assistance throughout the network.

- The WAP network is active in client education. It is a medium to high priority for both the State and local WAP agencies. There is a general desire for more client education, and local WAP agencies anticipate expanding client education both through in-person contact and mailed literature.

1.5 SUMMARY

In summary, the WAP network represents a large and diverse resource for delivering energy-efficiency to the nation's low-income housing sector. The network is interacting with other energy related programs and organizations. It is involved in the field implementation of a range of advanced diagnostic and screening techniques and energy-efficiency measures. It is also involved in housing rehabilitation, safety, and client education.

2. INTRODUCTION

2.1 BACKGROUND

The Weatherization Assistance Program for Low-income Persons (WAP) is administered by the U.S. Department of Energy (DOE). The WAP was originally designed and operated by the federal Community Services Administration. It began nation-wide operation in 1974, based on a pilot program implemented in the State of Maine. The DOE/WAP was established by Title IV of the Energy Conservation and Production Act of 1976 (PL 94-385). The program is designed to provide federal assistance to low-income householders for the purpose of "weatherizing" their housing units to reduce energy consumption, and corresponding energy expenditures. Federal grants are made to the States (as State WAP agencies), which in turn distribute the funds to community agencies (local WAP agencies) for the direct weatherization of qualifying, low-income housing units.

In the WAP, grant funds are allocated to States by the Department of Energy on a formula basis to make improvements to conserve energy. The formula takes into account the number of low-income households, the percentage of total residential energy used for space heating and cooling, and the number of heating and cooling degree days per State. DOE sets the framework within which State and local weatherization activities take place by providing program regulations and policy guidance.

States must apply for allocated funds each year by submitting a State Plan that, among other things, describes the work to be accomplished with grant funds. Grants are generally awarded in March and implementation begins in April. Regional and State conferences occur regularly during the program year to communicate new programmatic information and share technical advancements on a regional basis.

The WAP is administered as an intergovernmental program, with relatively complex funding, planning, implementation, and reporting processes. Overall, WAP policy and funding is provided by the Department of Energy. State WAP agencies are located in State governments and are therefore key actors in planning and implementing the WAP. Local agencies receiving WAP funds from State WAP agencies are local WAP agencies, and constitute the key service providers to eligible low-income persons.

The most recent national level evaluation of the Weatherization Assistance Program was completed in 1984 and was based on data for 1981. WAP regulations and operations have changed substantially, outdating the original study. New funding sources, management principles, audit procedures, energy-efficiency measures, and an increased emphasis on training, technical assistance, and client education have been incorporated into the program in the last decade. In addition, new initiatives, incentives, opportunities, methods, and technologies will be forthcoming. Many of these factors have been studied alone or at a local level; however, no recent

work has been done to assess their integrated impact or potential. This study is part of a timely and comprehensive national level evaluation of the WAP designed to provide policy makers and program implementers with the up-to-date, credible, and reliable information they need for effective decision making and cost-effective operations.

This report documents a study designed to "characterize" the WAP network of State and local WAP agencies. This study is one of five being conducted for the U.S. Department of Energy as part of a national WAP Evaluation. Three of the remaining four studies focus on principal WAP submarkets:

- fuel-oil heated homes
- single family/small multifamily homes (using gas or electricity)
- high-density multifamily buildings (all fuels).

The final study will provide a profile of eligible clients and characterize the resources applied to weatherization employing other than DOE-appropriated funds. The reports documenting the results of these four additional studies will be issued over the next two years. Two working groups, a Methodology Group and a Planning and Implementation Group, are participating in the evaluation. They have been and will continue to be a major source of input to DOE on technical issues, project foci, and application of results.

2.2 PURPOSE OF STUDY

The overall national WAP evaluation is designed to accomplish seven goals:

1. estimate energy savings due to the program -- one, two and three years after participation;
2. assess non-energy impacts, e.g. comfort, safety, and housing affordability;
3. assess program cost effectiveness;
4. analyze factors which influence energy savings, non-energy impacts, and cost effectiveness;
5. describe the WAP network's characteristics and innovations;
6. characterize the WAP-eligible population and resources; and
7. identify promising WAP opportunities for the future.

This report is the first to be issued as part of the national WAP Evaluation. The report addresses the fifth and seventh objectives above; it presents important characteristics of the existing WAP network of State and local WAP agencies.

As a part of the overall WAP evaluation, this report investigates the current and potential contributions of the State and local WAP agency network in promoting energy-efficiency.

The major objectives of this study are to analyze:

- the relationships between State and local WAP agencies, and the extent of external program relationships;
- the interest and availability of potential partners for future energy-efficiency efforts;
- technical assistance, client education, and training skills;
- range of experience and technical expertise for diagnosing weatherization needs and installing retrofit measures;
- the ability of State and local WAP agencies to provide market information on client needs and to provide feedback on the performance of new technologies; and,
- innovations and cutting-edge initiatives being implemented or tested in the field.

By understanding the size, scope, skills, and innovative capabilities of the current Weatherization Assistance Program network, DOE can better work with the network to enhance program performance and establish links with other programs aimed at promoting energy-efficiency in the nation's building stock.

2.3 RESEARCH METHODOLOGY

The Characterization of the WAP Network was based on two national surveys of State and local WAP agencies. This report presents summary data and findings from the two surveys. A phase II effort will document more in-depth findings from a detailed process evaluation of the WAP network, and will be based on interviews with selected network members.

2.3.1 Local WAP Agency Survey

Local WAP agencies in the continental forty-eight States and the District of Columbia were surveyed. To identify the population of local WAP agencies to receive the survey, State WAP agencies were asked to supply current lists of local WAP agencies, their addresses and the name of a contact person. A preliminary listing of local WAP agencies was provided by the National Association for State Community Service Programs (NASCSP). This was provided to the States as a starting point for enumerating local WAP agencies. As a result of this effort, 1,148 Local WAP agencies were identified.

The local WAP agency questionnaire used in this project was developed by the project team in consultation with a subcommittee consisting of members of the Planning and Implementation and Methodology Working Groups. It was reviewed extensively and underwent nine revisions and pre-testing to insure that it adequately captured the key characteristics of the local WAP agency network. The local WAP agency questionnaire (and resulting national statistics) can be found in Appendix A.

The local WAP agency questionnaire contains 22 questions. Each of these questions has a series of sub-questions, resulting in a data set of more than 500 variables. The questions sought information on general local WAP agency characteristics, the number and type of weatherizations performed in program years 1986 and 1989, whether waiting lists exist and of what length, the management of non-WAP energy programs* , the size and responsibilities of in-house and non-agency staff, whether licenses and certifications for staff are required and by whom, and the nature of the training received by staff. The questionnaire also addressed financial issues: type and source of funding and in-kind assistance and the level of funds outside the agency dedicated to low-income weatherization services. The survey addressed the type and scope of services offered by Local WAP agencies.

The survey was also concerned with mechanisms for technology transfer and local WAP agency technical innovations and initiatives. In addition, it asked respondents to report on use of and prioritization of diagnostic and screening techniques and energy-efficiency measures. Finally, it solicited input on how to improve the delivery of weatherization services.

The local WAP agency questionnaires were mailed in October 1990 to the 1,148 local WAP agencies identified by NASCSP and the State WAP agencies. Several follow-ups, including direct mailings to local WAP agencies and requests to State WAP offices to contact local WAP agencies were made. By mid-January, 1991, the survey cut-off date, 920** or 81 percent of the questionnaires had been completed and returned. An additional 19 were returned containing statements that the agency either did not manage a WAP program, or that the program had been terminated prior to Program Year 1989. The final disposition of the mailed local WAP agency questionnaires is shown in Figure 2.1. The local agency data and information contained in this report are based on the 920 returned local WAP agency questionnaires.

The data from the 920 returned questionnaires were screened and edited to identify possible erroneous responses. Where necessary, local WAP agencies were telephoned to verify certain responses failing the edits. The data were then analyzed using PC SAS® Version 6.03. Univariate statistics on all variables, including means, medians, sums, standard deviations, minimums, maximums, and frequencies were produced, as appropriate on the national level. In addition, subgroup statistics were produced according to the three national climate zones being employed in the national WAP evaluation (Figure 2.2). The climate zones correspond more or less to the cold, moderate, and hot zones of the United States.

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* Rather than a formal definition of "energy program," examples were provided to survey respondents (e.g., compact fluorescent light bulb installation) to attempt to capture the scope of all energy related activities performed by State and local WAP agencies. "Energy Programs" might therefore represent services and funding other than DOE's.

** A total of 920 questionnaires were received by the cut-off date and are included in the data set. A subset of 27 of these questionnaires did not include financial information.

Final Disposition of Subgrantee Questionnaires	
Number of Subgrantees Identified by ORNL (based on NASCSP and State input) and Mailed Questionnaires	1148
Number Returned Stating No WAP Program or Program Terminated	19
Number Completed and Returned Prior to Deadline	920
Number Returned After Deadline (and not included in analysis)	33
Total Completed Subgrantee Questionnaires (as of 4/23/91)	953

Fig. 2.1. Final Disposition of Local WAP Agency Questionnaires.

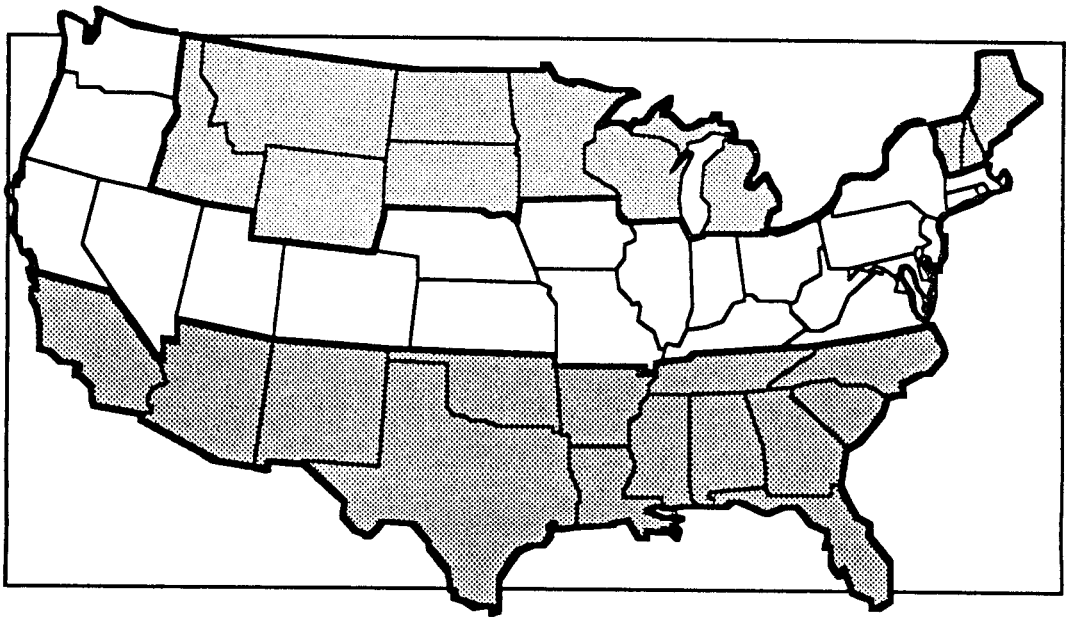

Fig. 2.2. Three Climate Zones for the National WAP Evaluation.

2.3.2 Technical Notes

The local WAP agency survey did not poll a scientifically designed sample of the local WAP agency universe. The survey was addressed to all local WAP agencies. As a result, the net 16 percent which did not respond may (or may not) represent a biased subsample. A State-by-State analysis indicates that there is no relationship between response rate (measured as the percent of local WAP agencies in a State that completed the questionnaire) and State size (measured either in terms of the number of local WAP agencies in the State or the DOE/WAP funding received by the State in Program Year 1989). Nevertheless, response rates do differ, ranging from 43% in Louisana and 53% in Connecticut and New Mexico to 100% in 10 States. Further, there may be a

proportionately larger number of small local WAP agencies included in the non-respondent group.* Because of this, care should be taken when projecting totals to the entire population based on the 920 responses to the survey.

In addition, when calculating means for weatherization, financial and personnel data, it was assumed that unreported or missing data were to be interpreted as zero, where similar data are reported for other variables. For example, if a local WAP agency reported receipt of $X from WAP, but did not enter a figure for LIHEAP, LIHEAP funding is assumed to be zero. The means (arithmetic averages), medians, and standard deviations reported reflect that assumption. There is one exception to this assumption. For those cases where a value is reported for number of weatherizations, and no value for funding, funding data are treated as missing. This approach does not affect the sums reported, but may have the effect of slightly deflating means and slightly inflating the standard deviations. In addition, several local WAP agencies, when reporting the percent of housing types weatherized, provided figures which totaled more than 100 percent. To account for rounding, values totaling 105 percent or less were retained. Those exceeding 105 percent were not included in the analysis.

The local WAP agency sums contained in this report are also somewhat underreported in that the entire population of local WAP agencies are not included. In addition, of the 920 responses received, 18 local WAP agencies did not report any financial data, 17 did not report number of weatherizations, and 19 did not report staff size. As a result, these missing values are not included in any of the local WAP agency statistics.

2.3.3 State WAP agency Survey

As part of the Characterization of the WAP Network, a survey of State WAP agencies was also conducted. The target population for this survey was all State WAP agencies in the continental United States and the District of Columbia (a total of 49 organizations). The list of State WAP agencies was provided by DOE.

A survey questionnaire similar in structure to the local WAP agency questionnaire was constructed. Like the local WAP agency questionnaire, this questionnaire was also reviewed extensively by ORNL and DOE staff, and a subcommittee of the national WAP Evaluation Working Groups. The questionnaire was revised through several iterations, and then was pre-tested by two State WAP agencies. The final State WAP agency questionnaire, and national statistics, are contained in Appendix B. The final State WAP agency questionnaire was mailed to State WAP agencies on December 20, 1990. All 49 State WAP agencies responded. The last State WAP agency questionnaire was received on February 15, 1991. One State WAP agency did not provide financial data. These missing financial data were estimated by contacting DOE and the HHS-LIHEAP offices. The financial estimates provided for DOE/WAP, HHS-LIHEAP weatherization, and PVE "Oil Overcharge" funds were incorporated in the data set. These data, estimated for one State WAP agency only, are based on the federal fiscal year 1989, rather than the WAP Program Year 1989.

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* The number of weatherizations reported by the 920 respondents (81 percent of the total number of local agencies) represents 86 percent of all the WAP weatherizations in PY 1989.

The data from the 49 State WAP agency questionnaires were analyzed using PC SAS®. Univariate statistics for all data were produced on the national level and by the three climate zones.

Only one State, California, lies in more than one climate zone. To develop State WAP agency estimates by climate zone, the California data are weighted by the proportion of funds reported by California local WAP agencies in the hot and moderate climate zones. In effect, California is treated as two State WAP agencies. The hot zone represents 65 percent of the State's response, and the moderate zone represents 35 percent of the State.

2.3.4 Data Limitations of the State and Local WAP Agency Surveys

We believe it necessary to describe the limits of this work before describing its findings. We believe this will help the reader to take full advantage of the material provided and to avoid conclusions that go beyond its methodological limits. The reader should recognize these caveats in any conclusions or reports generated as a result of this study.

- This work is in the main a snapshot of a program. It asked questions related to a point in time (usually the WAP Program Year 1989).

- The local WAP agency response rate, while extraordinarily high (81 percent) is a self-selected sample, subject to response bias. It is not a complete census.

- The accuracy of the data, and thus the report and statistics, is limited by the individual respondent's accuracy and interpretation of the questions posed. Data accuracy may vary widely by respondent.

- State and local WAP agencies vary widely. This should be kept in mind when interpreting broad national or regional averages. Specific State or local WAP agencies may differ significantly from the average. For this reason, medians as well as means are reported to better approximate "average" characteristics.

- In many cases, agencies report a particular practice or approach is used. This does not necessarily mean that this practice or approach is used in all cases (e.g., all weatherization jobs).

- The quantity of weatherizations, training, personnel, etc., are reported. Because no qualitative data were collected, no inferences concerning impact or quality can be made.

2.4 REPORT ORGANIZATION

This report presents aggregate national statistics from the State and local WAP agency surveys primarily in graphical format. Selected regional data are also presented. Chapter 3 presents key national facts and figures related to the WAP network. Chapter 4 provides more detailed local WAP agency information, largely relating to interactions between the Local WAP agencies and

other programs and agencies. Chapter 5 presents similar details on the State WAP agency network. Chapter 6 focuses on innovations and initiatives within the WAP network. Finally, Chapter 7 presents overall conclusions. A list of acronyms and a glossary of terms are contained in Appendix C.

3. KEY WAP NETWORK FACTS AND FIGURES

3.1 LOCAL WAP AGENCY WEATHERIZATION NETWORK

3.1.1 Number and Type of Local WAP Agencies

Local WAP agencies represent a variety of organization types (Figure 3.1). The vast majority (70 percent) of local WAP agencies are Community Action Agencies (CAA) organized as private, non-profit entities. Local and county government agencies (CAA or non-CAA) comprise 20 percent of local WAP agencies. The balance (10 percent) are non-CAA, non-governmental organizations. The WAP network can therefore be characterized as an organization with a significant community-based presence.

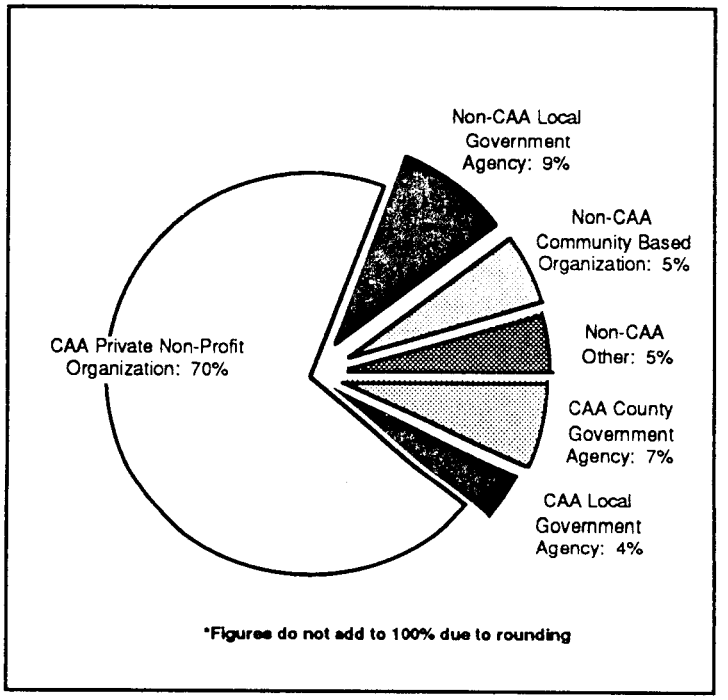

Fig. 3.1. (L1)* Local WAP Agency Organization Type.

* The letter and number indicate the questionnaire (S=Grantee or State WAP agency, L=Subgrantee or local WAP agency) and question number from the surveys. The questionnaires are found in Appendices A and B.

3.1.2 Weatherization Services of the Local WAP agency Network

Number and Type of Households Weatherized

The 920 local WAP agency respondents report that a total of 243,268 low-income housing units were weatherized with funds received from all sources in Program Year (PY) 1989*. This represents an increase of nearly 7,000 weatherization completions over PY 1986. The average (mean) number of weatherization completions per local WAP agency declined somewhat over the same period, from 279 total units per local WAP agency in PY 1986 to 271 in PY 1989. The median** number of units weatherized declined from 187 units in PY 1986 to 184 units in PY 1989 (Figure 3.2). The mean number of units weatherized per local WAP agency is substantially larger than the median, reflecting the highly skewed distribution of local WAP agencies, with a very few large agencies and many smaller agencies (see Figure 3.4).

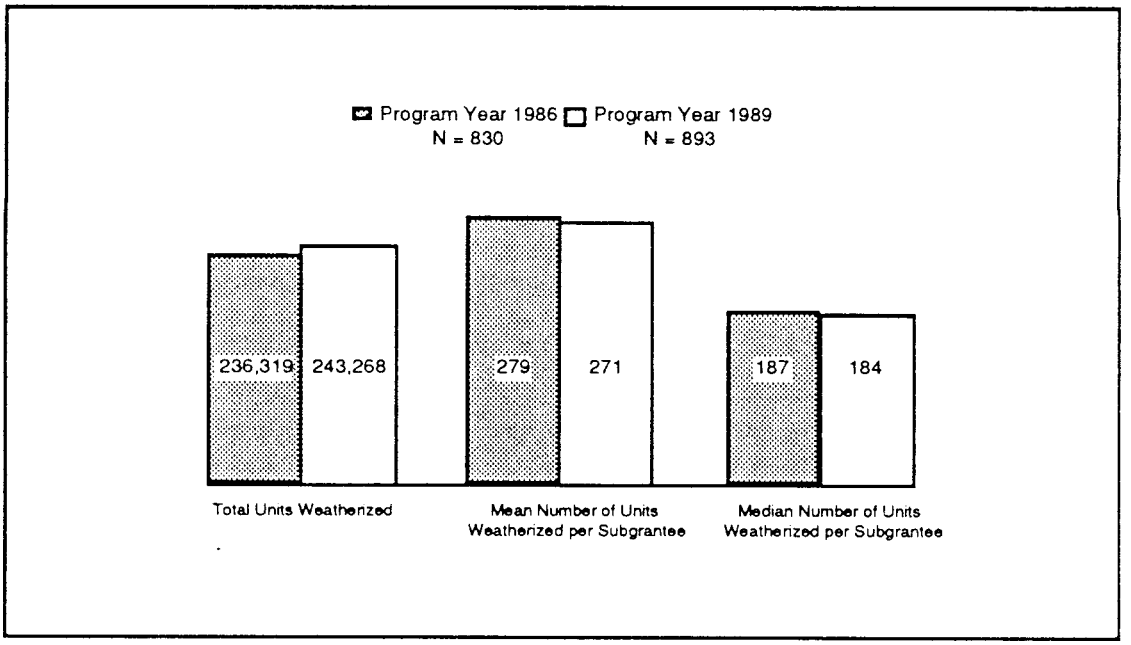

Fig. 3.2. (L2) An Overview of the Local WAP Agency Network and Local WAP Agency Activity.

Distribution of Weatherization Completions

The data reported by local WAP agencies, (Figure 3.3), indicate that most housing units weatherized in both PY 1986 and PY 1989 were owner-occupied, single-family homes, followed by renter occupied single-family homes, and renter occupied multifamily units. Figure 3.3 reports the means of estimates for each housing segment given in percent by local WAP agencies. While only six percent of the housing units weatherized in PY 1989 were rental units in buildings with

* Program Year (PY) 1989, for most local WAP agencies, is April 1, 1989 through March 31, 1990.

** Median number of units are reported in addition to mean number because of the skewed distribution of number of units weatherized by subgrantees (see Figure 3.4).

five or more units, this represents a ten percent increase over PY 1986 activity in this housing segment. Roughly 153,250 owner-occupied and 87,600 renter-occupied housing units were weatherized in PY 1989. The low-income population resides in approximately a 50/50 ratio in residences they own (53 percent) and residences they rent (47 percent).*

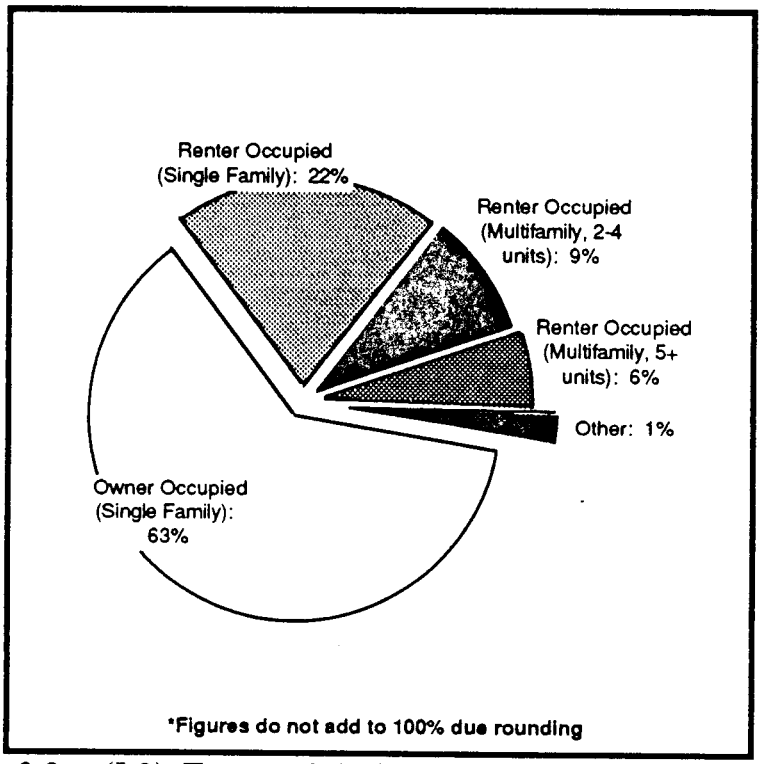

Fig. 3.3. (L2) Types of Units Weatherized in PY 1989.

The number of weatherizations performed by local WAP agencies in PY 1989 with all sources of funding varies significantly and is highly skewed (Figure 3.4). The average (mean) number of weatherizations performed was 271 in PY 1989. However, nearly 70 percent of local WAP agencies perform fewer weatherizations than the mean. The median number of weatherization completions was 184 in PY 1989. Only 23 local WAP agencies reported more than 1000 weatherization completions in PY 1989, including one local WAP agency which reported over 5000 weatherization completions. Approximately 73 percent of local WAP agencies reported less than 300 weatherization completions in PY 1989. Thus, most local WAP agencies operate "small" to "medium" size programs, with a few very large agencies skewing the distribution.

Similar distributions apply to total energy program** funding and total staff sizes for the local WAP agencies. Not surprisingly, there are positive correlations between staff size, funding levels, and number of weatherizations. This is discussed later in this report.

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* Calculations of weighted means by segment percent and total weatherization by each local WAP agency suggest a somewhat different distribution: owner occupied, 52 percent; renter occupied, single family, 21 percent; multi-family renter, 2-4, 13 percent; multi-family renter 5+, 13 percent; and others, less than 1 percent.

** Rather than a formal definition of "energy program," examples were provided to survey respondents (e.g., compact fluorescent light bulb installation) to attempt to capture the scope of all energy related activities performed by State and local WAP agencies. "Energy Programs" might therefore represent services and funding other than DOE's.

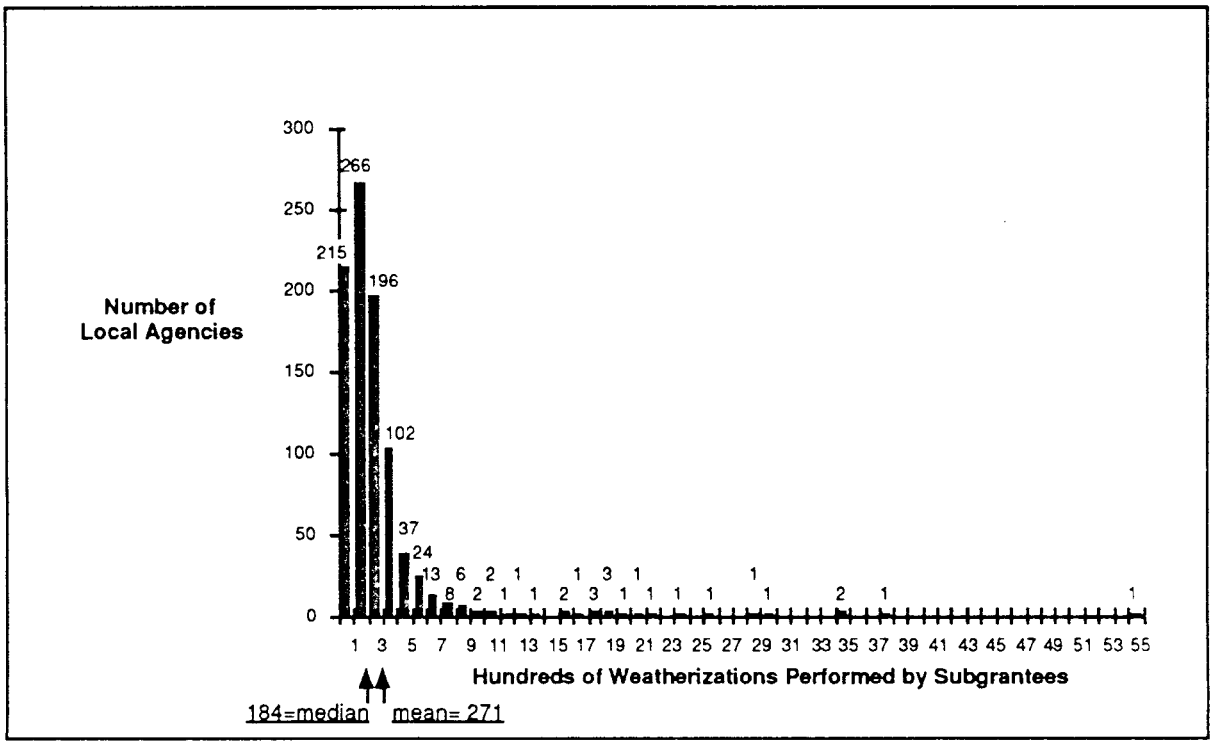

Fig. 3.4. (L2) Distribution of Local WAP Agencies by Number of Units Weatherized (PY 1989)--All Sources of Funding.

Waiting Lists for Weatherization Services

The vast majority of local WAP agencies maintain waiting lists for weatherization services (Figures 3.5 and 3.6). The size of most waiting lists is between 11 and 100 eligible clients for weatherization services. However, approximately 13 percent of the local WAP agencies maintain waiting lists of over 500 eligible income-qualified clients. Further, most local WAP agencies maintain waiting lists of additional clients who have not yet been income-qualified. More than 75 percent of local WAP agencies reporting maintain both types of waiting lists; 20 percent have an income-qualified list, but do maintain a not income-qualified list; and finally, less than one percent maintain a not income-qualified list but do not maintain an income-qualified list.

A general but slight lengthening of client waiting lists occurred between PY 1986 and PY 1989 (Figure 3.5 and 3.6). The percent of local WAP agencies reporting no waiting list for income-qualified clients declined from 8 percent to 4 percent, while those having no waiting list for potential, not income-qualified clients fell from 28 percent to 24 percent. At the same time, the number reporting relatively long waiting lists increased by one to three percent. There do not appear to be significant differences in waiting list lengths between different organization types. For potential clients, CAA local government agencies tend to have the shortest waiting lists followed by county government agencies. In general, local WAP agencies do not keep waiting lists any longer than those they can serve within their planning horizon. Most local WAP agencies keep waiting lists on the order of 50 clients (about 3 months worth of service), fairly consistent with the median number of homes served annually (184). At the time of this survey, more than

107,000 housing units (income and not income-qualified) were estimated to be awaiting weatherization. These statistics suggest that the demand for low-income weatherization services remains strong.

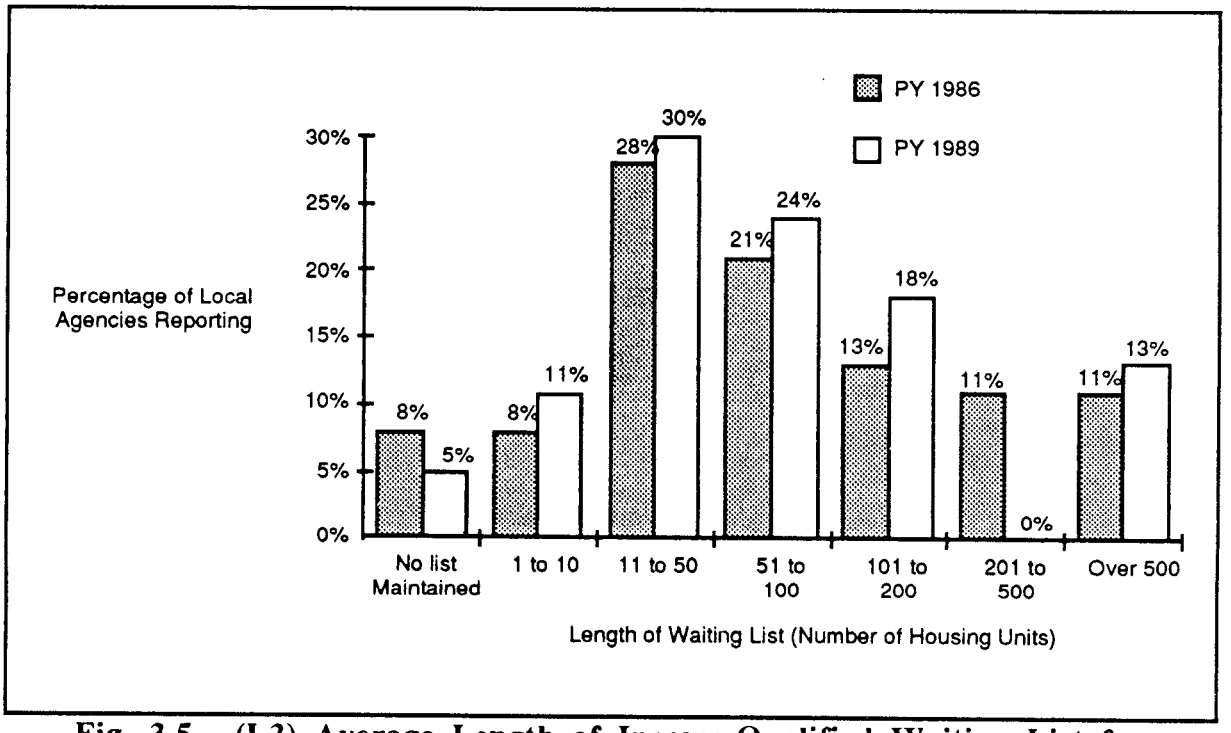

Fig. 3.5. (L3) Average Length of Income-Qualified Waiting List for Low-Income Weatherization Services.

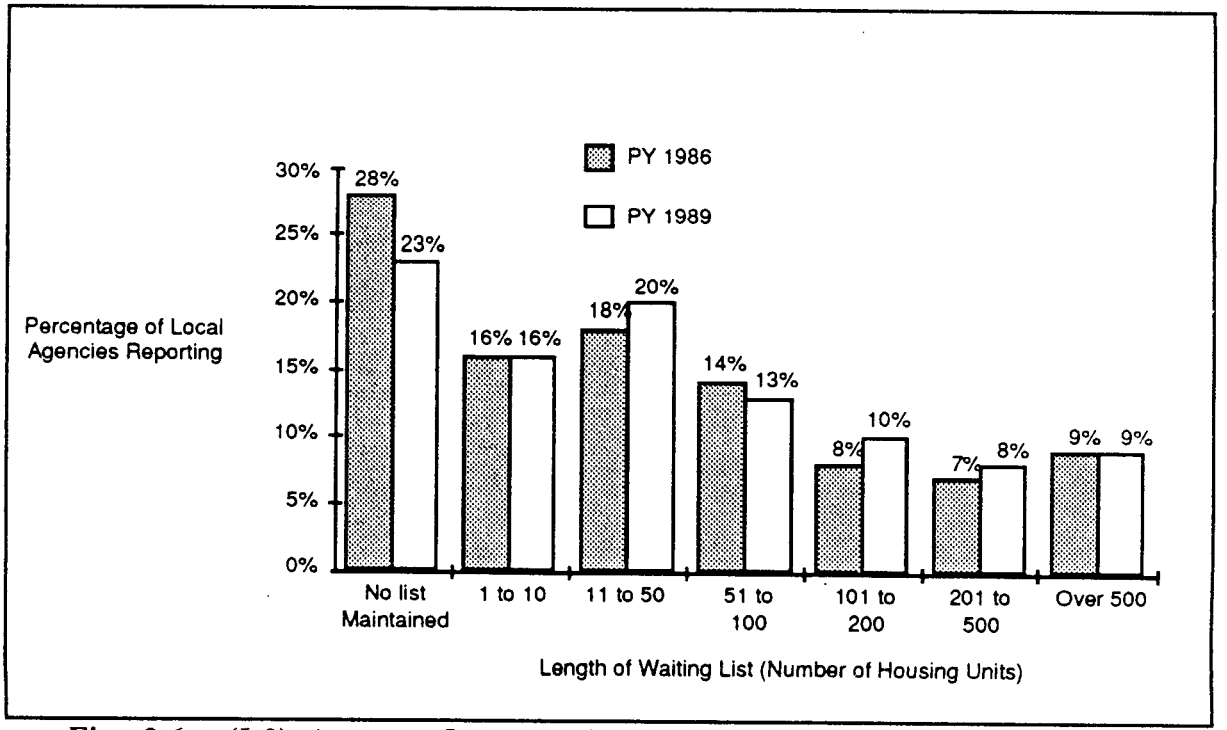

Fig. 3.6. (L3) Average Length of Not Income-Qualified Waiting List for Low-Income Weatherization Services.

3.1.3 Local WAP agency Energy Program Funding

This section reports local WAP agency energy-efficiency and weatherization funding. No LIHEAP fuel assistance/crisis intervention funds are included in the analysis. Sixty-two percent of local WAP agencies report receiving LIHEAP weatherization funds. Forty percent of responding local WAP agencies operate energy programs other than DOE/WAP and LIHEAP weatherization (Figure 3.7). These include a variety of programs, such as fuel banks, installation of compact fluorescent bulbs and high efficiency ballasts, pipe wraps and shower aerators; use of matching funds to perform emergency repairs or to bring structures up to code; and similar efforts. This indicates significant network experience in a variety of non-WAP areas.

Based on data from the 920 local WAP agency respondents, total energy program resources in financial and in-kind terms for PY 1989 were on the order of $477.5 million or an average of $541,000 per local WAP agency. The median total funding level reported was $363,000. Direct funding of energy programs constituted more than 98 percent of total support, in-kind contributions less than two percent (Figure 3.8).

The sources of both local WAP agency direct funding and in-kind support were reported on the local WAP agency questionnaire (Figure 3.9 and 3.10). The total from direct funding sources on a national level in PY 1989 was $477.5 million. DOE/WAP accounted for 31 percent of this total ($149.7 million), the single largest source of financial support, followed by PVE "Oil Overcharge" funds. The mean direct funding level per local WAP agency was approximately $530,000. and the median was approximately $357,000. Local WAP agencies have been successful in leveraging non-DOE/WAP funds from a variety of sources in addition to PVE, including landlords and utilities. (In a separate study, the State of New York reported more than $3.2 million in landlord contributions for PY 1989, which exceeds our nationwide estimate of $2.6 million.)

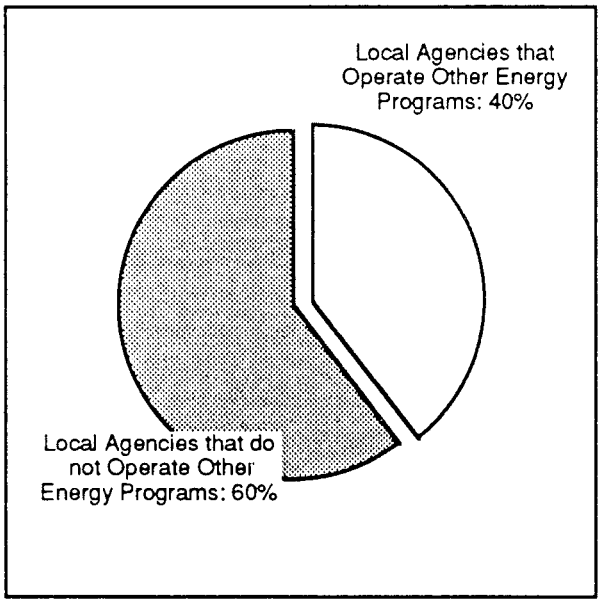

Fig. 3.7. (L4) Local WAP Agencies Operating Additional Energy Programs.

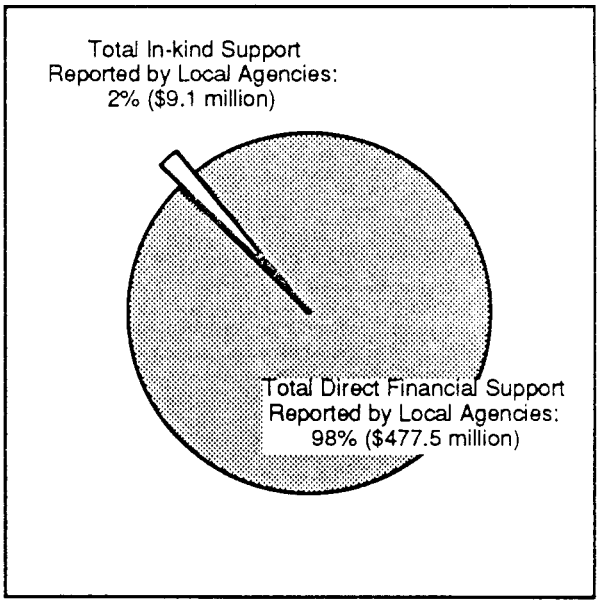

Fig. 3.8. (L9) Type of Energy Program Support Received.

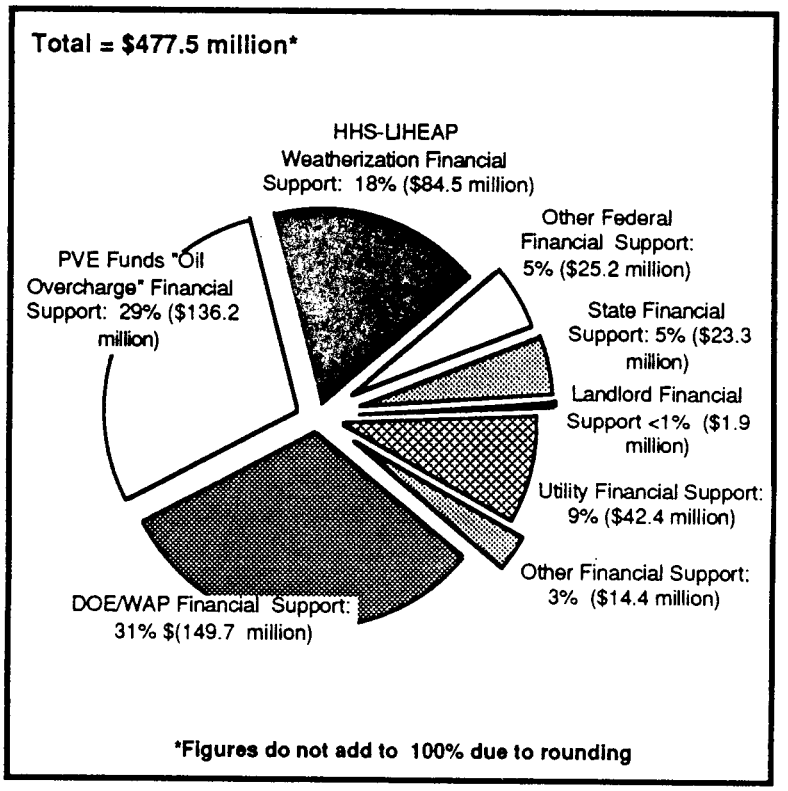

Fig. 3.9. (L9) Local WAP Agency Financial Support (PY 1989).

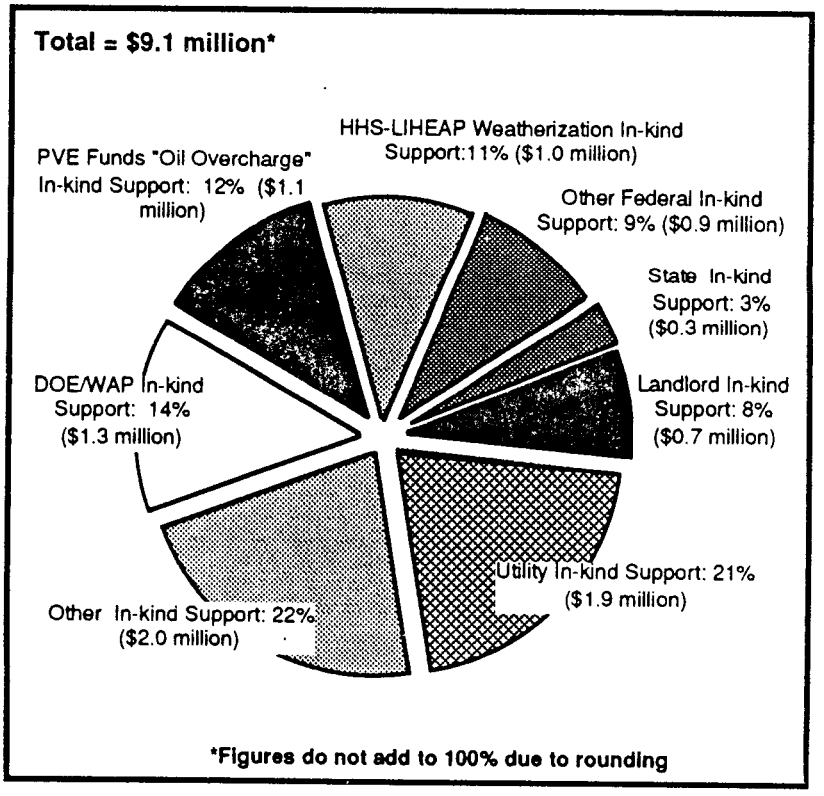

Fig. 3.10. (L9) Local WAP Agency In-kind Support (PY 1989).

There is no clear pattern of sources of State funds. Only ten percent of the respondents indicated programs for which they had received either State direct funding or in-kind State support. The most frequently cited State programs were homeless programs, followed by State Weatherization Assistance Programs. There were a total of 95 different types of State funded energy programs reported by local WAP agencies.

Funding earmarked for low-income weatherization services, rather than general residential energy programs constitutes a large fraction of the total financial and in-kind support provided local WAP agencies. DOE/WAP direct funding and in-kind support represents 31 percent and 24 percent of all energy program funds respectively. Other federal, State, and private sector support for low-income weatherization bring total support to approximately $487 million in direct and in-kind funding.

In-kind contributions to local WAP agencies are significantly smaller than direct funding support. The dollar figures are agency estimates of the value of those in-kind contributions. The HHS-LIHEAP weatherization programs are identified as providing the most in-kind support ($3.1 million), followed by "Other" ($2 million). The "other" category is quite diverse, and includes programs such as the Salvation Army's Project Warmth and the U.S. Department of Housing and Urban Development's (HUD)--Community Services Block Grants (CSBG), as well as volunteers. Utilities provided an estimated $1.9 million of in-kind support to local WAP agency energy programs.

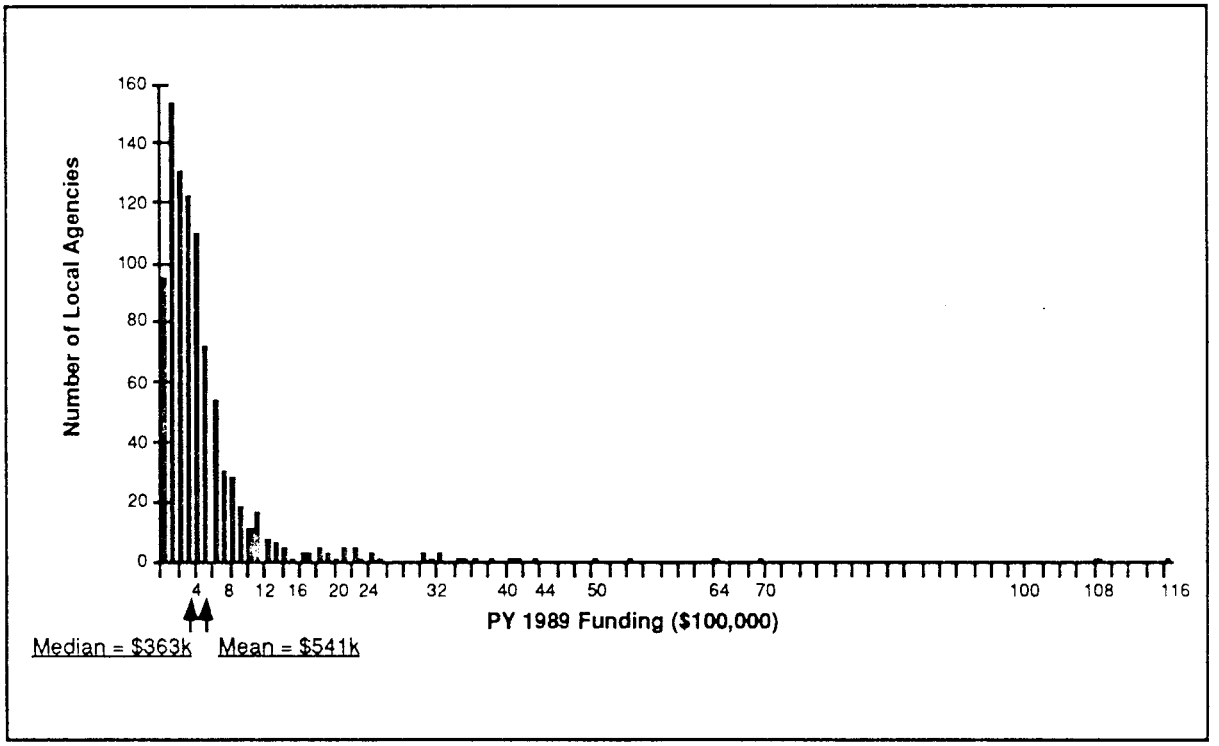

Fig. 3.11. (L9) Distribution of Local WAP Agencies by PY 1989 Energy Program Funding From All Sources.

As is the case with the number of weatherization completions, local WAP agency funding levels are highly skewed (Figure 3.11). Almost three-quarters of local WAP agencies have total financial and in-kind energy program funding less than the average of $540,700. Only 10 percent of local WAP agencies report total energy program funding at levels more than double the average (mean). The median local WAP agency energy program funding level from all sources is $363,000.

3.1.4 Referrals of Weatherization Clients to Other Programs

Local WAP agencies responding to the survey reported that a quarter of weatherization applications resulted in referrals to other public services (Figure 3.12). The services to which applicants are referred are diverse and include emergency housing assistance programs, LIHEAP, Social Security, HUD, Federal Emergency Management Administration (FEMA), food assistance programs, home repair and rehabilitation programs, energy loan programs, handicap access, health care, alcohol and drug rehabilitation, low-cost loans, and elderly services. Thus, the local WAP agency network provides an important link to other services for its low-income clients.

3.1.5 Additional On-Site Services

Eighteen percent of local WAP agencies reported providing on-site services in addition to weatherization (Figure 3.13). The additional services provided by local WAP agencies include installation of smoke detectors, dead bolt locks in high crime areas, radon testing, and minor home repairs. Home repairs include furnace, chimney, roof, and porch repairs.

Funding for additional services comes from a variety of sources: block grants to cities, the Farmers Home Administration (FmHA), State crime and safety programs, the HUD Housing Rehabilitation Program, CSBG, and area agencies on aging.

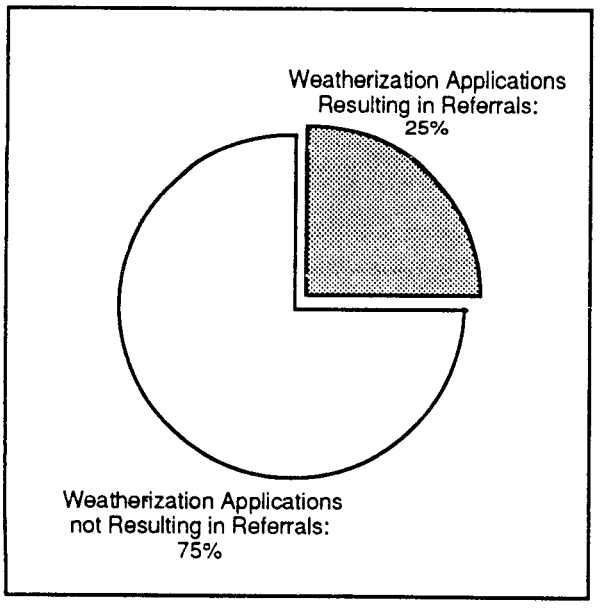

Fig. 3.12. (L11) Weatherization Resulting in Referrals Applications.

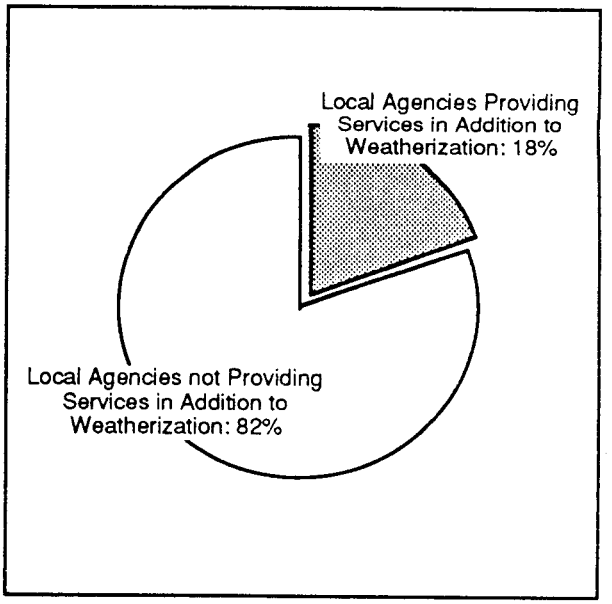

Fig. 3.13. (L12) Local WAP Agencies Providing Other On-site Services.

3.1.6 Personnel Resources

Staff Composition and Size

Local WAP agency in-house staff can be divided into two groups: those assigned WAP duties or who perform activities funded by WAP, and those who are funded by other sources and do not perform WAP activities. In reality, local WAP agency employees often wear more than one hat and perform both types of activities.

Agency Personnel

Local WAP agencies were asked to report the number of employees they have, by position or function and by WAP or non-WAP status in terms of full-time equivalents (FTE). Non-WAP employees are individuals employed by the agency who perform non-WAP duties and are paid with other than WAP funds. Fractions of FTEs could be noted. The average local WAP agency has 9.53 FTE employees. The median number of FTEs is 6.5. The 920 local WAP agencies responding to the survey reported a total of 8,586 FTEs, of whom 6,723 are engaged directly in WAP-funded activities.

The number of local WAP agency employees, just as their budgets, varies widely and is highly skewed (Figure 3.14).

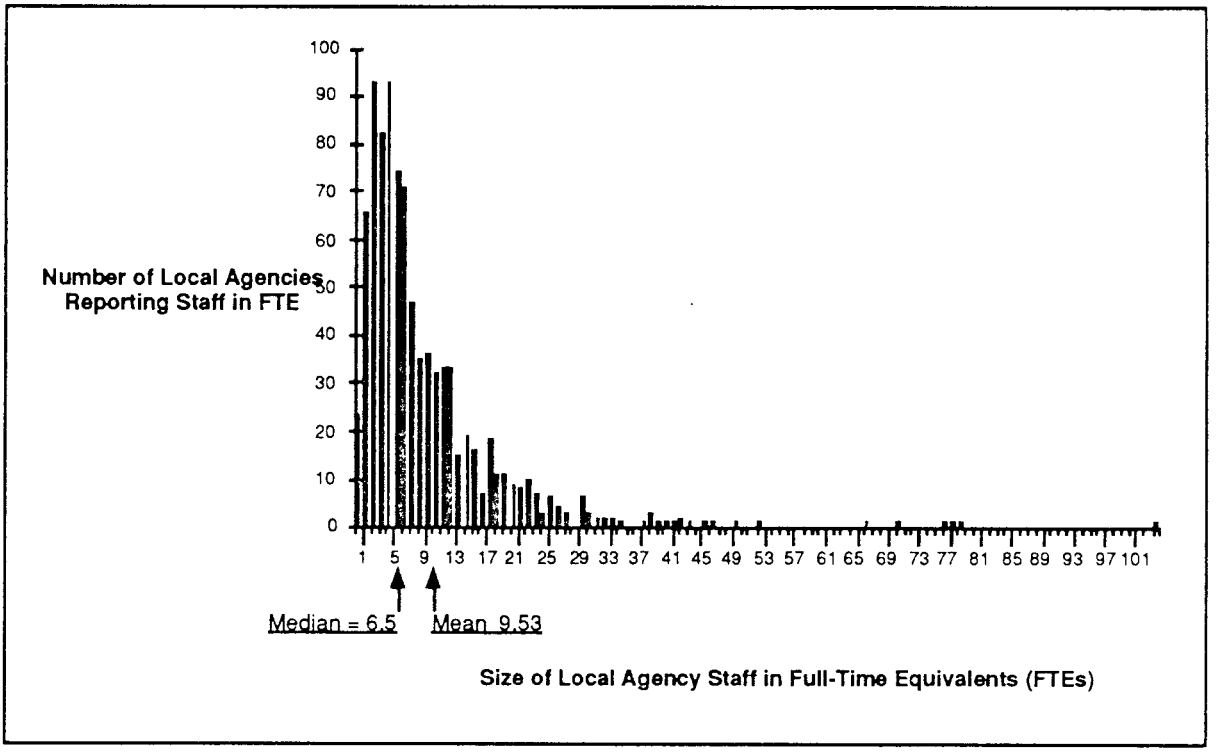

Fig. 3.14. (L5) Distribution of Total In-house Local WAP Agency Staff in Full-Time Equivalents (FTE).

Nearly 70 percent of local WAP agencies have fewer than the average number of WAP staff (9.53 FTEs). Local WAP agencies report that in-house WAP staff ranges between 0.1 and 78 FTEs, and that non-WAP staff ranges between 0 and 97 FTEs.

The local WAP agency survey attempted to develop of profile of in-house local WAP agency staff by type or task area for both WAP and non-WAP services (Figure 3.15). The single largest group are envelope crew and crew chiefs at 34 percent of total FTEs. Non-technical personnel -- management/administrative and clerical -- constitute 26 percent of total FTEs. That translates into an average of 3.17 FTE envelope personnel and 2.46 FTE administrative or clerical personnel per local WAP agency. Local WAP agencies employ very few engineers. The survey identified only 20.3 FTE engineers for all local WAP agencies responding, or 0.02 FTE per agency.

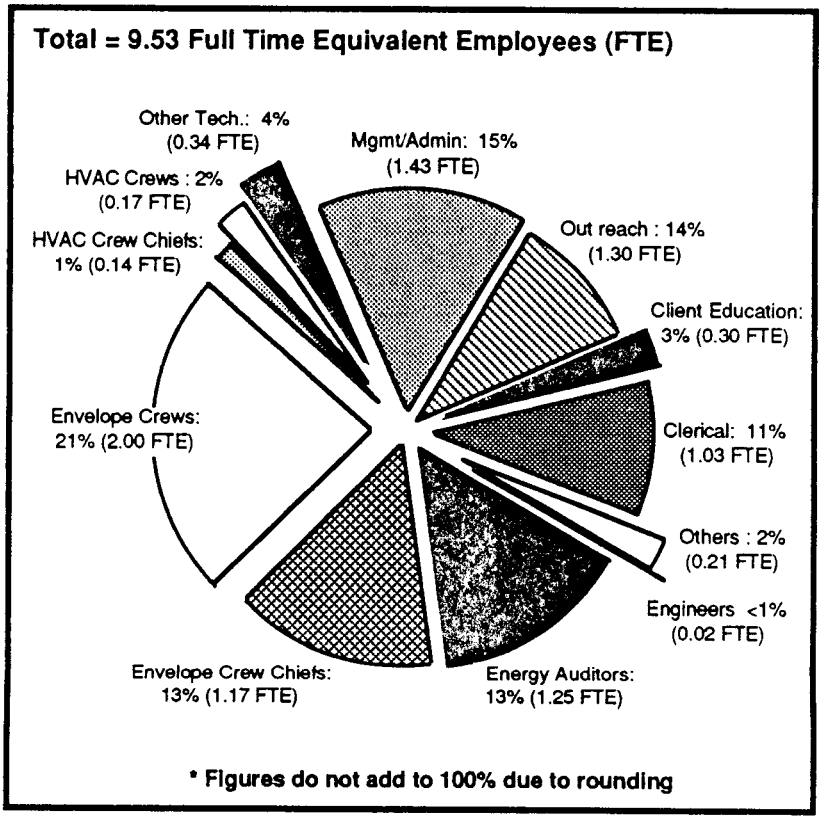

Fig. 3.15. (L5) Breakdown of Average Local WAP Agency In-House Staff Resources.

One of the objectives of the local WAP agency questionnaire was to estimate the number of in-house WAP and non-WAP agency personnel reported by respondents in terms of FTEs per agency (Figure 3.16). WAP personnel predominate in the local WAP agencies, but there is variation by area of expertise. Many outreach and clerical employees, for example, are designated as non-WAP. Client education and management and administrative staff are also often drawn from non-WAP programs within the local WAP agency.

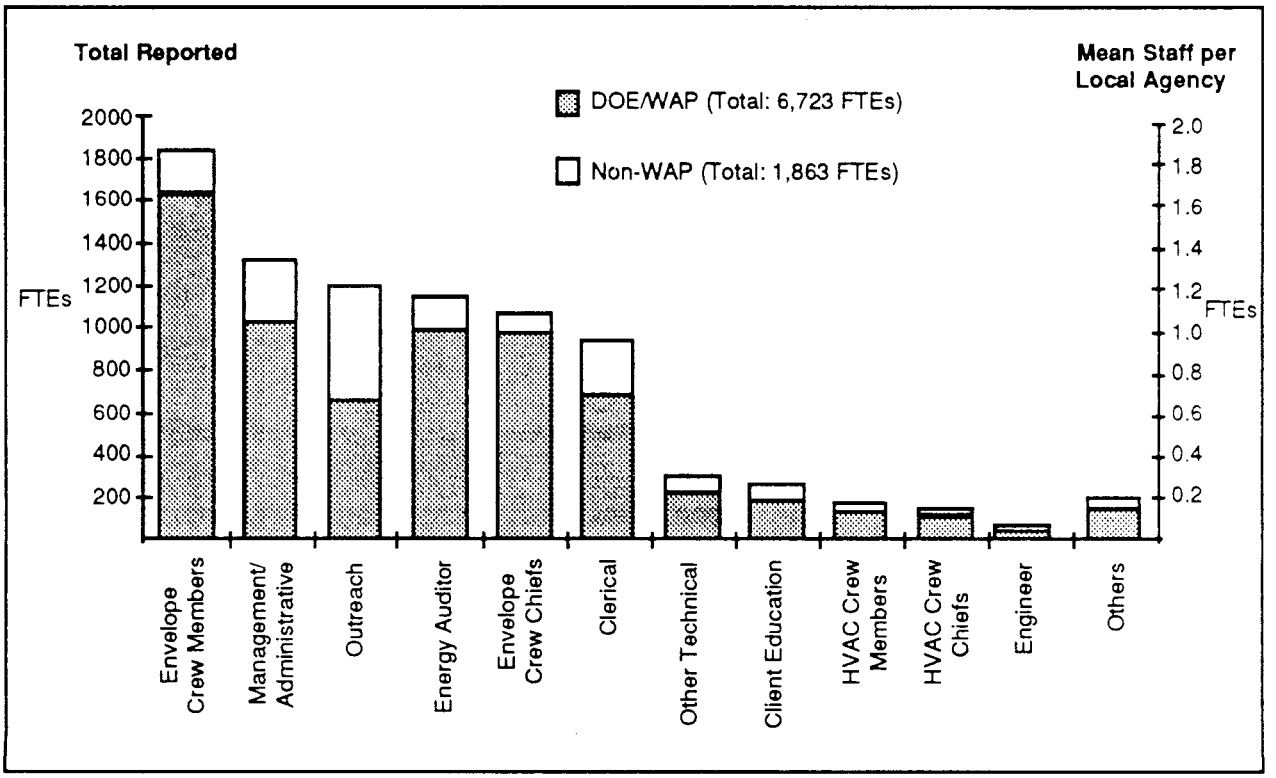

Fig. 3.16. (L5) Local WAP Agency Network In-House Staff Resources by WAP Function.

Non-Agency Personnel

Local WAP agencies who utilize outside personnel (i.e., non-agency) by type and source were reported in the survey (Figure 3.17). It is possible for any one local WAP agency to utilize more than one source for outside personnel for each category. Each bar in Figure 3.17 indicates the total incidence of local WAP agencies utilizing outside personnel sources by type of source.

An example is found in the management/administrative category. Twenty-four percent of the respondents indicated that they utilized outside personnel for management/administrative functions at some point on a continuing basis. There were a total of approximately 370 incidences of outside sources providing management/administrative functions reported by the local WAP agencies on a continuing basis. Of those 370 incidences, the largest source of outside management/ administrative staff was State agencies.

The use of outside personnel by local WAP agencies varies by the type of personnel utilized. Outside crews and crew chiefs, when they are used, are almost entirely provided by contractors for both envelope and HVAC weatherization services. Approximately 30 percent of local WAP agencies use outside sources (mostly contractors) for envelope crew chiefs and crew members and approximately 20 percent use contractors for HVAC crew chiefs and crew members. State agencies provide approximately one-third of the outside staff for management/administration and "other technical." Volunteers represent an important source for crew, clerical and outreach staff. Generally, the other types of outside staff are distributed evenly among the eight sources indicated.

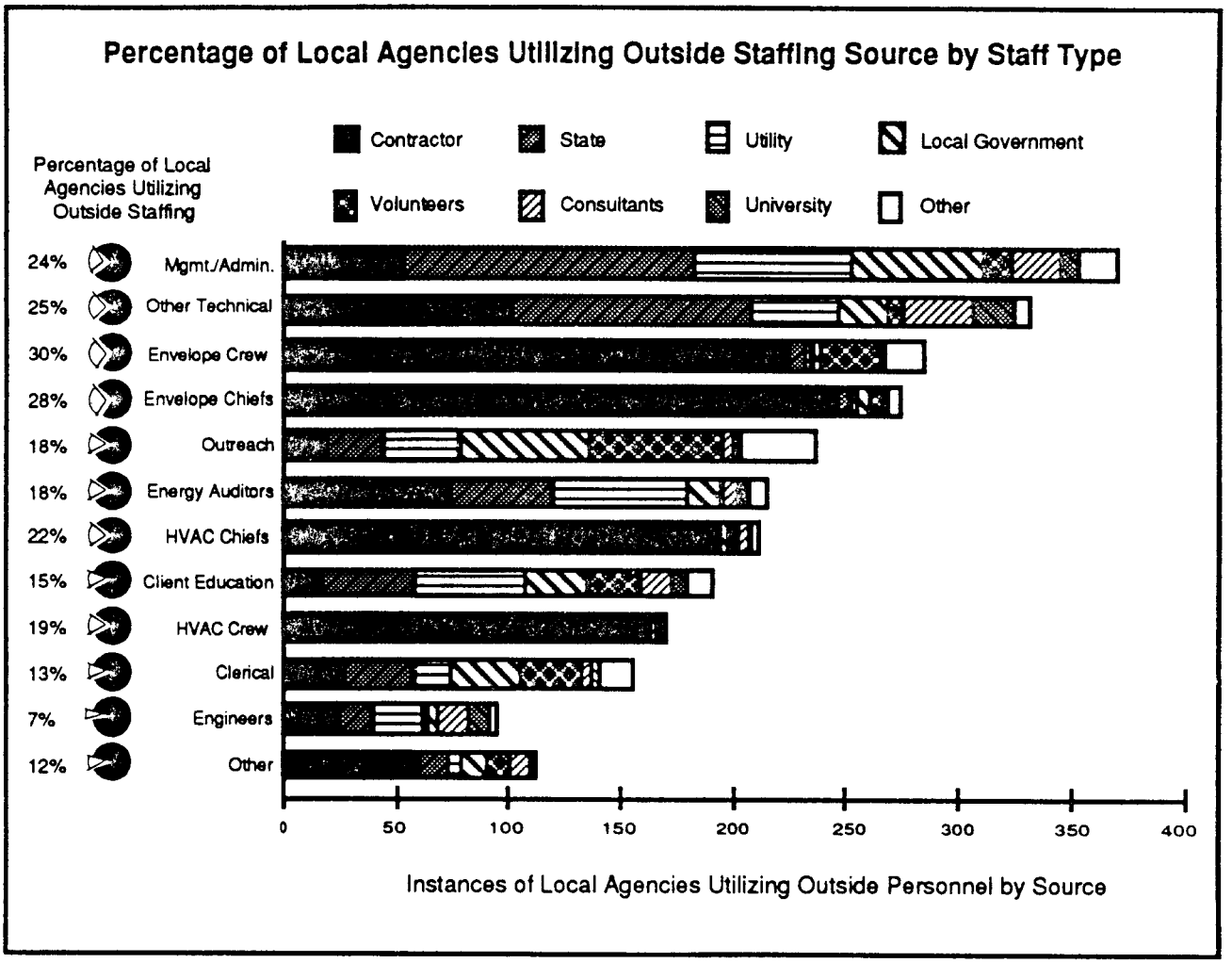

Fig. 3.17. (L6) Local WAP Agencies Utilizing Outside Staffing Sources by Staff Type.

The range of outside services sought by local WAP agencies is not dissimilar to the distribution of in-house employees with the exception of "Other Technical." It might be inferred from responses to the questionnaire that other technical personnel are brought in to provide skills not needed on a full-time basis, e.g., inventory control.

Personnel Qualifications

Local WAP agency employees are often subject to licensing and/or certification requirements (Figure 3.18). Energy auditors are most frequently certified at the State level, but in some jurisdictions may receive certification from utility programs. HVAC and envelope crew chiefs and sometimes crew members are required to hold contractors licenses or specialized licenses, such as roofing. Some local WAP agencies report requiring staff to hold a city building code license. Management/administrative personnel may be required to hold utility certification or to pass a prescribed number of management courses.

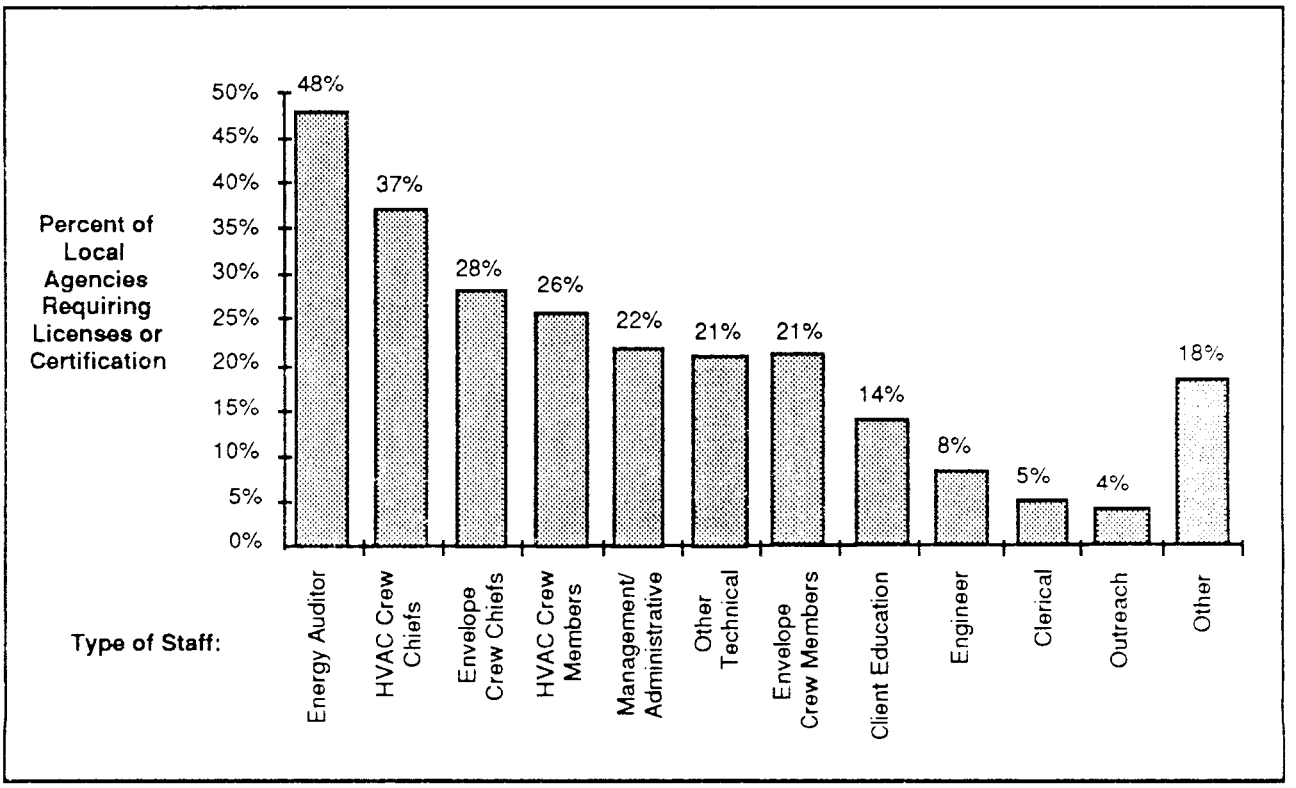

Fig. 3.18. (L7) Percentage of Local WAP Agencies Reporting Staff Licensing or Certification.

Personnel qualifications as demonstrated by licenses or certification vary from State to State and jurisdiction to jurisdiction. Many require some form of certification for those performing the actual weatherization, and a fair number require some form of certification for managers, client education, and outreach personnel. In general, there are no significant differences between staff qualifications and organization type. In summary, many local WAP agencies report highly professional staff resources for administering energy programs.

Personnel Training

Nearly all local WAP agencies report that staff receive additional formal training beyond technical certification, licensing or degree requirements (Figure 3.19). All organization types report similar staff training trends.

The majority of local WAP agencies responding to the survey report that training beyond the requirements for certification or licensing is provided on a continuing basis (defined in the survey as at least once per year) (Figure 3.20). This suggests that the professional level of local WAP agency energy staff can be expected to increase in the future as additional on-going training is provided. There were no statistics for staff turnover rate collected in the local WAP agency survey and therefore it is not possible to determine if the training provided is increasing or merely maintaining the current skill base.

Local WAP agencies report a variety of "other training." This includes combustion-efficiency test training, furnace repairs, auditor/inspector training, client services, utility functions, and "energy update." Energy update includes environmental issues such as global warming and the effects of radon.

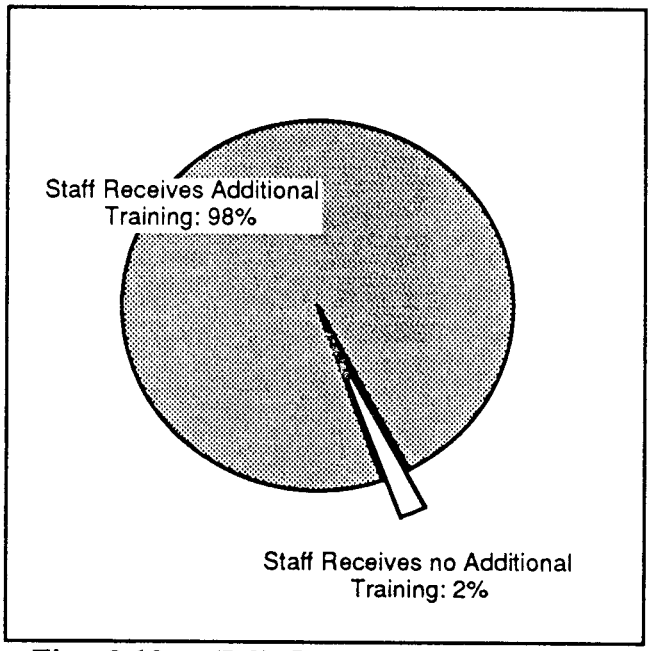

Fig. 3.19. (L8) Local WAP Agencies Reporting Additional Staff Training.

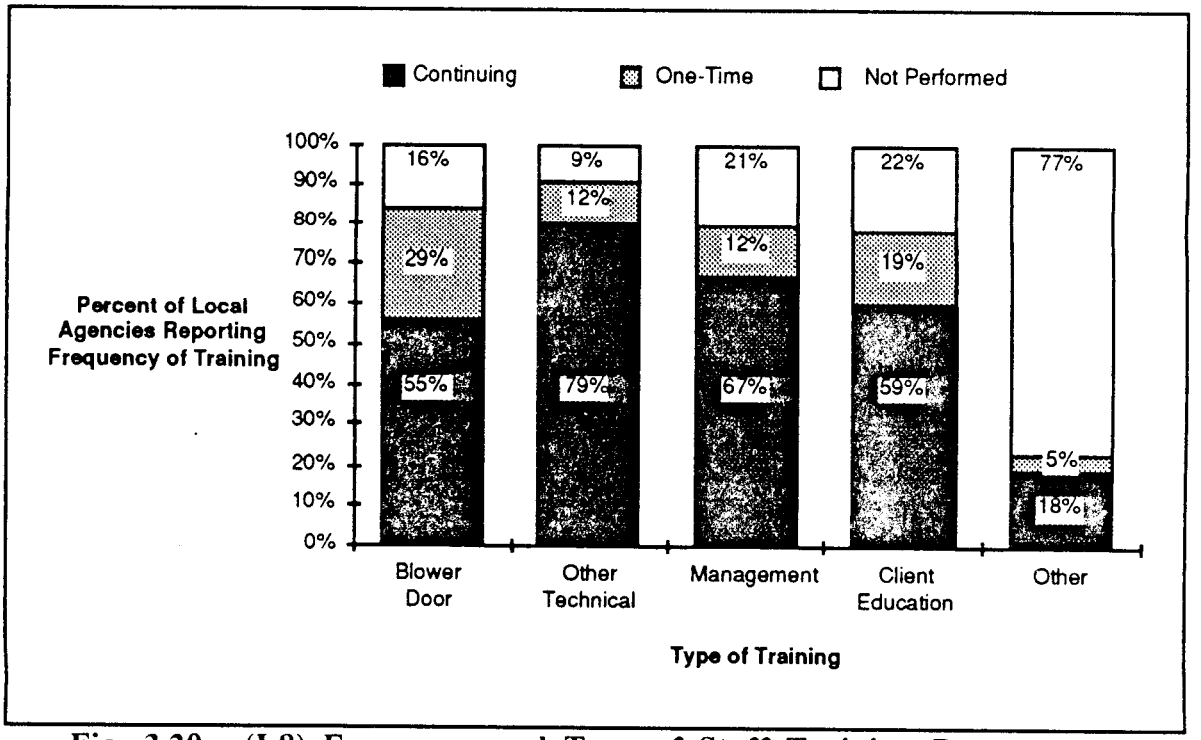

Fig. 3.20. (L8) Frequency and Type of Staff Training Reported by Local WAP Agencies.

3.1.7 Potential WAP Service Improvements

Local WAP agencies were asked to rank the importance of eleven different factors that might improve the delivery of low-income weatherization services (Figure 3.21). Six of the factors were viewed as important by 90 percent or more of the local WAP agencies, and all eleven factors were judged to be important by at least 60 percent of them. These same eleven factors were common themes in the open-ended question that ended the local WAP agency questionnaire. The material from these open-ended comments are used below to help illuminate the eleven issues.

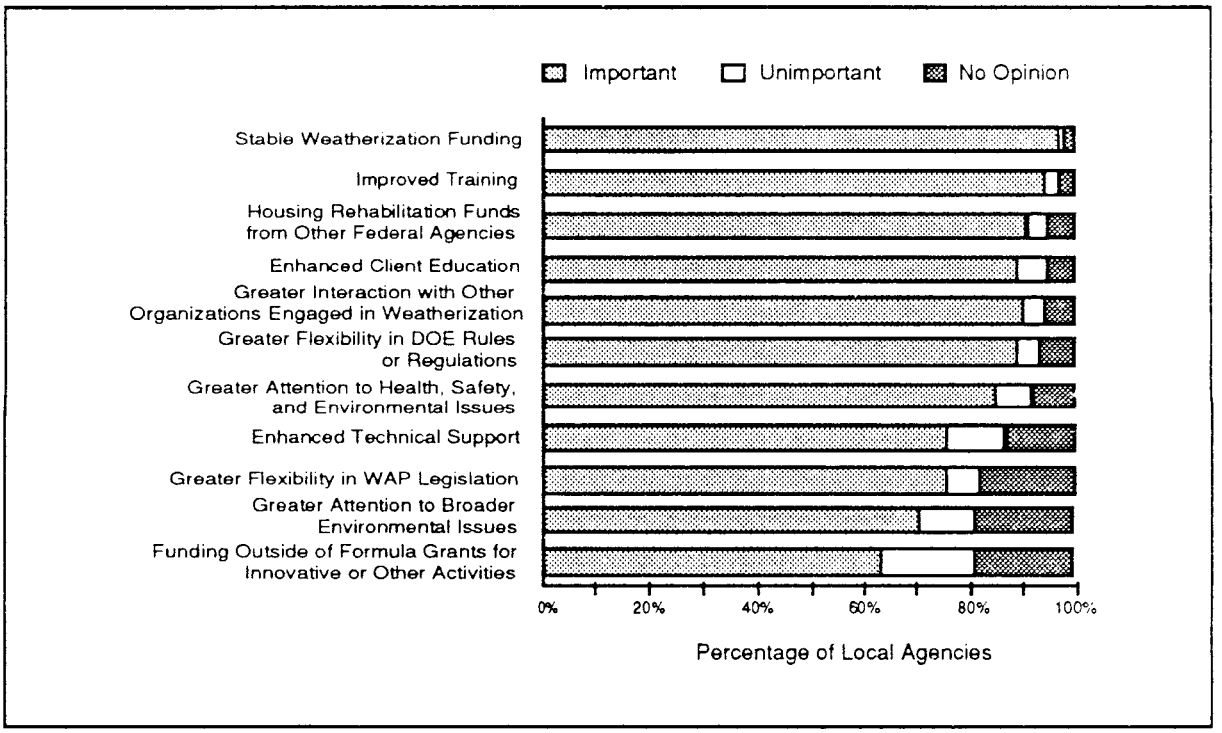

Fig. 3.21. (L21) Importance of Issues that Affect Local WAP Agency Delivery of Low-Income Weatherization Services.

Stable Weatherization Funding

Stable weatherization funding was judged to be the most important means of improving weatherization programs. As one local WAP agency noted, "it is difficult to plan and manage programs with unstable and unpredictable funding." Stable funding is particularly important for small programs that do not have multiple sources of funding and are therefore vulnerable to swings in levels of WAP support. The problem of unstable funding was often discussed hand-in-hand with the problem of diminishing WAP funds. "Weatherization funds must be maintained at higher levels -- the cuts we continue to receive do nothing more but hurt our clients: we cannot do as many homes nowadays, and there are more and more clients needing this help." For example, one local WAP agency notes that "Our weatherization dollars are $312,000 annually for a County where over 14,000 homes have been identified where clients are 125 percent of poverty. The $312,000 translates into 160 homes weatherized annually."

Improved Training

More than 90 percent of the local weatherization agencies viewed improved training as important. According to one local WAP agency, "The most important aspect in enhancement of this program is to make the needed investment in salaries and professional development (training) to attract qualified and talented people." Specifically, training on moisture control, furnace repair, radon, asbestos, and client education was cited.

Housing rehabilitation funds

Availability of housing rehabilitation funds from other federal agencies was judged to be highly important by the vast majority of respondents, and this was a common theme addressed in the open-ended answers. Comments noted the need for repair funds for roofs, foundations, septic repairs, bathrooms, plumbing, electrical repairs, ramps, steps, and porches. Thus, this issue is related to the strong concern that WAP provide greater attention to health, safety, and environmental issues. "Realizing that the majority of our clients are low-income elderly and handicapped and their economic conditions are not apt to change, any energy saving methods or devices employed are at risk if the client doesn't have the funds to maintain the soundness of the exterior envelope. We need to move toward addressing major repairs in the near future to continue to provide and protect cost-effective energy conservation methods." Repairs are often needed before weatherization measures can be installed. One local WAP agency estimated that one out of every ten eligible homes in its service area has to be put on hold until someone can rehabilitate it. Overall, "Less 'energy' is expended to make non-weatherization related repairs (e.g., roof replacement) than to allow the house to deteriorate to a 'point of no return'."

Enhanced client education

The vast majority of local WAP agencies feel that better client education is an important means of improving weatherization programs. "People need to become energy literate and we need to design our measures so that people can employ and understand them." "WAP could be the influential wedge that would encourage nationwide conservation opinion and attitudes." One local WAP agency was particularly enthusiastic about its newly expanded client education program, including: "(1) group briefing sessions with video talk-throughs of ways to save energy in the housing unit; (2) group demonstrations of how measures will be installed and the effectiveness of each; and (3) follow-up evaluations of savings to residents."

Greater interaction with other organizations engaged in energy programs

Nearly 90 percent of the local WAP agencies indicated that one important key to success was greater interaction with other organizations engaged in energy programs. Utilities were mentioned most often as potentially beneficial partners in the open-ended responses. The potential for leveraging funds was noted by many local WAP agencies. "The WAP nationwide delivery network of general contractors (i.e., local WAP agencies) provides a competent, far reaching arm into the low-income residential market. Our WAP network needs to be recognized and marketed as a more cost-effective, better managed approach towards resolving low-income residential

problems. Health and housing related programs have an ideal network of agencies available that have cornered the low-income market. While 'we' are on-site, many other programs could be implemented."

Greater flexibility in DOE rules and regulations

This issue was another important theme addressed by numerous local WAP agencies in their open-ended responses, and usually was discussed in conjunction with a desire for greater flexibility in WAP legislation. "Flexibility is the key to a successful program -- recognizing differences in (1) geographic areas; (2) socio-economic levels (and therefore qualification criteria); (3) program costs; (4) housing stock; (5) uniqueness of individual households; and (6) weatherization agencies (purchasing procedures, personnel, etc.)." Another local WAP agency noted, "Agencies should be allowed flexibility in achieving their goal while achieving the goal of DOE. Checks and balances should be administered more by aggressive field monitoring than by prolific documents of rules and regulations." Many agencies recommended elimination of the 60/40 rule, the $1600 cap per home, the rule against reweatherization of homes weatherized before 1984, and the limit on funding for administrative costs and program support. The limit on administrative and program support funds is seen as more problematic than ever today because of the increased reporting burden shouldered by local agencies.

> "The 60/40 rule should be eliminated as soon as possible. Enhancements in WAP retrofit techniques have resulted in the need for fewer materials while increasing the need for highly skilled, motivated, and dedicated installers. Our ability to rely on minimum-wage labor is gone. More program funds are needed in order to hire (and keep) skilled staff."

> "Artificially capping available dollars for properties is seriously counter-productive. [My agency] is afflicted by a three-headed monster which makes such a limit particularly problematic. The three heads: an ageing housing stock; an abundance of owner-occupied, sizable homes; and an absence of mobile homes all contribute to a very high cost-per-job ratio. The WAP is forced to choose between options which either incompletely address properties or cancel the properties in the worst condition."

> "The weatherization program has come a long way from the days when we were limited to spending $300 per home using CETA labor. Many of the early clients we served have been short changed because we are not allowed to return to their homes to provide them with the improved materials and workmanship now available. Many of these clients are elderly homeowners who are especially hard hit with rising fuel prices."

Enhanced technical support

Several local WAP agencies noted that they need quantitative information about the benefits of weatherization and better audit tools. "DOE should continue its efforts to standardize reporting requirements and auditing techniques by taking the lead (again) in automating the programs." Another technical support theme from the open-ended comments was a desire for better communication with DOE. "Direct communications from national office to local operators or regional to Local Weatherization Offices (LWOs) is needed. Not on an as needed/screened basis

from the State." One example of extended technical support from State WAP agencies is provided by the following quote: "Each State (or national region) should develop a list of approved weatherization materials and supplies. A local government/not-for-profit program does not have the personnel nor the resources to test sample products to assure they meet (federal) guidelines."

Greater attention to broader environmental issues

The growing public awareness of environmental issues and the need for national planning was noted by several agencies. "Our country needs to devise a sound energy conservation and alternative energy plan. Low income weatherization needs to continue to be an intricate part of this plan to reduce the use of energy in some of the nation's worst housing."

Funding for innovative or leveraged activities

Funding outside of formula grants for innovative or leveraged activities was seen as important to the program's success by approximately 70 percent of the local agencies. However, this issue was addressed by only a few local WAP agencies in their open-ended comments.

3.1.8 Regional Issues

In general, moderate climate zone agencies perform more weatherizations on average with more money and more staff, followed by cold zone agencies, and finally by the hot zone local WAP agencies (Figures 3.22 and 3.23). However, hot zone agencies perform more cooling system tune-ups and fewer heating system tune-ups than their colleagues in the moderate and cold zones. Future WAP evaluation reports will provide results on this same climate zone basis.

Climate Zone	Number of Local Agencies	Housing Units Weatherized (all funds)			Funding From All Sources in $1,000		
		Total	Mean	Median	Total	Mean	Median
Cold	136	41,099	311	247	90,578	860	531
Moderate	494	143,930	299	209	317,900	833	492
Hot	290	58,239	205	105	78,166	362	209
Network	920	243,268	271	184	486,644	541	357

	Local Agency Staff in Full Time Equivalents (FTEs)			Mean Heating Tune-ups in Percent of Total Units Weatherized	Mean Cooling Tune-ups in Percent of Total Units Weatherized
	Total	Mean	Median		
Cold	1,595	11.7	8	53.3	0.01
Moderate	5,168	10.5	7	50.4	1.12
Hot	1,822	6.6	5	7.14	5.31
Network	8,585.6	9.53	6.5	39.7	2.18

Fig. 3.22. (L2, L6, L9 L16) Summary of Local WAP

Agency WeatherizationActivity in PY 1989 by Climate Zone.

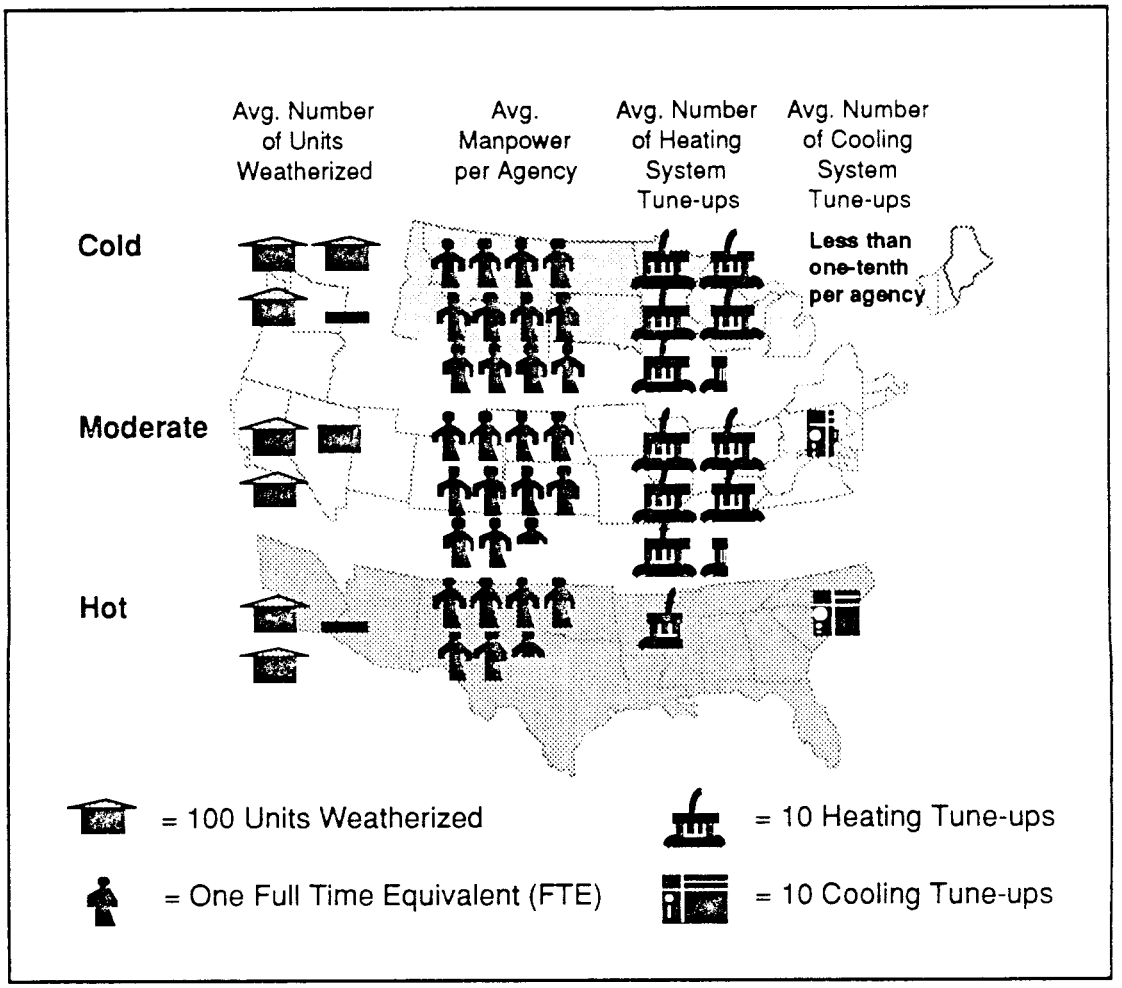

Fig. 3.23. (L2, L6, L9, L16) Profile of the Average Local WAP Agency by Climate Zone -- Program Year 1989.

3.2 STATE WAP AGENCY WEATHERIZATION NETWORK

3.2.1 State WAP Agency Organization Type

All State WAP agencies responding to the questionnaire are agencies of State government, or in the case of Washington, DC, city government. The State WAP agencies were asked to name the department or office where the State WAP agency is located, and to indicate the number of organization levels between the agency and the governor. Forty-seven percent of State WAP agencies indicate that there are two intermediary offices (levels) between the State and the governor (Figure 3.24). This indicates access and a need to be responsive to governors' prerogatives. A majority of the remaining State WAP agencies are organizationally more distant from the governor, which can lead to lower visibility and less responsiveness on the part of the State government to WAP needs.

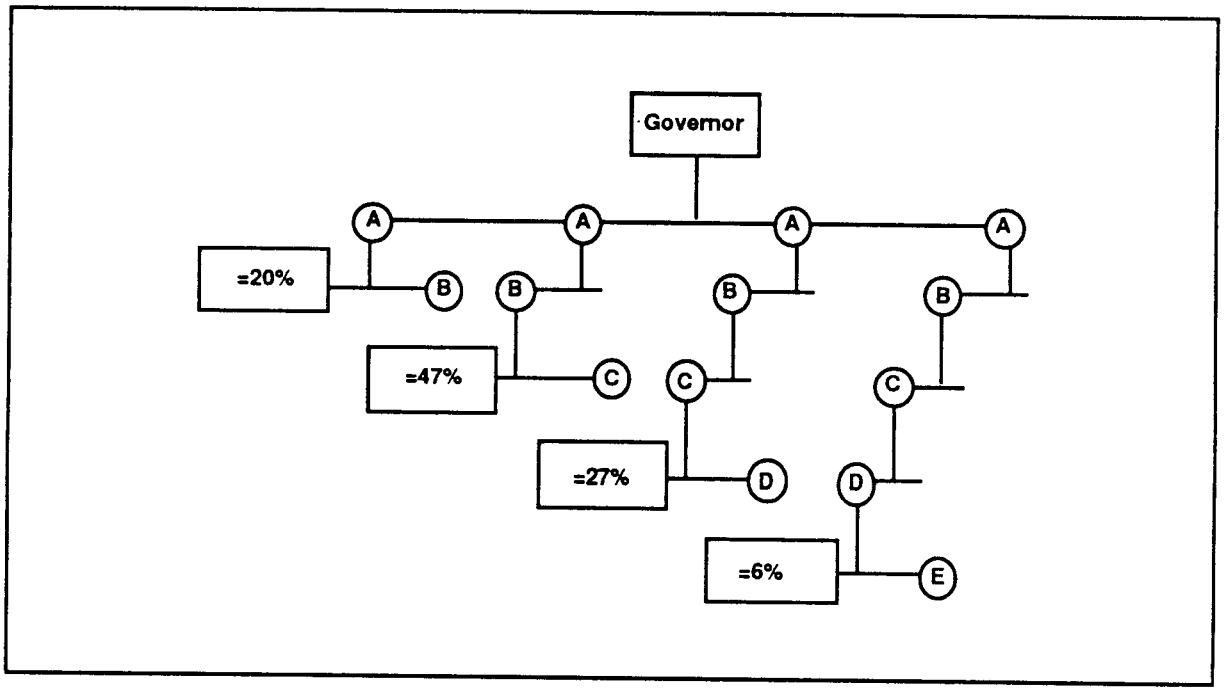

Fig. 3.24. (S17) Number of Intermediate Organizational Levels Between the StateWAP Office and the Governor.

Most State WAP agencies are located within State executive departments. A few are located in an Office of the Governor. The plurality of State WAP agency offices are located in human services departments, followed by community development and economic development departments (Figure 3.25). Each location offers access to a different array of low-income or weatherization-related services and contributes to diversity in the nature of different State programs.

This wide array of WAP office locations provides opportunities for sharing lessons learned across organizations. For example, the benefits the WAP receives from an office located in the State Energy Office could be shared with those located in Housing, Health, or Community Development.

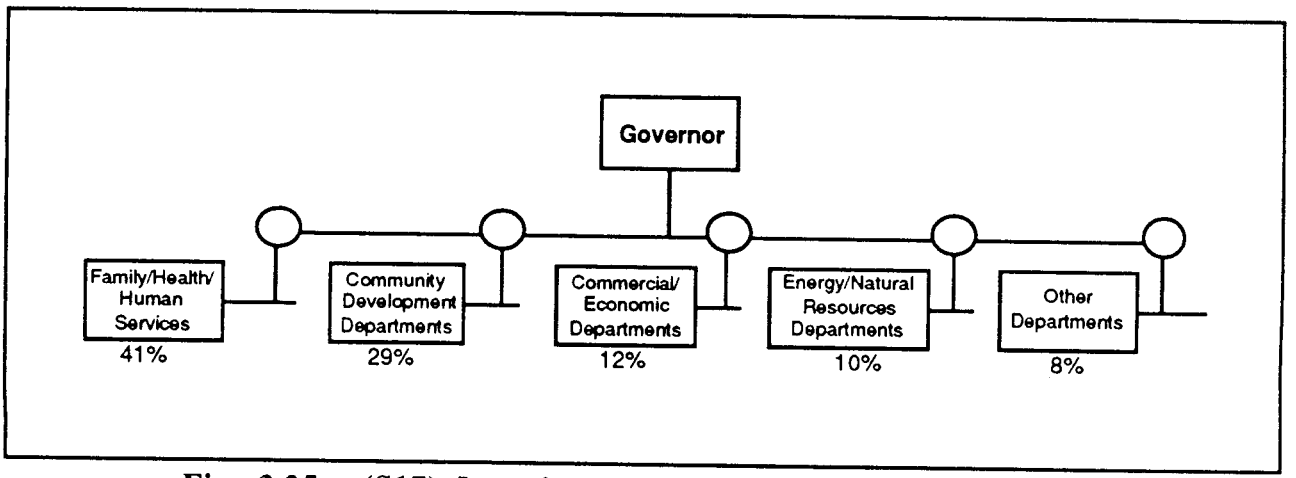

Fig. 3.25. (S17) Location of State Weatherization Office.

3.2.2 State WAP agency Weatherization Services

Slightly more than half of the State WAP agencies surveyed report that they administer or operate energy programs other than DOE/WAP and HHS-LIHEAP (Figure 3.26).

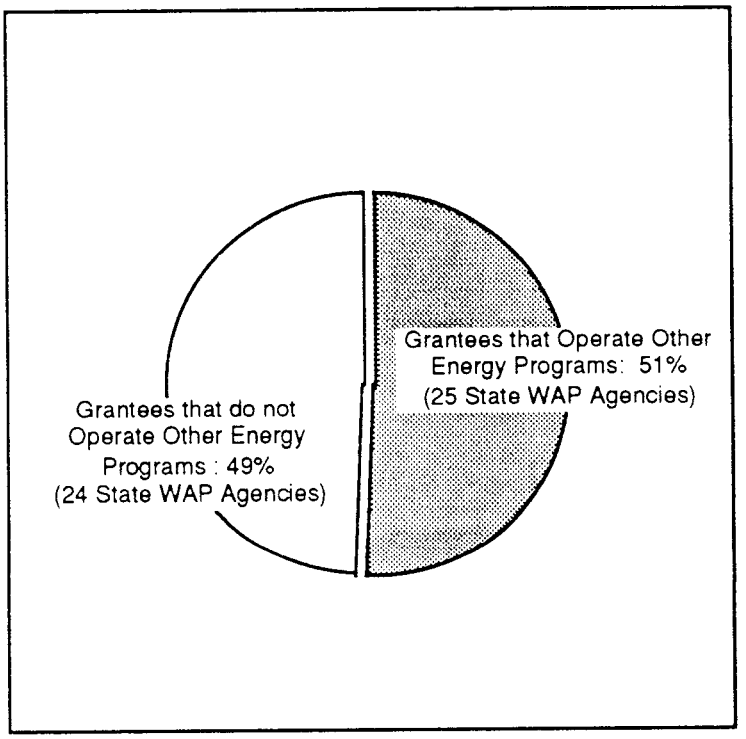

Fig. 3.26. (S1) State WAP Agencies Operating Additional Energy Programs.

The diversity of these energy programs is illustrated by the following examples:

- Augmented Residential Weatherization
- Demand Side Electricity Saving
- Energy Audits: Residential, Commercial, Institutional, Industrial
- Energy Conservation Planning
- Energy Conservation Outreach
- Energy Extension Service
- Government/Private Sector Funding Partnership
- Grants for Energy Saving Inventions
- Household Emergency and Conservation Repairs
- Institutional Conservation
- Multifamily Housing Energy Retrofits
- Research, Development, and Demonstration
- Residential Education
- Residential Energy Conservation Loans
- Skills Training and Education
- Weatherization Fund Leveraging

Thus many State WAP agencies have experience in the energy field aside from the WAP with significant opportunity for synergy between programs. The remaining State organizations are a potential resource for implementing similar energy programs in their States.

3.2.3 State WAP Agency Energy Program Funding

Based on data from the 49 State WAP agency respondents, total State WAP agency energy program resources in direct and in-kind terms for PY 1989 were $590.6 million, for an average of $12.0 million per State WAP agency.

The federal government provides over 48 percent of the direct funding for State WAP agency energy programs (Figure 3.27). PVE funds (which are expected to decline significantly or be eliminated in the near future) comprised the second largest direct funding source in PY 1989 (43 percent). State, utility, and other funding sources account for less than 10 percent of direct State WAP agency energy program funding.

State WAP agencies receive only about $1 million in financial support from utilities. As was reported earlier, local WAP agencies report receiving over $42 million in direct utility financial support. Thus, it appears that many local WAP agencies are successfully working with utilities and this experience could be shared at the State level. Using this experience as a model, States might work effectively with Public Service Commissions to help generate greater utility participation. The fact that over 40 percent of State WAP agencies already interact with utilities could be used as a basis to initiate WAP/utility dialogues.

The DOE/WAP is the single largest source of in-kind support, valued at over $1 million. PVE sources also provide for a significant amount of in-kind support to State WAP agencies (Figure 3.28). Local WAP agencies receive significantly more in-kind support from a variety of sources, valued in excess of $9 million (see Figure 3.10).

Funding earmarked specifically for low-income weatherization services, rather than general energy programs, constitutes a significant fraction of the total financial and in-kind support available to State WAP agencies. DOE/WAP and LIHEAP weatherization funding and in-kind support represents almost 48 percent of all reported energy program support.

The distribution of State WAP agency funding is highly skewed (Figure 3.29). The smallest reported State WAP agency budget in PY 1989 was $1.9 million, the largest $83.2 million. Thirty-three State WAP agencies, or 67 percent of the respondents report total energy program budgets of less than $10 million. The mean total direct financial and in-kind support per local WAP agency is $12.0 million; the median is $5.9 million.

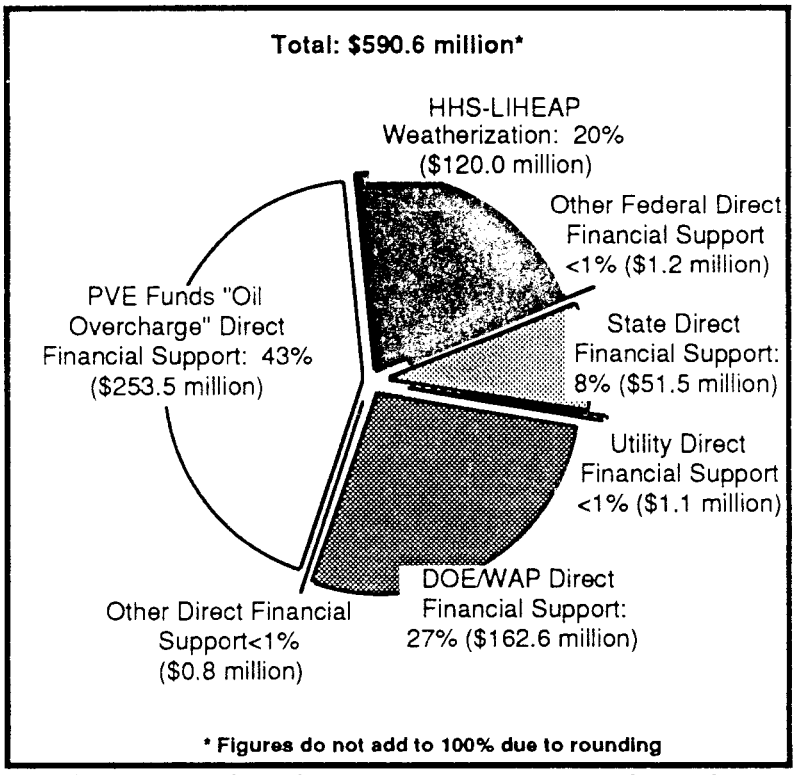

Fig. 3.27. (S6) State WAP Agency Financial Support (PY 1989).

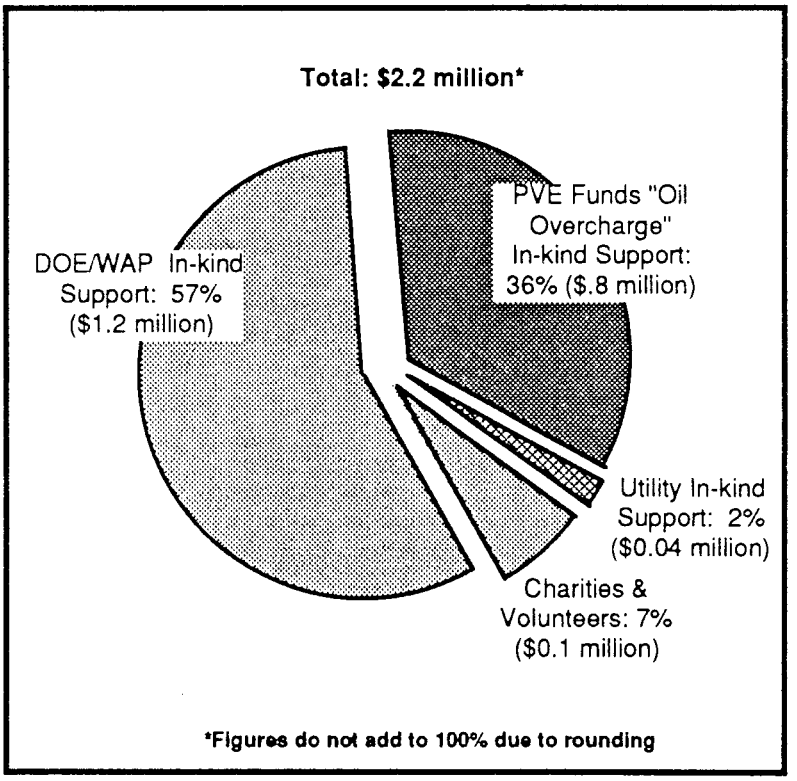

Fig. 3.28. (S6) State WAP Agency in-kind Support (PY 1989).

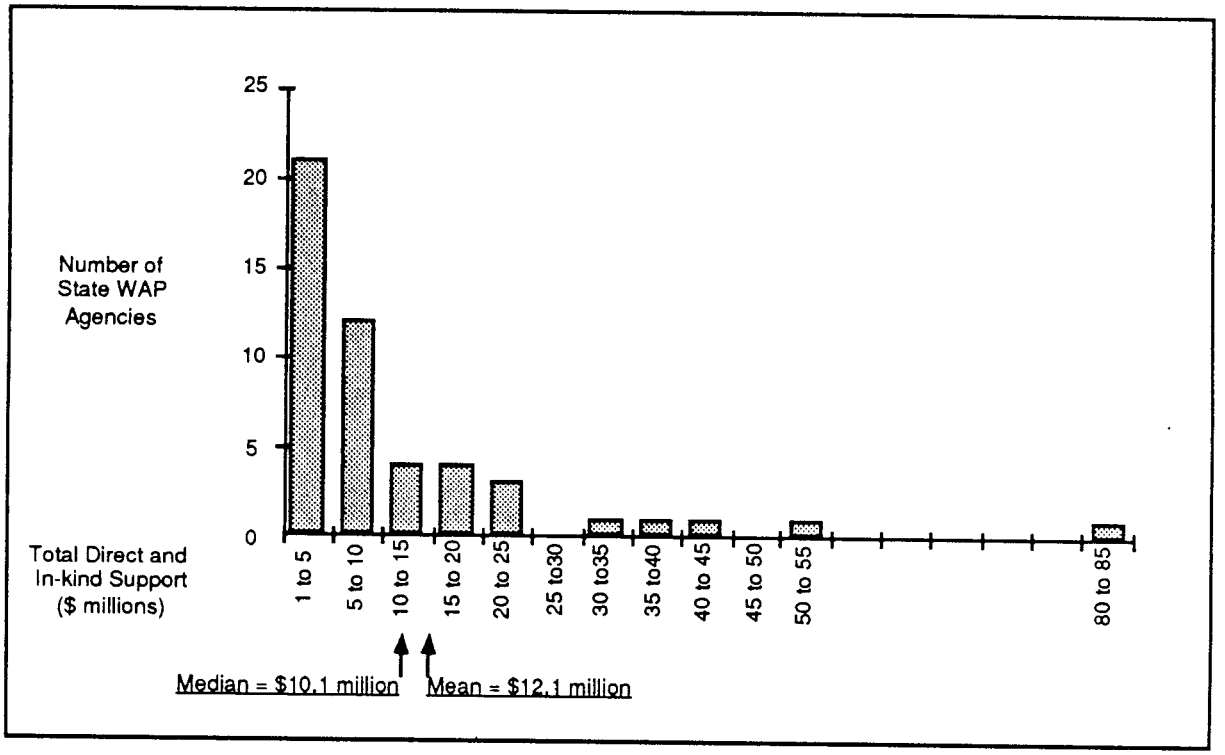

Fig. 3.29. (S6) Distribution of State WAP Agency Total Energy Program Funding Levels (PY 1989) Direct and In-kind.

3.2.4 State WAP Agency Personnel Resources

State WAP Agency Staff Composition and Size

As is the case with local WAP agencies, State WAP agency staff can be divided into two groups: those who perform WAP tasks and those who are funded by other sources and do not perform WAP tasks. State WAP agency staff may perform more than one role and be assigned WAP as well as non-WAP functions. Thus, data are reported in full-time equivalent employees (FTEs).

State WAP agencies were asked to report the number of in-house employees they have, by position or function and by WAP and non-WAP status as full-time equivalents. The average State WAP agency has 14.02 FTE employees, of whom 7.96 FTEs perform WAP functions and 6.06 do not. The total number of agency personnel reported in the State WAP agency network nation-wide is 687 FTEs; the largest State WAP agency reports a total of 48 FTE employees, the smallest reported is 1 FTE. On a national average basis, this translates to over $860,000 of total energy program support administered per State WAP agency FTE, and over 600 housing units weatherized per year per State WAP agency WAP FTE.

The distribution of State WAP agency staff size is skewed (Figure 3.30). While the largest agency reports 48 FTE employees, 49 percent have fewer than ten total WAP and non-WAP staff FTEs. The mean total staff size per State WAP agency is 14.02 FTEs while the median is 11.00 FTEs.

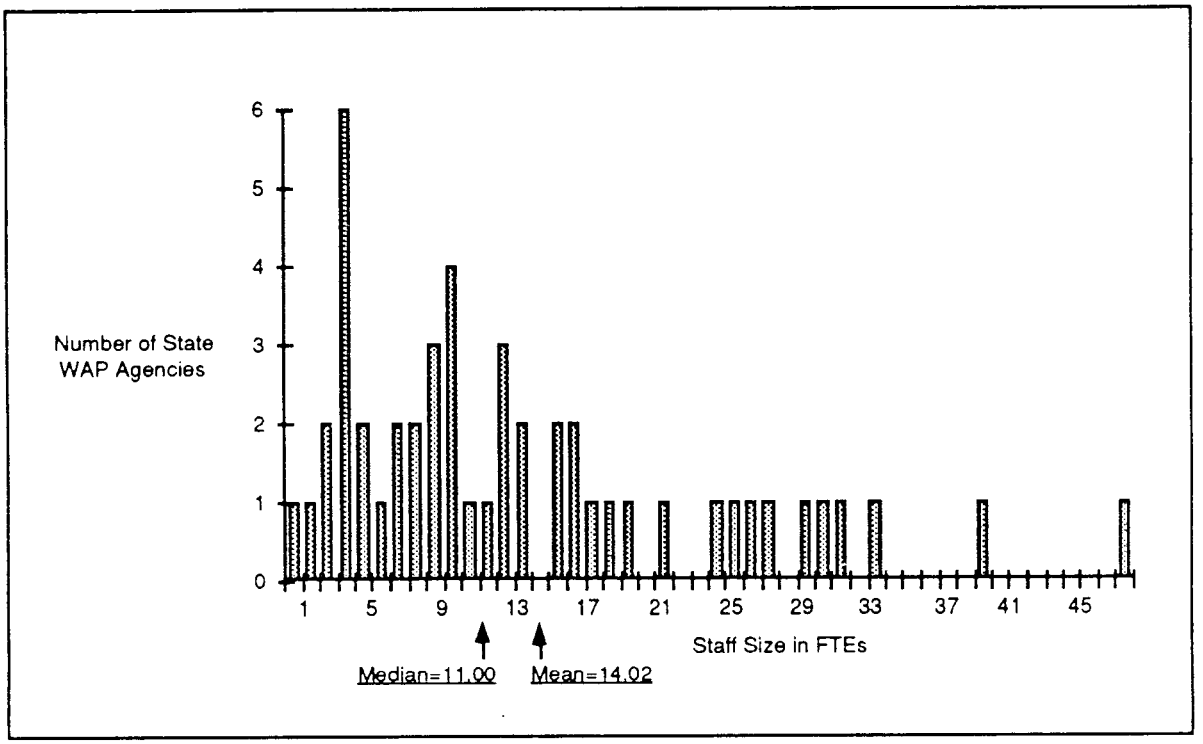

Fig. 3.30. (S2) Distribution of State WAP Agency Staff Sizes in Full-Time Equivalents WAP and non-WAP (PY 1989).

The single largest State WAP agency in-house staff group is management/administrative/fiscal (35 percent), followed by field monitors/auditors (Figure 3.31). The average State WAP agency reports 2.57 management/administrative/fiscal WAP FTEs and 2.37 management/administrative/ fiscal non-WAP FTEs. Client education and State WAP agency outreach staff are the smallest, at an average 0.26 client education FTEs and 0.08 FTEs for outreach. Relative to the importance placed on client education (see section 3.2.5), this level of staffing is minimal.

WAP personnel form the majority of State WAP agency staff, but there is variation by area of expertise (Figure 3.32). Most State WAP agency engineers, for example, are not assigned WAP duties, while most State WAP agency field monitors/auditors are part of the WAP program. WAP and non-WAP management and clerical/support staff are in rough balance. Thus, a significant staff resource base, in addition to WAP employees, exists in the State WAP agency network.

While State WAP agency staff are heavily oriented toward management and monitoring functions, local WAP agency staff are concentrated in program delivery (i.e., envelope crew and crew chiefs, energy auditors, and outreach). This was illustrated in Figure 3.16, and is what would be expected given the respective responsibilities of State and local WAP agencies.

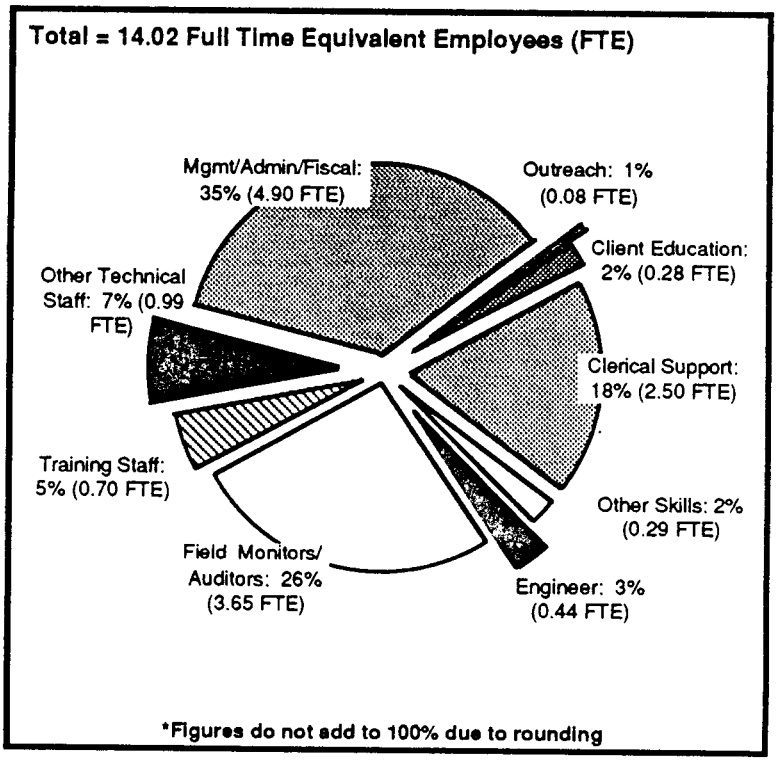

Fig. 3.31. (S2) Breakdown of Average State WAP Agency WAP and non-WAP In-House Staff Resources.

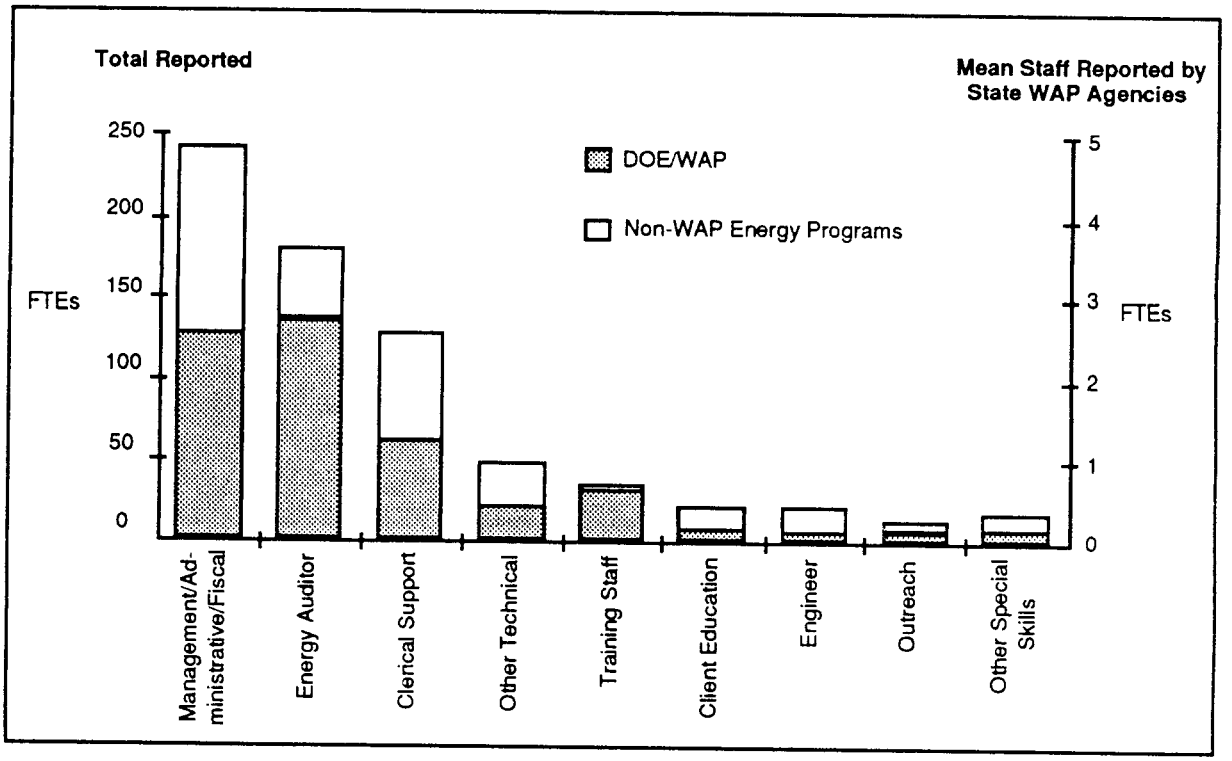

Fig. 3.32. (S2) State WAP Agency Network In-House Staff (PY 1989).

Personnel Qualifications Reported by State WAP agencies

State WAP Agency Staff

State WAP agencies report a wide variety of licensing and certification requirements for their in-house staff (Figure 3.33). Field monitors/auditors are most often required to hold a license or certification. That certification may be by the State or by utilities. Fewer than 20 percent of the State WAP agencies require licenses or certification for the other State WAP agency staff categories listed.

Local WAP Agency Staff

State WAP agencies were also asked whether the State weatherization office maintained license or certification requirements for their local WAP agencies' staff (Figure 3.34).

Approximately one half of the State WAP agencies indicate that their local WAP agency energy auditors/estimators are required to hold licenses or certification. That corresponds to the 48 percent license and certification requirements for auditors/estimators which local WAP agencies indicated. There is much wider variation in license/certification requirements as reported by State and local WAP agencies for other professions and functions. For example, local WAP agencies report a 22 percent licensing/certification requirement for management/administrative local WAP agency personnel, while State WAP agencies report 11 percent. The reason for the discrepancy may be that local WAP agencies report license/certification requirements imposed either by the State or by themselves. In the latter case, local WAP agencies appear to establish standards more stringent than the State. This is true for several other staff categories, including envelope crew, envelope chiefs, client education staff, and other technical staff (see Figure 3.18).

Staff Training

The majority of State WAP agencies provide in-house staff training beyond technical certification, licensing, or degree requirements (Figure 3.35). Blower door and other technical training is most common, followed by weatherization skill training and management training. As is the case with local WAP agencies, most State WAP agency staff training is provided on a continuing basis.

A large majority of State WAP agencies provide training beyond degree, certification, or licensing requirements to local WAP agency staff (Figure 3.36). Most of the local WAP agency staff training provided by State WAP agencies is on a continuing basis, with weatherization skill training being the largest training category provided. Compared with State WAP agency in-house staff training, local WAP agency staff training focuses more on technical subjects and client education and less on management.

Virtually all State and local WAP agencies (see Figure 3.20) conduct some form of training, and rank it among the highest of priorities (see Figures 3.21 and 3.37). Training is provided in all the principal areas of responsibility. Technical skill training is approaching saturation, but there appear to be two principal opportunities for enhanced training: (1) roughly a third of State WAP agencies

do not receive training in management skills, and (2) emerging program directions could benefit from enhanced staff training in marketing and client education.

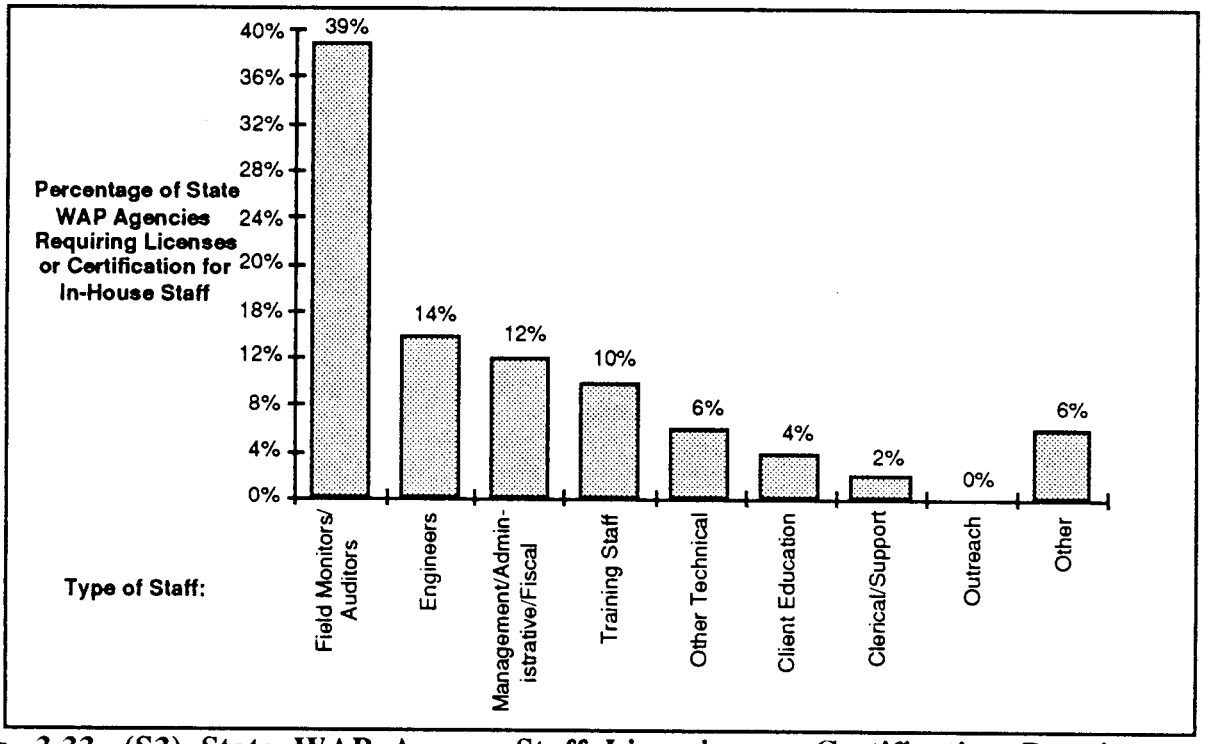

Fig. 3.33. (S3) State WAP Agency Staff Licensing or Certification Requirements.

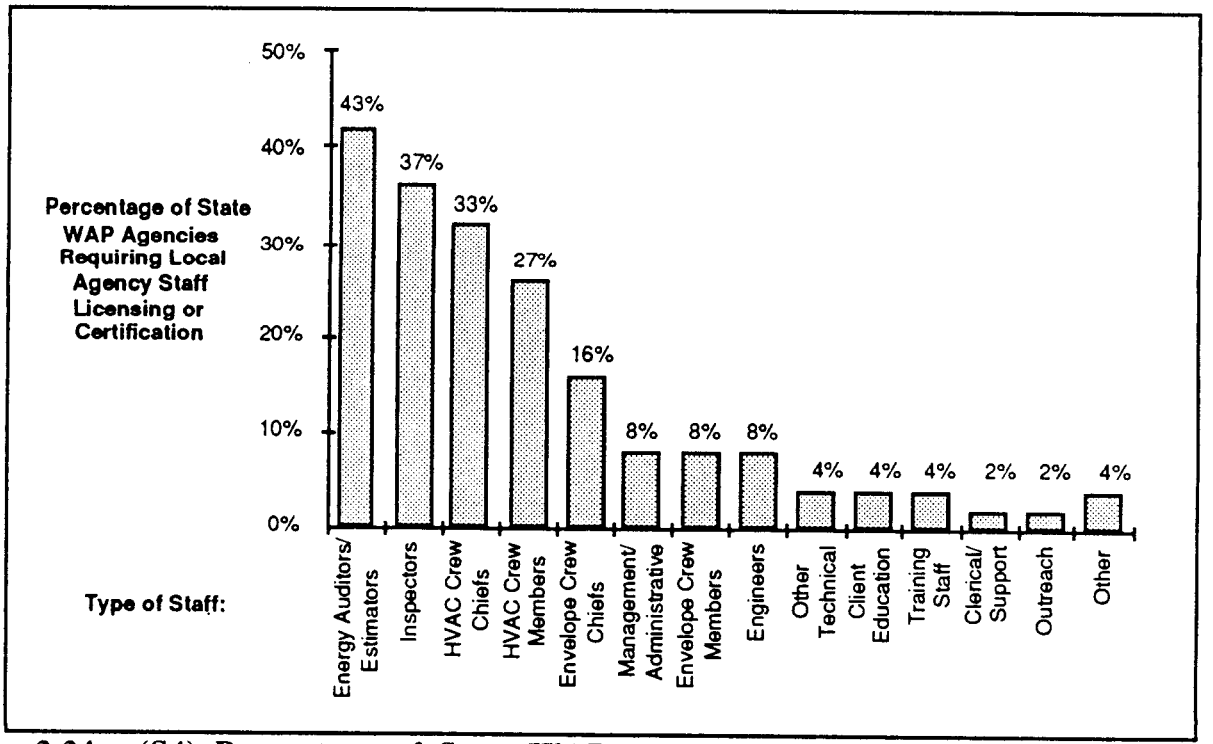

Fig. 3.34. (S4) Percentage of State WAP Agencies Requiring Local WAP Agency Staff Licensing or Certification.

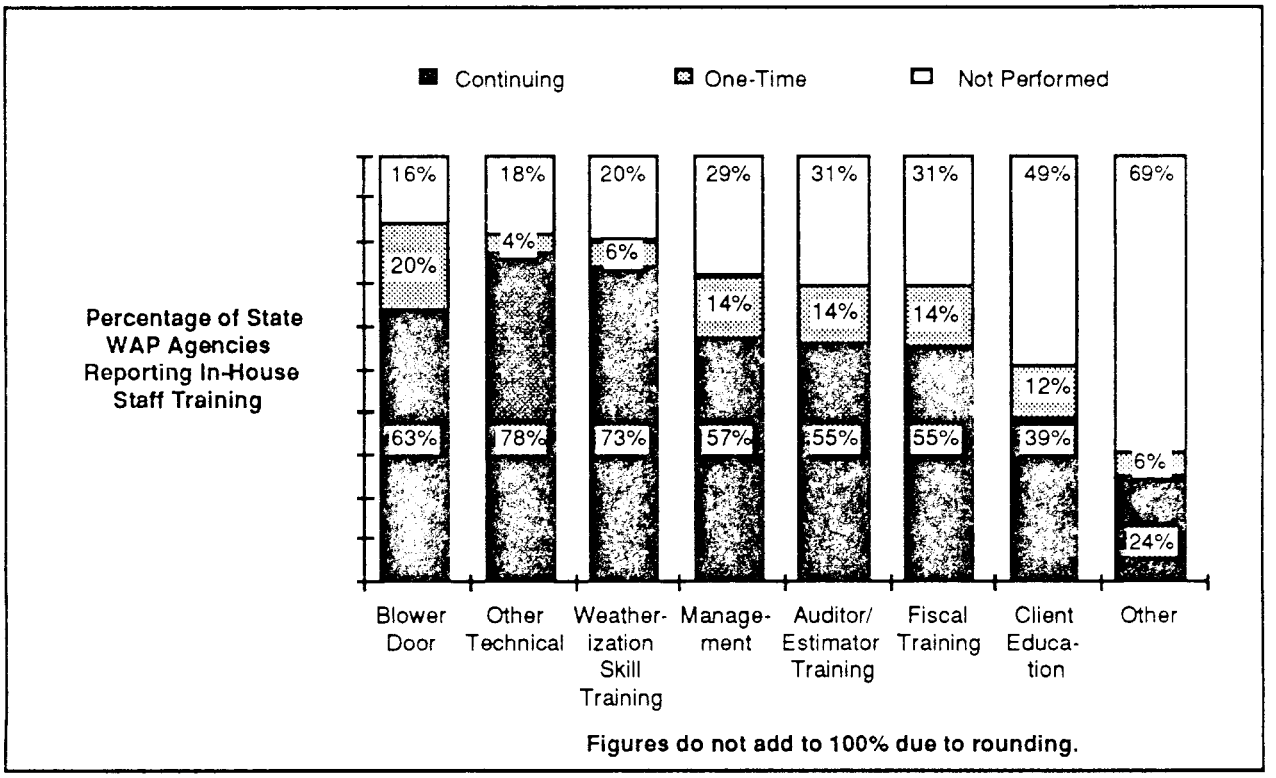

Fig. 3.35. (S5) Percentage of State WAP Agencies Providing In-House Staff Training by Type of Training.

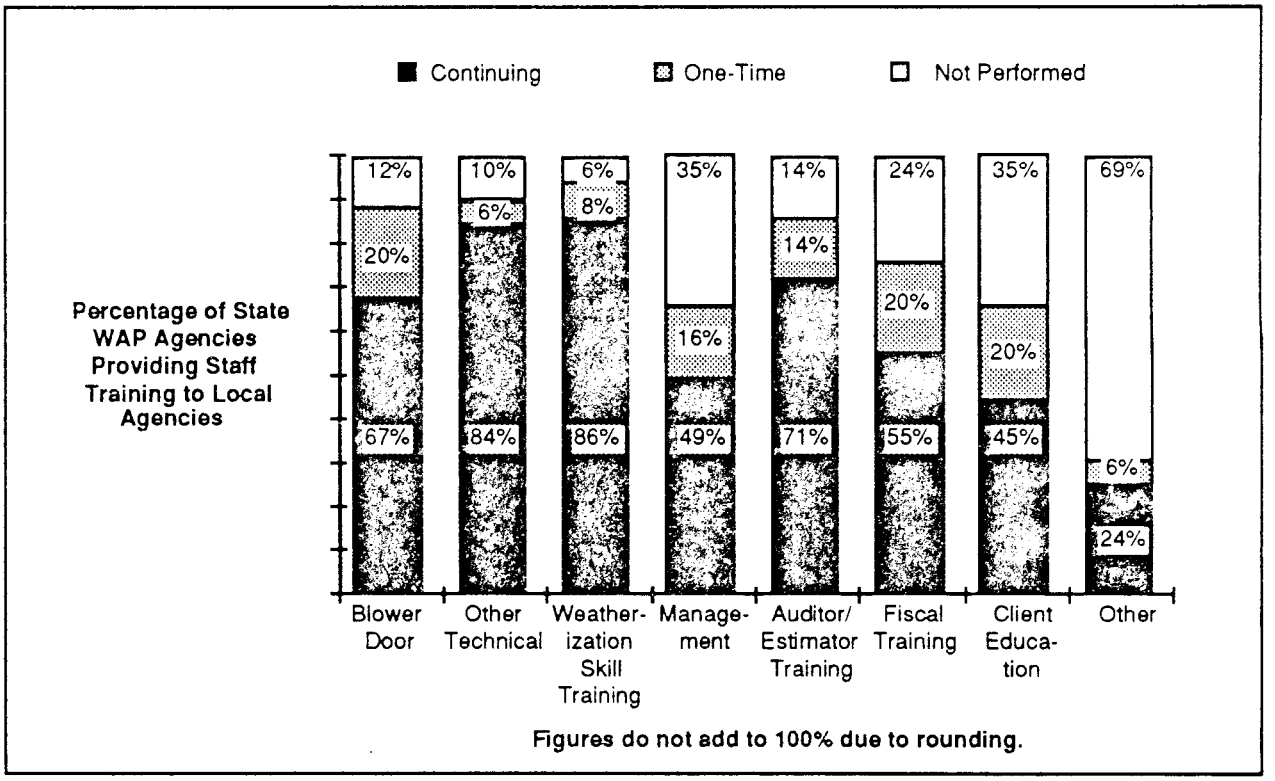

Fig. 3.36. (S5) Percentage of State WAP Agencies Providing Additional Local WAP Agency Staff Training.

3.2.5 Potential WAP Service Improvements

State WAP agencies were asked to rank the importance of eleven different factors that might improve the delivery of low-income weatherization services. Local WAP agencies ranked the same factors, and comparison of the two sets of responses indicates that State and local WAP agencies have very similar views about how the WAP can be improved. The four most important factors and the three least important factors are the same for both State (Figure 3.37), and local WAP agencies (see Figure 3.21). The only notable difference is in the ranking of "Funding outside of formula grants for innovative or leveraged activities...": 75 percent of the State WAP agencies felt this was important, while only 63 percent of the local WAP agencies judged it to be important.

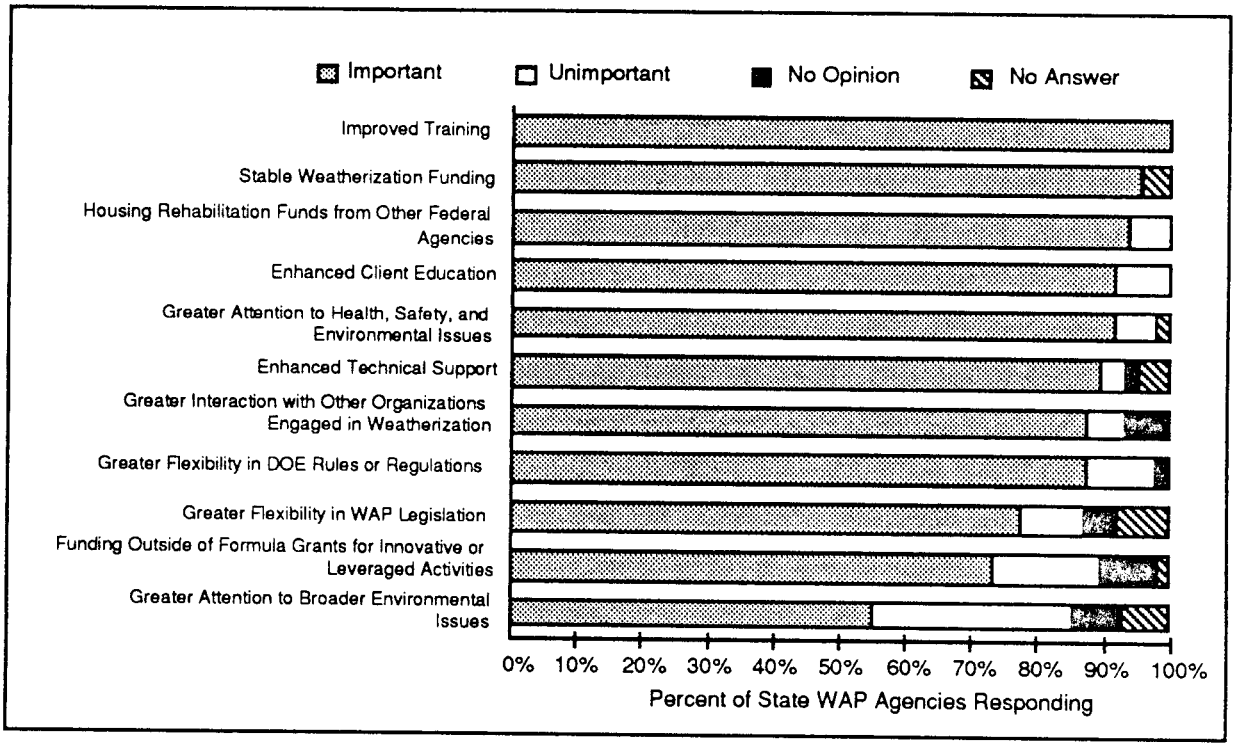

Fig. 3.37. (S16) Importance of State WAP Agency Issues that Affect the Deliveryof Low-Income Weatherization Services.

As with the local WAP agencies, these same eleven factors were often discussed by State WAP agencies in answering the survey's open-ended questions. The following sections draw heavily upon these State WAP agency comments.

Improved Training

According to the State WAP agencies, training is needed at all levels of the WAP network to strengthen its capabilities. "More training is needed on the latest weatherization technologies," and it should be region specific. One State noted that "training specifically geared toward problems encountered by warm weather States" was especially needed. In addition, training on client education and "How to Market" (to help develop the network's ability to attract new sources of funding) was also recommended.

Stable Weatherization Funding

Inadequate funding was identified as an obstacle to optimal program performance. Additional funding is needed to "allow more complete service, including repairs and heating systems," and to weatherize more homes. One way to stabilize and enhance financial support for the program is to "obtain non-federal funds to supplement DOE funding." However, it was also noted that, "Leveraging can support but not sustain the program."

Housing Rehabilitation Funds from other Federal Agencies

The need for housing rehabilitation funds was the subject of several State WAP agency open-ended responses. The program needs to "[a]ccess housing funds to improve the cost-effectiveness of the weatherization funds." Better coordination with HUD could greatly improve access to rehabilitation resources, and "DOE national can help this effort by working with HUD to establish a network."

Enhanced Client Education

Client education is viewed as a cornerstone of many State weatherization programs. Yet many State WAP agencies feel that their client education activities could be more effective. Greater funding and training is needed to accomplish this.

Greater Attention to Health, Safety, and Environmental Issues

State WAP agencies would like to address the wide array of health, safety, and environmental issues that surround weatherization. Some States have strengthened this dimension of their program. One State WAP agency noted that "Currently we are beginning to stress health and safety issues, especially heating system safety, asbestos concerns, air quality, and recognizing and remediating moisture problems." However, more resources are needed to properly deal with these issues. One State WAP agency described "the 'knowledge means responsibility' syndrome--as we learn more about health & safety, other liabilities, etc., we become burdened with additional necessary work that has no energy conservation value." Program managers do not want to be penalized for addressing health, safety, and environmental issues. One way to accomplish this is to "separate the program (in terms of reporting) into energy conservation costs and 'other services' costs, so that only energy conservation costs are subject to benefit/cost analysis." Providing "greater attention to broader environmental issues" was not seen to be as important as dealing with more immediate health and safety issues.

Enhanced Technical Support

Enhanced technical support was viewed as important by 44 of the 47 State WAP agencies who rated this factor. Technical support is needed to address the perceived "lack of research and dissemination of information on methods and materials specific to the WAP." One State WAP agency expressed the need for "a central source to evaluate and recommend more specific technical guidance--to drive program policy and technical advancements." One State WAP agency

suggested that "DOE should standardize a methodology for determining energy savings and cost effectiveness (particularly in view of upcoming performance funding)."

Greater Interaction with Other Organizations Engaged in Weatherization

The importance of greater interaction with other organizations engaged in weatherization was discussed by State WAP agencies in several contexts. First, there is the general need for enhanced weatherization resources and the specific need for housing rehabilitation funds. Second, there is the need for training so that the WAP network can more effectively market its services to other organizations. Third is the importance placed on "Funding outside of formula grants for innovative or leveraged activities." One obstacle to greater interaction and leveraging is "conflicting regulation." "DOE coordination with other federal agencies" to mitigate regulatory differences is seen as one solution to this conflict.

Greater Flexibility in DOE Rules and Regulation

Most State WAP agencies feel that DOE rules, regulations, and legislation should allow greater flexibility at the State and local level. Some of the same rules and regulations criticized by local WAP agencies in their open-ended responses are also criticized by State WAP agencies. For instance, the $1600 maximum per weatherized unit is problematic: in one State "Our current "minimum" measures cost $1,648 per unit -- without talking about furnace efficiency modifications. More labor intensive measures (wall insulation, blower door infiltration work, etc.) require higher dollars and more labor than materials dollars." Another State WAP agency "feels strongly about having provisions for returning to previously weatherized units that are showing continued high consumption." The cap on administrative funds was also seen as a hindrance, particularly for small local WAP agencies.

Supplementing WAP funding with funds from other organizations has provided some programs with the kind of flexibility they feel is important. "[One State] has initiated a weatherization enhancement program with Stripper Well and LIHEAP weatherization funds. This program allows local agencies more flexibility in determining the effective measures to be performed on a dwelling. The program allows for one or a combination of five activities, as long as these activities are directly related to energy conservation. The allowable activities are: weatherization, client education, home repair, youth employment, and training and technical assistance."

3.2.6 Regional Issues

Key State WAP agency characteristics by the three climate zones are shown Figure 3.38. As can be seen in Figure 3.38, State WAP agencies in the moderate climate zone (which includes half of the States, including many of the most populous States) have over twice the energy program funding of State WAP agencies in the hot zone with 28 percent of the States, and over four times the funding of the 20 percent of State WAP agencies in the cold zone States. An interesting comparison can be made between State and local WAP agency energy program funding in the hot zone. Hot zone local WAP agencies reported total support of approximately $78 million (see Figure 3.22). Hot zone State WAP agencies report total support of $144 million, or almost twice as much as local WAP agencies receive. The DOE/WAP funding to hot zone State WAP agencies

"DOE should be interested in pursuing this information one step further in order to tailor the energy efficient measures installed in the various climatic regions. Additional technology development is needed to optimize the energy savings in the Southern and Northern regions."

- Sharon Gill
U.S. DOE, Chicago Support Office

agencies is $24 million and the reported pass-through to hot zone local WAP agencies is $23.4 million. Therefore, it would appear that hot zone State WAP agencies disburse the difference of $144 million and $48 million, or approximately $66 million of energy program funds through agencies other than local WAP agencies.

Climate Zone	Number of State WAP Agencies	State WAP Agency Staff working on energy programs (in FTEs)			State WAP Agency Funding for Energy Programs (in $1000)		
		Total	Mean	Median	Total	Mean	Median
Cold	11	115.8	10.5	4	90,435	8,221	3,373
Moderate	25*	379.8	15.6	12.3	415,332	16,613	9,070
Hot	14*	191.4	14.02	13	141,463	10,105	5,706
Total Network	50*	686.9	14.02	11.00	590,600	12,099	6,011

* California is split between the moderate (.35) and hot (.65) Climate Zones according to the Subgrantee weighted funding level. For purposes of the total State WAP Agencies per region, it is counted as both a moderate and hot zone agency.

Fig. 3.38. Summary of State WAP Agency Energy Program Activity in PY 1989 by Climate Zone.

4. LOCAL WAP AGENCY WEATHERIZATION NETWORK INTERACTIONS

4.1 INTERACTION WITH OTHER AGENCIES AND FUNDING LEVELS

The interaction of local WAP agencies with agencies other than State and the DOE/WAP works in both directions. While DOE/WAP financial and in-kind support is an important resource, 69 percent of local WAP agency financial and in-kind support is derived from other sources (Figure 4.1). The largest source of non-DOE/WAP support to local WAP agencies is PVE at 41 percent. This source of support is diminishing, and will likely be eliminated in the next few years. HHS-LIHEAP weatherization was the second largest source of support to local WAP agencies in PY 1989. Utility support to local WAP agencies totaled $44.3 million, or 13 percent, in PY 1989, a significant resource. Other federal and State support combined totalled only 15 percent, or approximately $50 million in PY 1989. This is about $54,000 per local WAP agency on average.

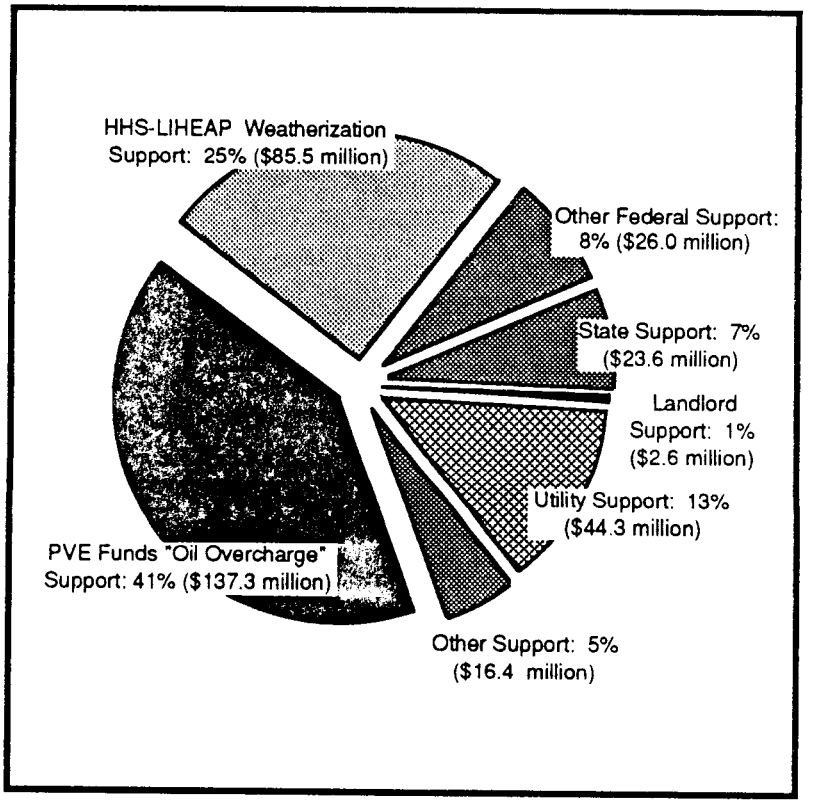

Fig. 4.1. (L9)* Breakdown of Non-DOE/WAP Local WAP Agency PY 1989 Funding by Source.

* The letter and number indicate the questionnaire (S=State WAP agency, L=local WAP agency) and question number from the surveys. The questionnaires are found in Appendices A and B.

In addition to operating energy programs* for a wide array of non-DOE sponsors, local WAP agencies also influence public opinion and energy policy. As is shown in Figure 4.2, representatives from a third of the local WAP agencies report serving on advisory committees. Others contribute magazine or journal articles. The "Other" category is diverse and includes speaking on energy issues to public groups and writing letters to public officials. Local WAP agency recognition as subject matter experts is reflected in their work on professional/technical boards, serving as consultants, and work with equipment manufacturers. Approximately 31 percent of local WAP agencies, however, report that they do not perform any of the activities indicated in Figure 4.2.

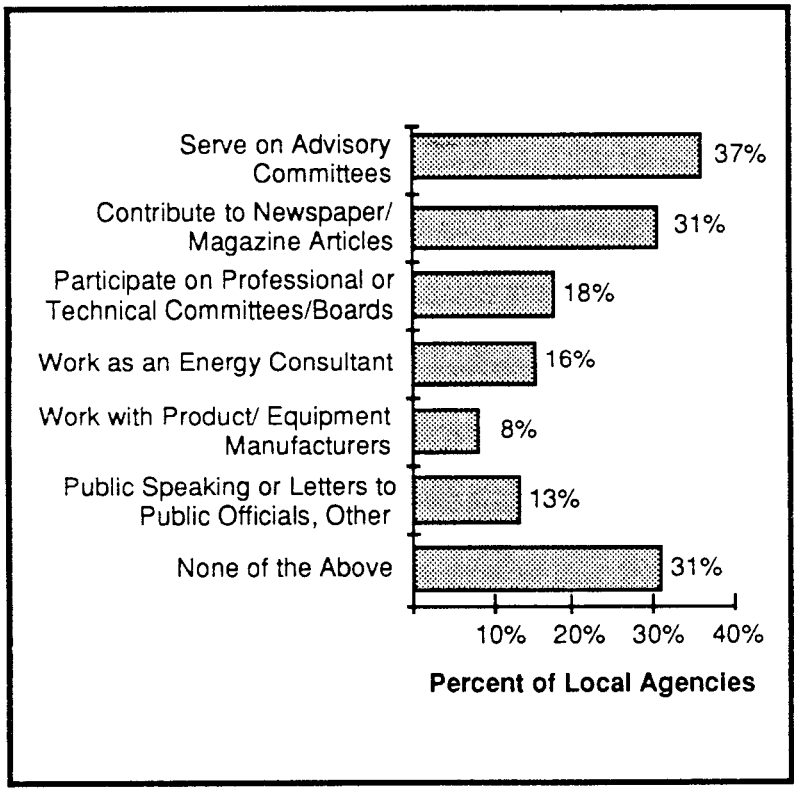

Fig. 4.2. (L20) Methods in Which Local WAP Agencies Report Influencing Energy Initiatives of Others.

4.2 LOCAL WAP AGENCY COOPERATION WITH UTILITIES

The local WAP agency questionnaire sought to determine specific local WAP agency interactions with the utility sector. Figure 4.3 outlines five potential local WAP agency/utility interactions: participate on utility task forces, provide comments on utility plans, assist in program design, intervene in regulatory proceedings, and other. Note that the categories are not mutually-exclusive. A local WAP agency could assist in program design as well as participate on utility task forces. Most local WAP agencies are not involved in utility interaction. However, 31 percent of local

* Rather than a formal definition of "energy program," examples were provided to survey respondents (e.g., compact fluorescent light bulb installation) to attempt to capture the scope of all energy related activities performed by State and local WAP agencies. "Energy Programs" might therefore represent services and funding other than DOE's.

WAP agencies report "other" interactions. These include: energy usage evaluations, administration of rebate programs, operation of utility weatherization programs, and coordination of energy programs. Overall, about one-third of local WAP agencies report active involvement in utility planning and program design functions, providing a significant base for expanded WAP network involvement with the utility sector.

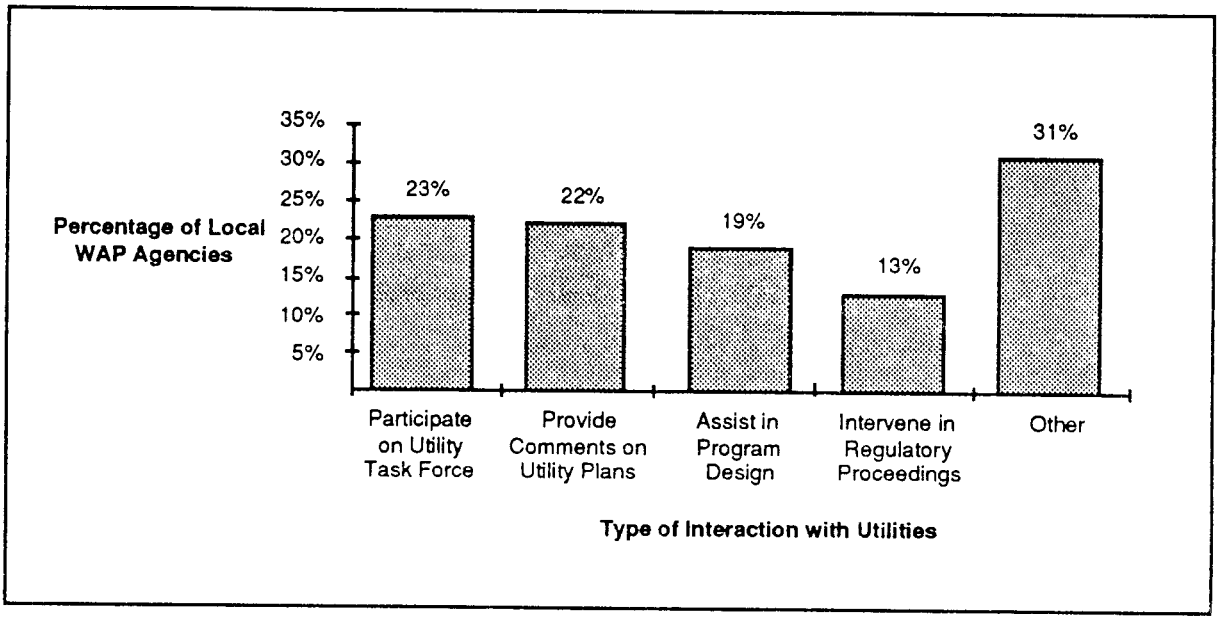

Fig. 4.3. (L13) Local WAP Agencies Reporting Interaction with Utilities by Type of Interaction.

5. STATE WAP AGENCY WEATHERIZATION NETWORK INTERACTIONS

5.1 STATE WAP AGENCY INTERACTIONS WITH OTHER AGENCIES AND FUNDING LEVELS

State WAP agencies receive funding from agencies other than the DOE/WAP (Figure 5.1). Substantial direct and, to a lesser degree, in-kind support is derived primarily from other federal sources and PVE funds. Only a small proportion of non-DOE/WAP funds, less than ten percent, come from State appropriations, utilities, or other sources. As PVE funds are exhausted, *ceterus paribus*, the "federal share" will increase.

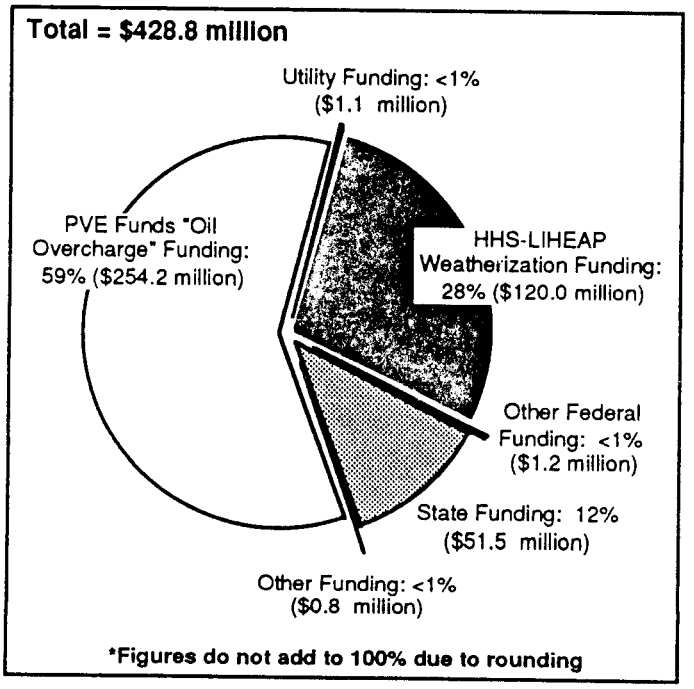

Fig. 5.1. (S6)* Breakdown of Non-DOE/State WAP Agency Funding by Source.

5.2 STATE WAP AGENCY COOPERATION WITH UTILITIES

The State WAP agency questionnaire sought to determine specific State WAP agency interactions with the utility sector (Figure 5.2). Five potential types of State WAP agency-utility interaction are reported: participate on utility task forces, assist in program design, provide comments on utility plans, intervene in regulatory proceedings, and other interactions. Note that these categories are

* The letter and number indicate the questionnaire (S=State WAP agency, L=local WAP agency) and question number from the surveys. The questionnaires are found in Appendices A and B.

not mutually exclusive. A State WAP agency could participate on utility task forces as well as intervene in regulatory proceedings.

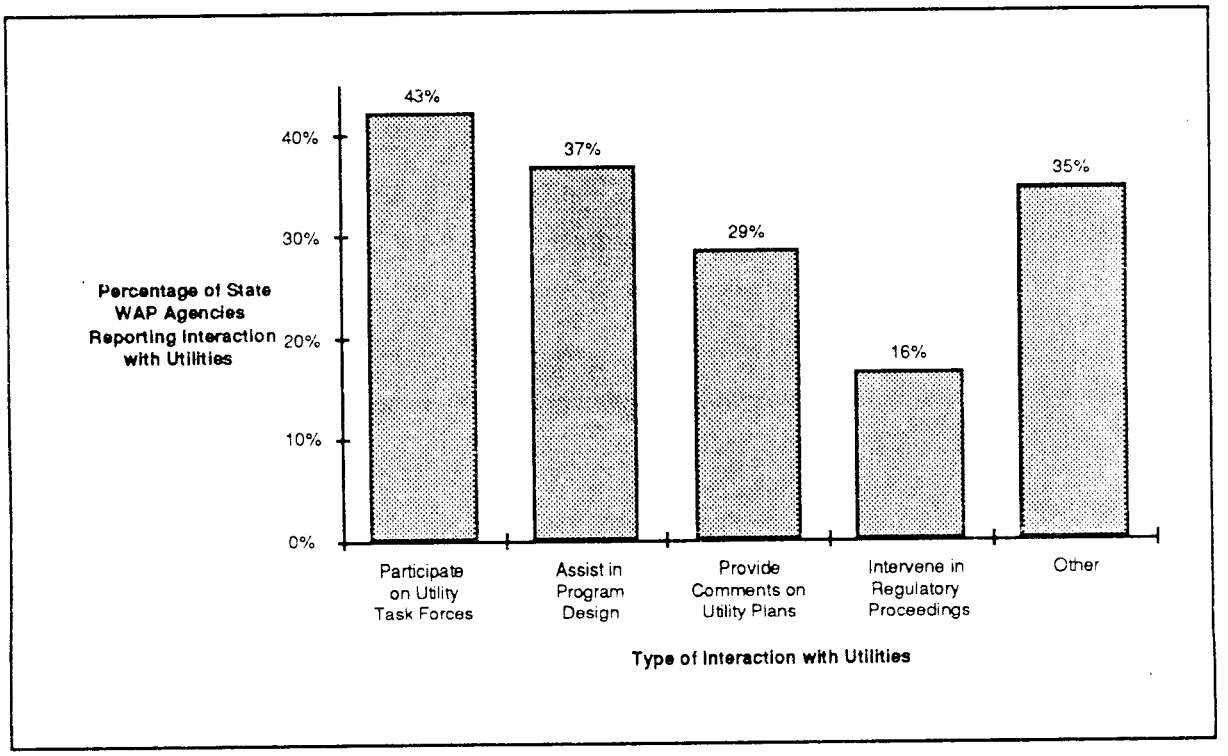

Fig. 5.2. (S8) State WAP Agencies Reporting Interaction with Utilities by Type of Interaction.

Considering that there are no requirements, Figure 5.2 indicates a high level of State WAP agency interaction with utilities. Also, given the level of utility funding to State WAP agencies (on average, less than $25,000 per State WAP agency in PY 1989) there is a large degree of activity in conjunction with utilities. The most common means of interaction is participation on utility task forces. Relatively few State WAP agencies intervene in regulatory proceedings. Slightly more than a third of the State WAP agencies indicate "other" forms of State WAP agency-utility interaction. These include:

- Arrearage forgiveness
- Cooperative weatherization and energy conservation programs
- Joint targeting of high energy users
- Promotion of least-cost utility planning
- Leveraging of utility weatherization funds
- Low-income rate assistance verification
- Matchmaker between utilities and local WAP agencies
- Participation on joint advisory boards and task forces
- Promotion of utility loan and rebate programs
- Training of utility staff and contractors
- Utility representatives on State WAP agency advisory board

- Utility-State WAP agency joint pilot demonstrations
- Utility/WAP program coordination
- Utility-weatherization information exchange and data sharing
- Weatherization support services provided by utilities

Finally, it is of interest to note that local WAP agencies resident in States where State WAP agencies interact with utilities are themselves more likely to interact with utilities in the same way, as is shown in Figure 5.3. For example, in States where the State WAP agency provides utility plan comments, more than 24 percent of reporting local WAP agencies do likewise; while in those states where State WAP agencies do not comment, almost 19 percent of local WAP agencies do. Similarly, in States where the State WAP agency participates on utility task forces, 26 percent of local WAP agencies do also while 17 percent do so in States where the State WAP agency does not.

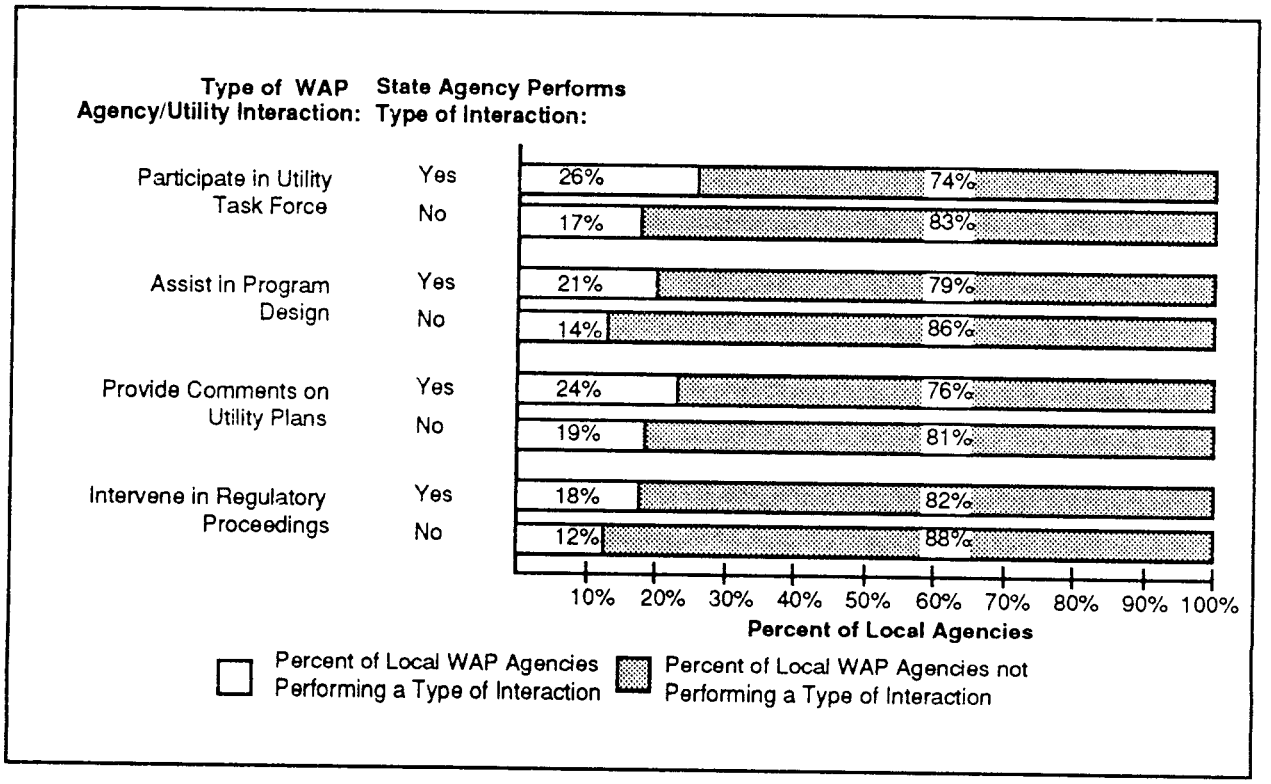

Fig. 5.3. (S8 L13) State WAP Agency and Local WAP Agency Interaction with Utilities Local WAP Agencies in Percent

In sum, a fairly solid basis of utility/State WAP agency interaction seems to be in place, which can provide a foundation for expanding cooperation between the WAP and utilities. This base can also be used to share experience with State WAP agencies which currently do not interact with utilities.

6. INNOVATIONS AND INITIATIVES IN THE WAP NETWORK

6.1 LOCAL WAP AGENCY WEATHERIZATION NETWORK

A major focus of the Characterization of the WAP Network was to explore the technical resources and know-how of the WAP network to diagnose weatherization needs, install retrofit measures, and provide feedback on the performance of technologies. In particular, the project sought to identify innovations and "cutting-edge" initiatives being implemented in the field by the WAP network. This section presents information reported by local WAP agencies on the above topics.

6.1.1 Local WAP Agency Sources of Technical, Management, and Marketing Information

> *"While overall technical knowledge is improving, the challenge still remains in seeing that all levels of the network can jointly share in that knowledge and its application. Expedited technical transfer is a vital network need."*
>
> **- Ron Marabate**
> **Michigan Department of Labor**

Local WAP agencies report a wide range of sources for technical, management, and marketing information (Figure 6.1). Most local WAP agencies report that their primary sources of technical information are those individuals and groups with whom they have on-going professional relationships. Local WAP agencies must interact with State weatherization offices. Over 70 percent of local WAP agencies attend weatherization conferences at least once a year and interact with their peers. They also consult with other WAP agencies. Over 60 percent of the local WAP agencies responding to the survey report periodic contacts with utilities. On the other hand, federal and State government agencies, other than the State weatherization agencies, are not major sources of technical information for local WAP agencies. Neither are national laboratories nor universities identified as significant sources of information, based on frequency of interaction.

6.1.2 Local WAP Agency Use of Selected Diagnostic and Screening Techniques

The local WAP agencies were asked to identify those diagnostic and screening techniques they employed in PY 1989 and those they anticipate using in PY 1991 with any source of funds. The purpose was to identify possible innovative applications and trends in the use of specific techniques (Figure 6.2). (A glossary defining technical terms is contained in Appendix C.)

Client selection based on current energy consumption and anticipated savings is used by only one-fourth of the local WAP agencies, but it is expected to increase significantly in PY 1991 (Figure 6.2). Approximately one-half of local WAP agencies responding to the survey indicate that they base investment levels on an analysis of energy savings per dollar invested. Local WAP agencies reported using integrated envelope and HVAC audits on 28 percent of their completions in PY 1989, and this is expected to increase to 38 percent by PY 1991.

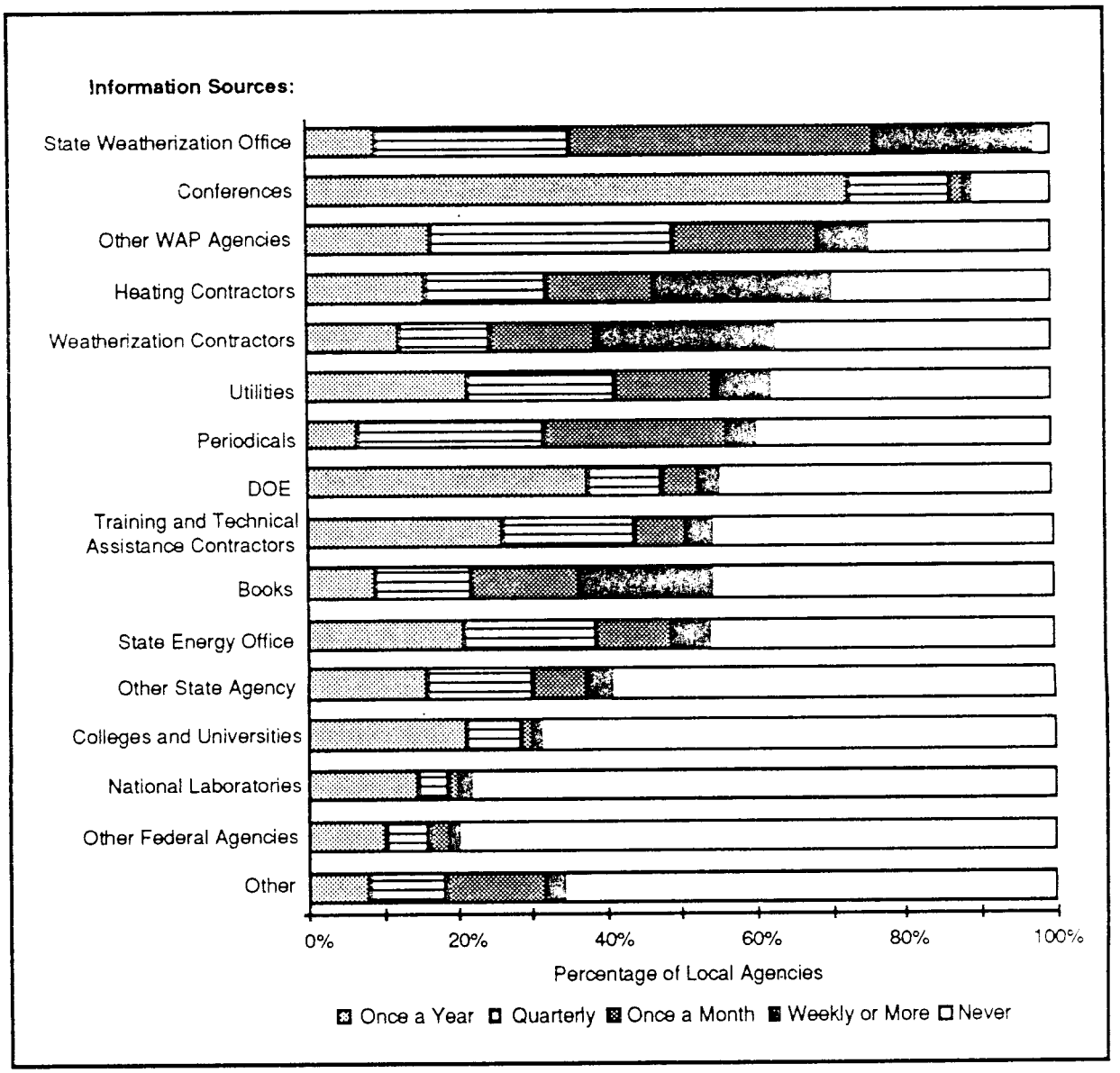

Fig. 6.1. (L14)* Percentage of Local WAP Agencies Indicating Contact with Various Information Sources by Frequency of Contact.

Major technological growth areas are in the use of blower doors and distribution system testing/balancing. Use of blower doors is anticipated to almost double to 50 percent of completions in PY 1991. Also, local WAP agencies report that approximately one-half of their building energy-efficiency completions involve HVAC system safety inspections and performance testing. Use of all these diagnostic or screening techniques is expected to increase by PY 1991.

Over 40 percent of local WAP agencies have experience in the use of these advanced, more cost-effective client selection, diagnostic, and screening techniques having applied them in as many as

* The letter and number indicate the questionnaire (S=State WAP agency, L=local WAP agency) and question number from the surveys. The questionnaires are found in Appendices A and B.

60 percent of their completions in PY 1989. Use of some of these procedures will almost double by PY 1991, which can be expected to result in greater, more cost-effective energy savings. Several areas, such as client selection based on landlord contributions and distribution system testing and balancing are just beginning to come into mainstream practice, and show significant potential for the future.

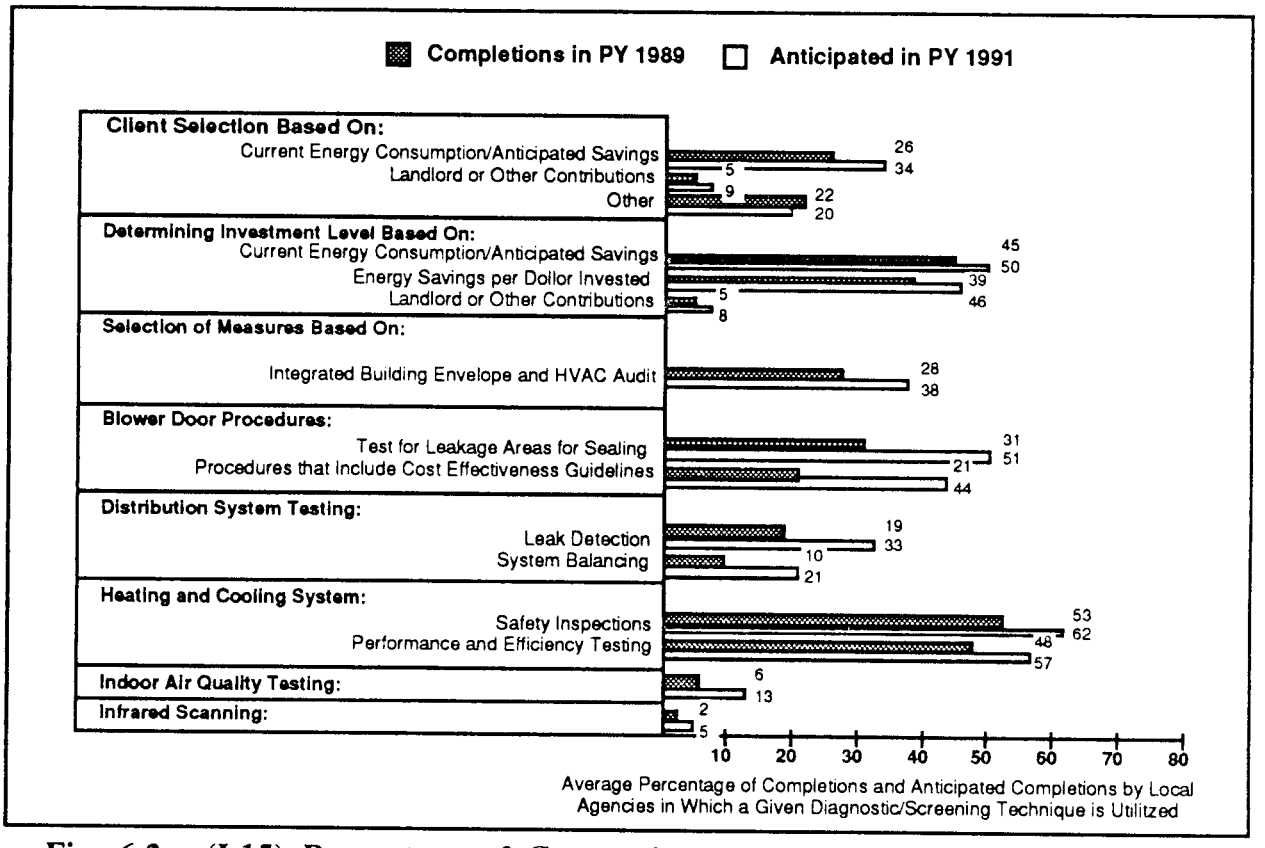

Fig. 6.2. (L15) Percentage of Completions in Which Local WAP Agencies Reported Use of Selected Energy-efficiency Diagnostic and Screening Techniques Utilizing any Funding Source.

6.1.3 Local WAP Agency Priorities for Selected Diagnostic and Screening Techniques

Local WAP agencies were asked to indicate the priority, ranging from "low" to "high" (Figure 6.3) that they would assign to the same list of diagnostic and screening techniques, as was shown in Figure 6.2. It should be noted that these may be techniques not currently employed by responding local WAP agencies, but those they might utilize had they the authority and resources to do so.

Responding local WAP agencies assigned high priorities to weatherization investment levels based on current energy consumption/anticipated savings and on energy saved per dollar invested. There are preferences for specific techniques. For example, heating and cooling system safety inspections and performance and efficiency tests are seen as more important than distribution system balancing and leak detection. Similarly, blower door procedures are considered a significantly higher priority than infrared scanning and indoor air quality testing.

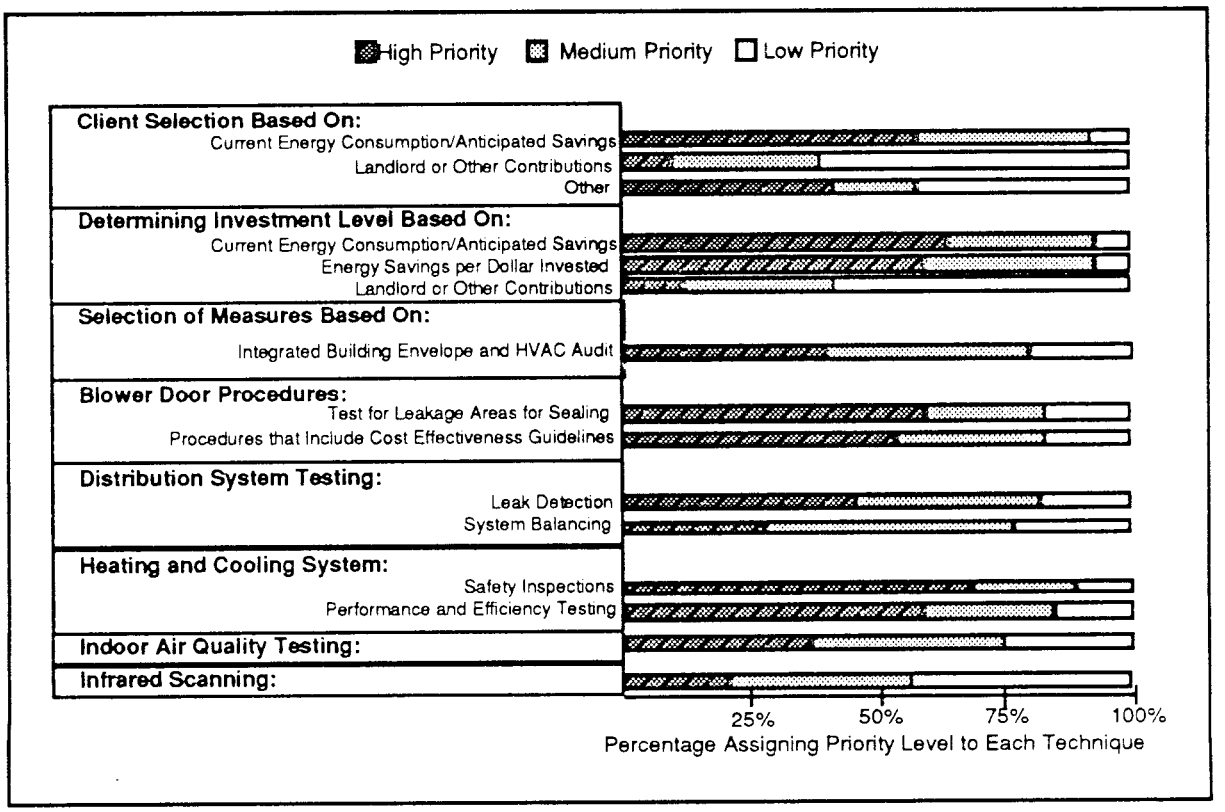

Fig. 6.3. (L15) Percentage of Local WAP Agencies Assigning Priority Levels to Selected Diagnostic and screening Techniques.

6.1.4 Local WAP Agency Use of Selected Building Energy-efficiency Measures

Local WAP agencies were asked to report the percent of building energy-efficiency completions in which they employed a series of measures in PY 1989 and anticipate employing in PY 1991. The classes of measures listed were subdivided into 23 specific measures.

Local WAP agencies offer numerous weatherization measures to their clients (Figure 6.4). The figure reports the percentage of completions in which various energy-efficiency measures were installed or employed in PY 1989 and which are anticipated for PY 1991. For many measures, local WAP agencies anticipate providing similar services in PY 1991 as they delivered in PY 1989. However, the number anticipating installing high-density insulation nearly doubles, and heating system measures are likely to be more common in PY 1991 as well.

Local WAP agencies, on the national level, do not perform many cooling measures. However, there are regional differences. Local WAP agencies in the hot climate zone perform more cooling measures (e.g. cooling system tune-ups are performed in 5.3 percent of all installations) and fewer heating measures (heating system tune-ups in 7.1 percent) than similar agencies in the moderate (1.1 percent and 50.5 percent, respectively) and cold zones (0.01 percent and 53.3 percent). Very few local WAP agencies installed or anticipate installing solar heating systems. Low emissivity windows, a technology which became commercially available in the late 1970s, were employed in

14 percent of installations in PY 1989, and may rise to 15 percent in PY 1991. Heating system replacements are not utilized nearly so often as are component retrofits, which are less popular than system tune-ups.

Local WAP agencies also indicate a strong interest in quality control issues. More than 80 percent practice and will continue to practice quality review of workmanship and provide feedback to field staff. In addition nearly half will engage in other quality control practices.

For each of the measures listed in Figure 6.4, local WAP agencies report that they anticipate employing them more often in PY 1991 than in PY 1989. Solar heating systems were and will continue to be the least used measure. Though the percentage of completions reported in PY 1989 for compact fluorescent bulbs and ballasts was low (1.9 percent), and anticipated PY 1991 use is also low (8.6 percent), the number of anticipated applications increases more than four-fold. Doubling of the use of high-density wall insulation and several cooling measures is also anticipated by PY 1991.

It should be noted that heating system tune-ups and quality review procedures were first encouraged in 1985 legislation, and are now done in 40 percent and 81 percent of completions, respectively. Based on this experience, the use of other innovative measures and associated energy savings should grow considerably as new conservation technologies are integrated into the WAP.

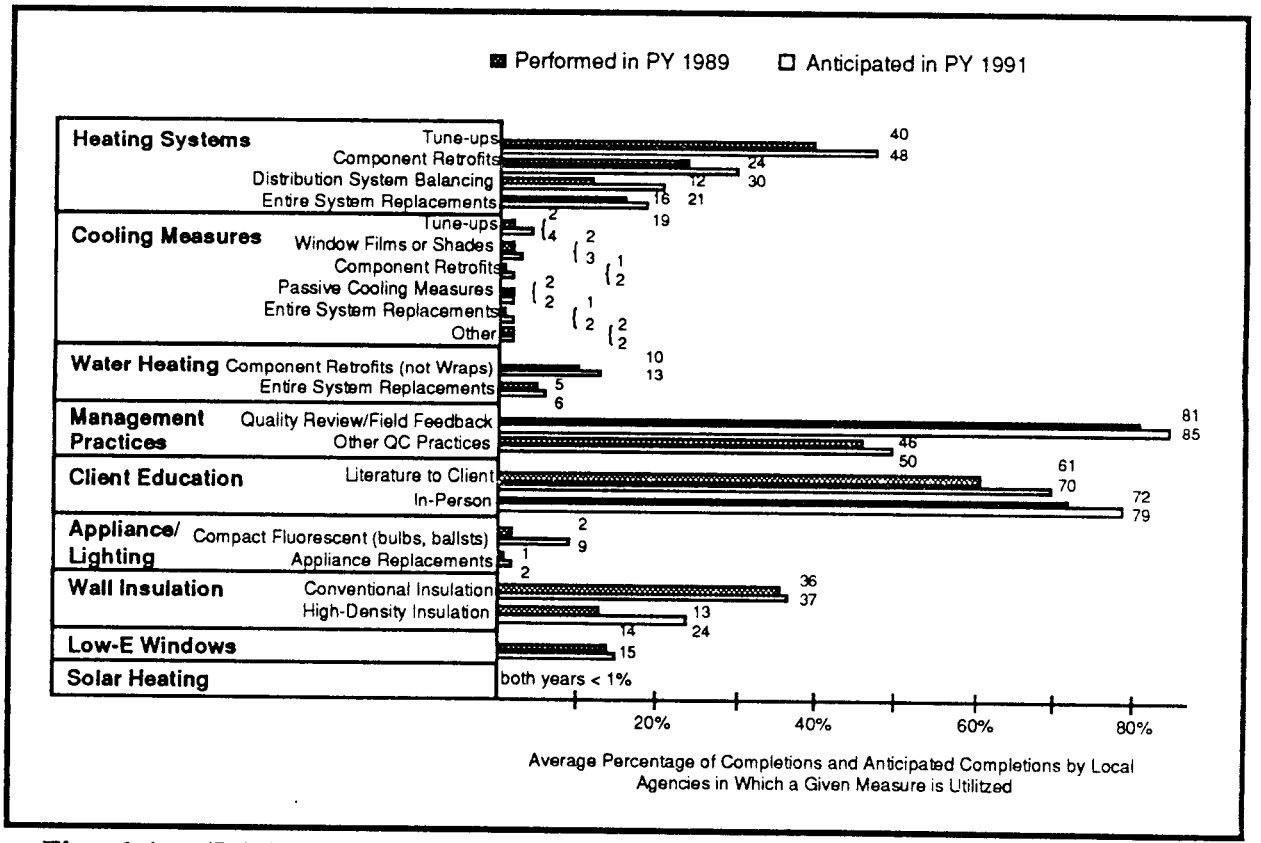

Fig. 6.4. (L16) Percentage of Completions in Which Local WAP Agencies Reported Use of Selected Energy-efficiency Measures in Which Use of the Measures was Physically Possible.

6.1.5 Local WAP Agency Priorities for Selected Building Energy-efficiency Measures

Local WAP agencies were asked to rate the priority of selected energy-efficiency measures assuming they had the authority and resources to implement them (Figure 6.5). In general, heating system options, client education, and management practices were rated as high priorities. Cooling systems, appliance replacement, and solar heating retrofits were seen as low priorities. Lighting options were perceived to be a medium priority. Within both heating and cooling systems, system tune-ups received the highest priority, while component retrofits were rated lower, followed by system replacements. Window treatments were seen to be of a medium to low priority.

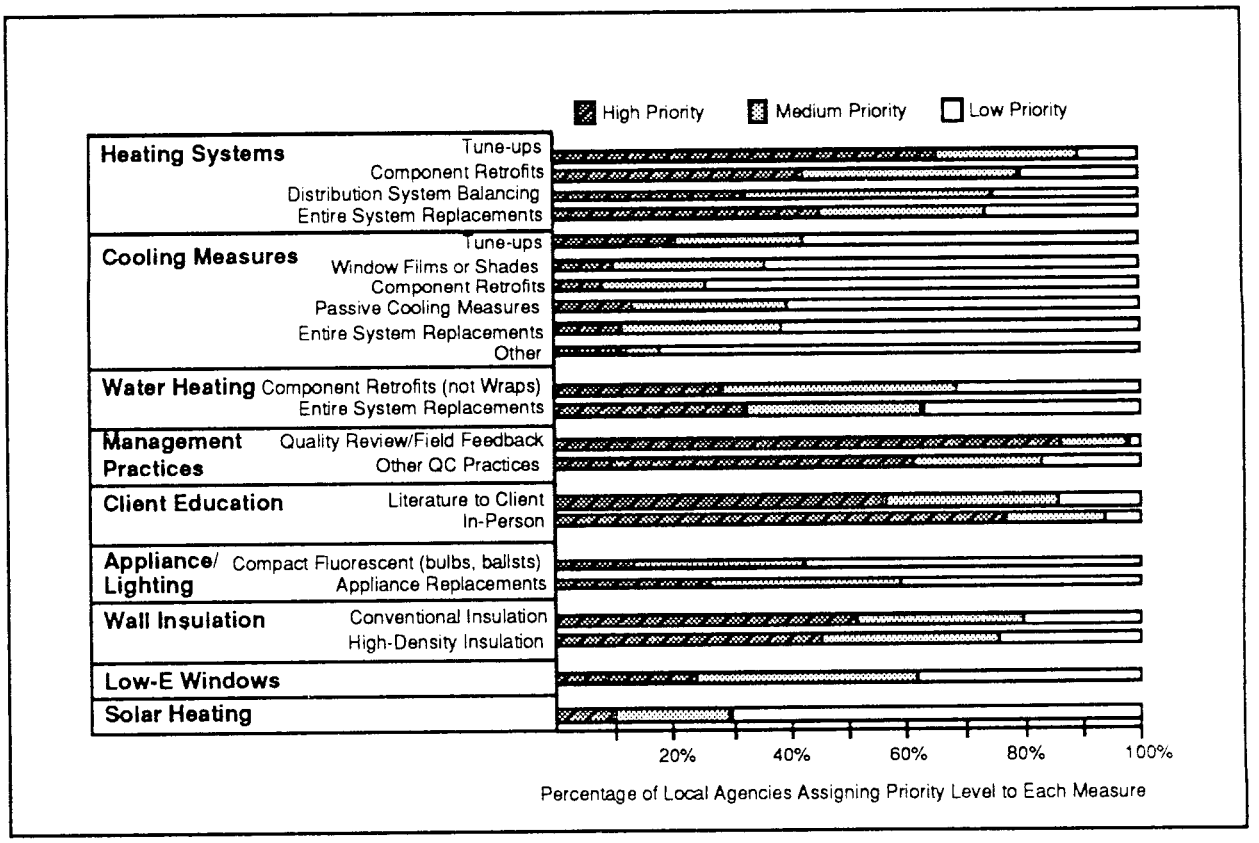

Fig. 6.5. (L16) Percentage of Local WAP Agencies Assigning Priority Levels to Selected Energy-efficiency Measures.

A general conclusion would be that priorities follow practices. Tune-ups take precedence over component retrofits, which in turn take precedence over system replacements both in current local WAP agency practice and expressed priorities. In addition, less complex and less expensive options are rated at a higher priority than are more complex or more expensive options. DOE, together with the Alliance to Save Energy, initiated retrofit technology training in the 1980s, further affecting preferences and practice.

6.1.6 Other Innovative Activities Performed by Local WAP Agencies

Local WAP agencies were queried as to their participation and interest in selected energy-efficiency research projects and pilot programs (Figure 6.6).

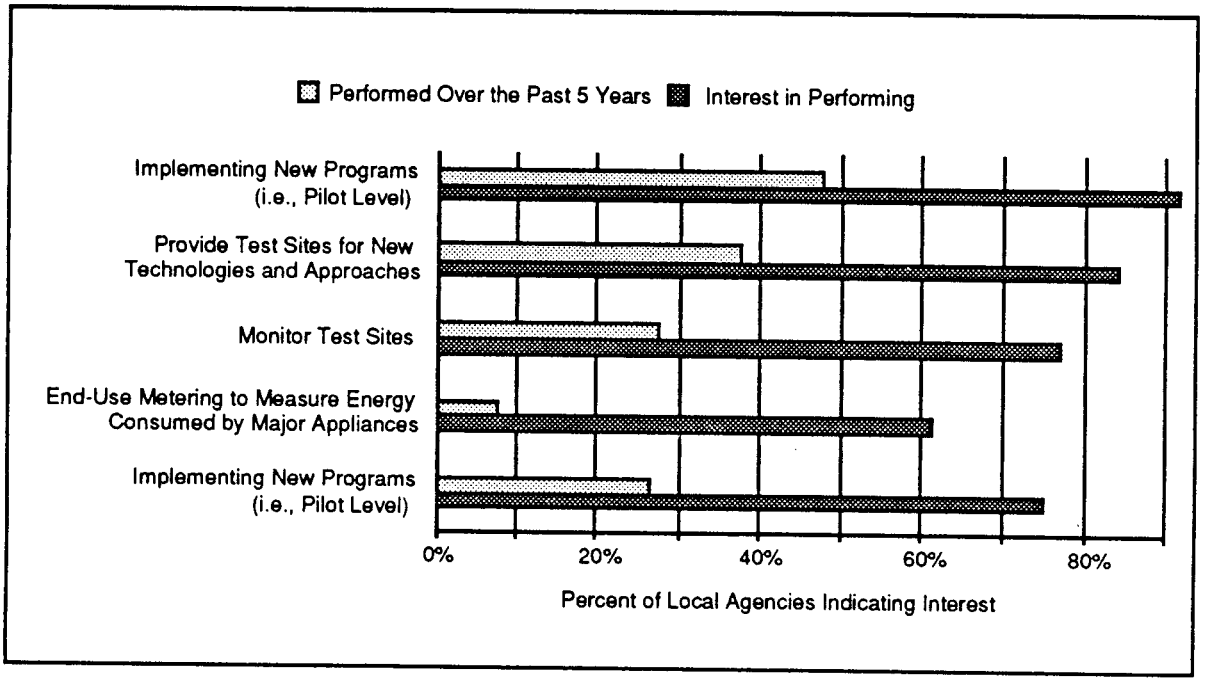

Fig. 6.6. (L18) Local WAP Agency Participation and Interest in Energy-efficiency Research.

> *"In State grant programs, the local WAP agency can only do what is allowed and many only do what is encouraged."*
>
> **- Meg Power**
> **National Community Action Foundation**

Almost half of local WAP agencies have implemented new, pilot level programs in the last five years and more than 90 percent are interested in doing so. With the exception of end-use metering, over 25 percent of the local WAP agencies responding indicated that they have performed demonstration type projects. Further, over half of the responding local WAP agencies are interested in participating in energy-efficiency research. The greatest degree of interest is in implementing pilot programs and providing and monitoring test sites. This is a significant indication of local WAP agency willingness to participate in the testing needed to prove new technologies and approaches to weatherization.

Programmatic innovations by local WAP agencies were reported in the local WAP agency survey (Figure 6.7). These relate to the use of innovative systems and methods by local WAP agencies in their day-to-day operations.

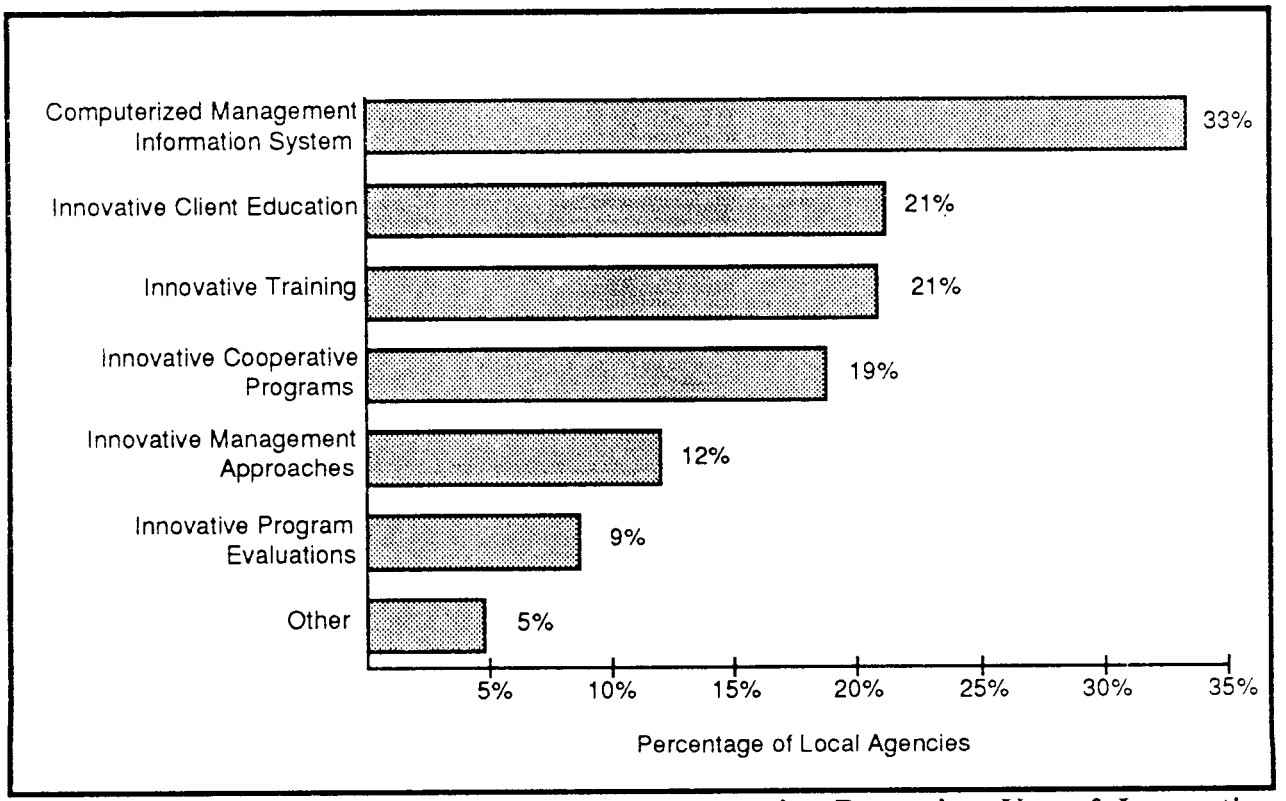

Fig. 6.7. (L19) Percentage of Local WAP Agencies Reporting Use of Innovative Systems or Methods Independent of Funding.

The local WAP agency questionnaire provided respondents with the opportunity to describe each category of innovation. A sampling of these descriptions is given below:

Computerized Management Information System

- Client tracking
- Bulletin board systems
- Computer link to State weatherization office
- Computerized whole house audit
- Telecommunications program
- Weatherization software

Innovative Client Education

- Energy-saving audio tapes
- Boiler maintenance training for building owners/managers
- Client pamphlets and brochures
- Energy-saving brochures written in the vernacular
- Home energy package for seniors
- Video tape training

Innovative Training

- Blower door certification
- Cross train CDBG and WAP staff
- Hazardous chemical training
- High density insulation training
- Moisture training
- On-the-job training for measures installation
- Solar certification
- State weatherization camp
- Video training

Innovative Cooperative Programs

- Joint agency task force for housing problems
- Home repair program based on health and safety
- Asbestos removal program with city and courts
- Contractors, utilities, manufacturers for training
- Energy education in conjunction with Energy Extension Service
- Energy education in conjunction with utility
- Fund leveraging
- Indoor air quality program with university
- Landlord participation program
- Pilot projects with utility
- State government evaluation training
- State-wide CAA/utility consortium
- Weatherization kits provided by HHS-LIHEAP
- Work with community groups to assist senior citizens
- Youth group training

Innovative Management Approaches

- Computer driven bidding procedures
- Time management
- All material goes directly from vendor to contractor
- County management seminars
- Incentive piecework pay
- Joint HUD and DOE programs
- Quick reporting summary sheet
- State-wide CAA consortium
- Team management
- Ten hour, four day week
- Time management

Innovative Program Evaluations

- Advanced weatherization studies
- Board and clients evaluate programs
- Client feedback after each job
- Cost/benefit analysis of innovative technologies
- Cost/benefit analysis of client energy use
- Multiple choice forms for client evaluation
- Weatherization funding from utility

Other

- Asbestos monitoring
- Carbon monoxide testing
- Furnace retrofit study
- Infrared scanning
- Multifamily loan guarantee program

As can be seen from Figure 6.7 and the above listing, local WAP agencies have employed a wide range of innovative systems and methods. Significant use is being made of computer technology for program management and delivery. Many different types of cooperative programs with other organizations are also being pursued.

6.2 STATE WAP AGENCY WEATHERIZATION NETWORK

This section continues the focus on the technical resources and know-how of the WAP network to diagnose weatherization needs, install retrofit measures, and provide feedback on the performance of technologies. As in the previous section on innovations and initiatives undertaken by local WAP agencies, this section seeks to identify innovations and "cutting-edge" initiatives implemented by State WAP agencies.

6.2.1 State WAP Agency Sources of Technical, Management, and Marketing Information

State WAP agencies report a wide range of sources for technical, management, and marketing information (Figure 6.8).

The Department of Energy is the organization most frequently contacted by State WAP agencies, and most contacts are monthly or more frequently. This is followed by local WAP agencies as a frequent source of information. Books are also frequently consulted, most are manuals (major titles include: ASHRAE Standards, and The Residential Energy Auditor Training Manuals). State WAP agencies also have somewhat less frequent interaction with other State agencies, other federal agencies, national laboratories, and colleges and universities. State WAP agencies are in much more frequent contact with all information sources than are local WAP agencies (see Figure 6.1). Given the frequency of contacts between State and local WAP agencies (as reported by both), it is likely that State WAP agencies serve as a conduit of information to the local WAP agencies from the other sources listed in Figures 6.1 and 6.8 and *vice versa*.

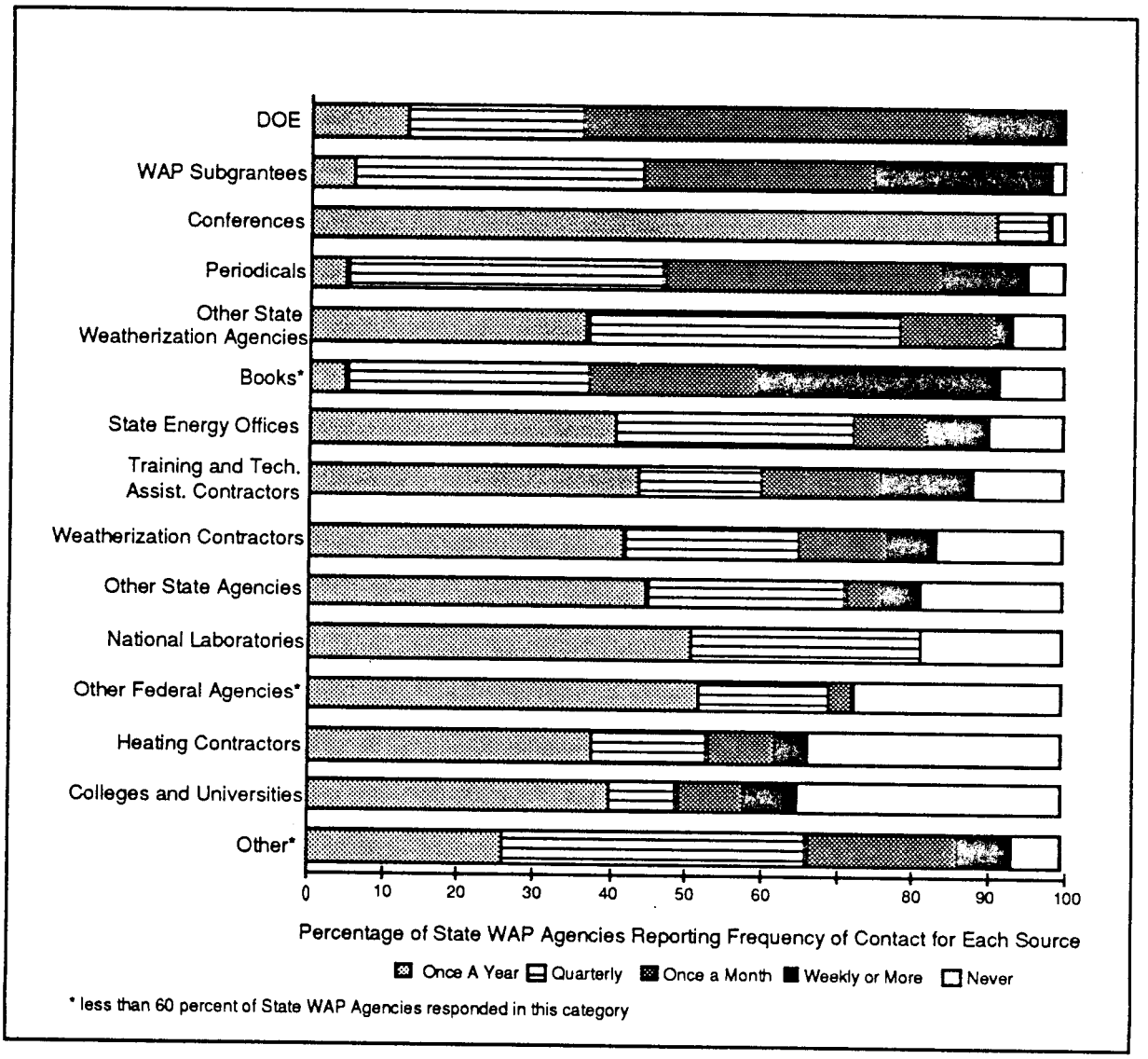

Fig. 6.8. (S9) Percentage of State WAP Agencies Indicating Contact With Various Information Sources by Frequency of Contact.

6.2.2 State WAP Agency Approach and Priorities for Selected Diagnostic and Screening Techniques

State WAP Agency Approaches to Diagnostic and Screening Techniques

The State WAP agencies were asked to indicate their approach to the use of selected diagnostic and screening techniques by the local WAP agencies. Each of these techniques is innovative in that they have not been adopted network-wide, and in many cases have been shown to achieve greater energy-efficiency more cost effectively (Harrigan, 1991; MacDonald, *et al*, 1991; Shen, *et al*, 1990). All of the techniques are required in some jurisdictions and are prohibited in others. All techniques listed are required or allowed in a majority of States (Figure 6.9).

"Given the need for additional funds, I question why many states appeared to be resisting charging landlords any percentage of the cost of weatherizing their rental units which is an easy way to increase funding for the program."

-Karl Pnazek
CAP Services, Stevens Point, WI.

There are seven categories of diagnostic and screening techniques analyzed. The diagnostic and screening techniques prohibited most often are the determination of weatherization investment level and client selection based on landlord or other contributions. The following three diagnostic and screening techniques are also commonly prohibited: (1) integrated building envelope and HVAC audit, (2) indoor air quality testing, and (3) infrared scanning.

State WAP agencies may require one technique or measure over another similar one. The techniques most often required are heating/cooling system safety inspections, building envelope measures selected based on an analysis of energy savings per dollar invested, and blower door procedures to test for leakage. These techniques are required by over 40 percent of State WAP agencies.

Local WAP agency data for performance of selected diagnostic and screening techniques and for building energy-efficiency measures are reported in this section for only those local WAP agencies resident in jurisdictions (the 48 coterminous States and the District of Columbia) where they are allowed. Two other categories exist (see Figures 6.9 and 6.11) and are more restrictive: require and prohibit. Data for local WAP agencies from these jurisdictions are not reported because it is only those State WAP agencies in jurisdictions which permit choice which are sufficiently flexible to make unfettered decisions.

Local WAP agencies in those jurisdictions which allow them to perform various diagnostic and screening techniques, employ them to varying degrees, as is shown in Figure 6.10. For example, 28 State WAP agencies permit local WAP agencies to select clients on the basis of current energy consumption and anticipated savings. Of the 655 local WAP agencies responding from those jurisdictions, 298 (or 46 percent) report applying the criterion. In addition, local WAP agencies employing the criterion did not do so for all weatherizations. Those local WAP agencies reported performing a total of 69,346 weatherizations. Performing local WAP agencies only applied the criterion in 24,356 weatherizations, or 35 percent of the time.

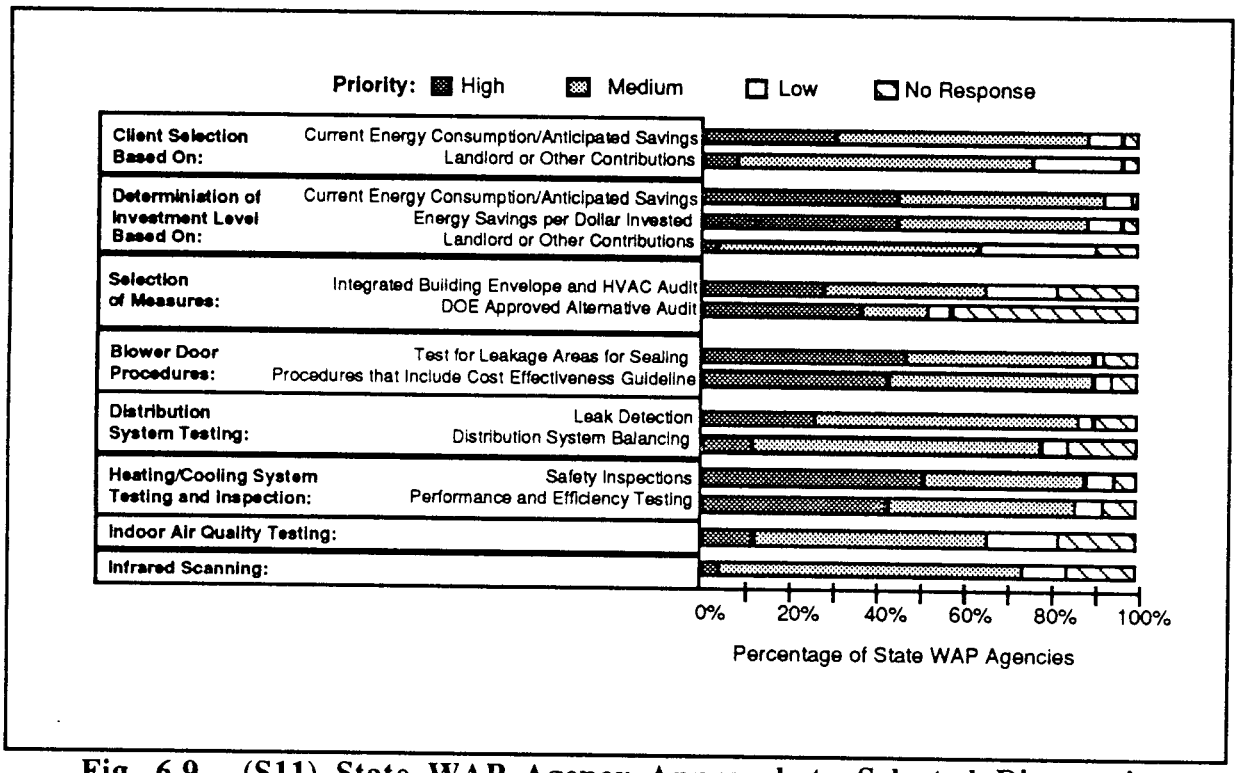

Fig. 6.9. (S11) State WAP Agency Approach to Selected Diagnostic and Screening Techniques.

Technique	State WAP Agencies Allowing	Total Local Agencies in States Allowing	Total Local Agencies Performing	Total Weatherizations	Total Weatherizations by Local Agencies Performing Technique	Total Weatherizations Where Technique is Performed
Client Selection: House Occupant Characteristic	7	155	136	30,735	28,699	19,239
Energy Consumption And Savings	28	655	298	146,847	69,346	24,356
Selection: Landlord/Other Contribution	33	595	107	153,245	33,055	4,926
Investment: Energy Consumption and Savings	23	548	241	147,711	65,430	36,869
Energy Savings Per Dollar	21	629	253	159,392	68,969	45,050
Investment: Landlord/Other Contribution	29	538	96	152,741	27,379	4,229
Audit: Envelope Measures Based on Savings per Dollar	17	425	245	126,696	77,239	49,740
Blower Door Leakage Test	21	497	140	135,404	44,371	9,444
Blower Door Cost Effectiveness	23	531	103	143,723	28,569	10,881
Distribution System Leak Test	29	476	68	133,624	21,303	13,257
Distribution System Balance	32	557	70	163,405	21,037	8,270
Heat/Cool System Balance	21	392	89	102,547	28,433	14,658
Heat/Cool System Safety Inspection	18	345	90	84,736	24,562	15,397
Infrared Scanning	34	709	137	206,358	52,605	4,333
Indoor Air Quality Test	26	610	64	172,974	19,016	9,538

Fig. 6.10. (S11, L15) Local WAP Agency and Weatherization Census in States Where State WAP Agency Allows Technique

State WAP Agency Priorities for Diagnostic and Screening Techniques

There is a tendency on the part of State WAP agencies to assign high priority at a rate greater than the technique is required by the State WAP agencies (Figure 6.11). Heating and cooling system safety inspections and testing is considered the highest priority, followed by blower door procedures. All techniques receive a medium to high priority rating by a majority of those State WAP agencies responding. Low priority ratings are accorded most frequently to landlord or other contributions and infrared scannings, however these techniques are expected to see increasing use by local WAP agencies in several States (see Figure 6.2).

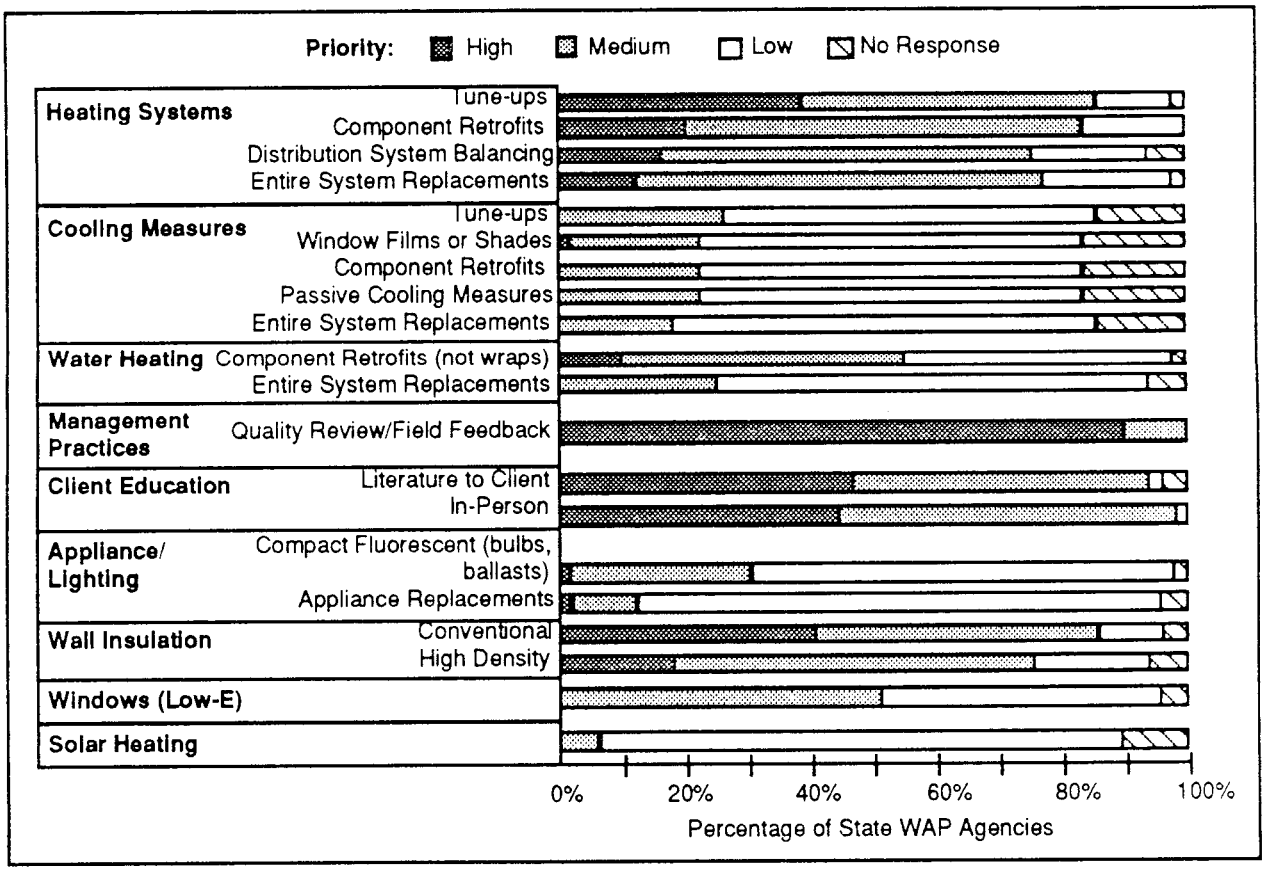

Fig. 6.11. (S11) State WAP Agency Priorities for Selected Diagnostic and Screening Techniques.

State and local WAP agencies assign similar priorities to the selected diagnostic and screening techniques as shown in Figures 6.3 and 6.11.

6.2.3 State WAP Agency Approach to Selected Building Energy-efficiency Measures

State WAP Agency Approach to Measures

A profile of State WAP agency treatment of selected building energy-efficiency measures was gleaned from the results of the State WAP agency survey (Figure 6.12). Again, a majority of these measures are state-of-the-art and have been shown to cost-effectively save energy (Harrigan, 1991;

Ternes, *et al*, 1991; Shen, *et al*, 1990). A comparison of Figures 6.4 and 6.12 illustrates that there is an opportunity to utilize innovative energy-efficiency measures at a rate greater than they are currently being employed. It is possible that this opportunity exists in jurisdictions where such measures are allowed but not required.

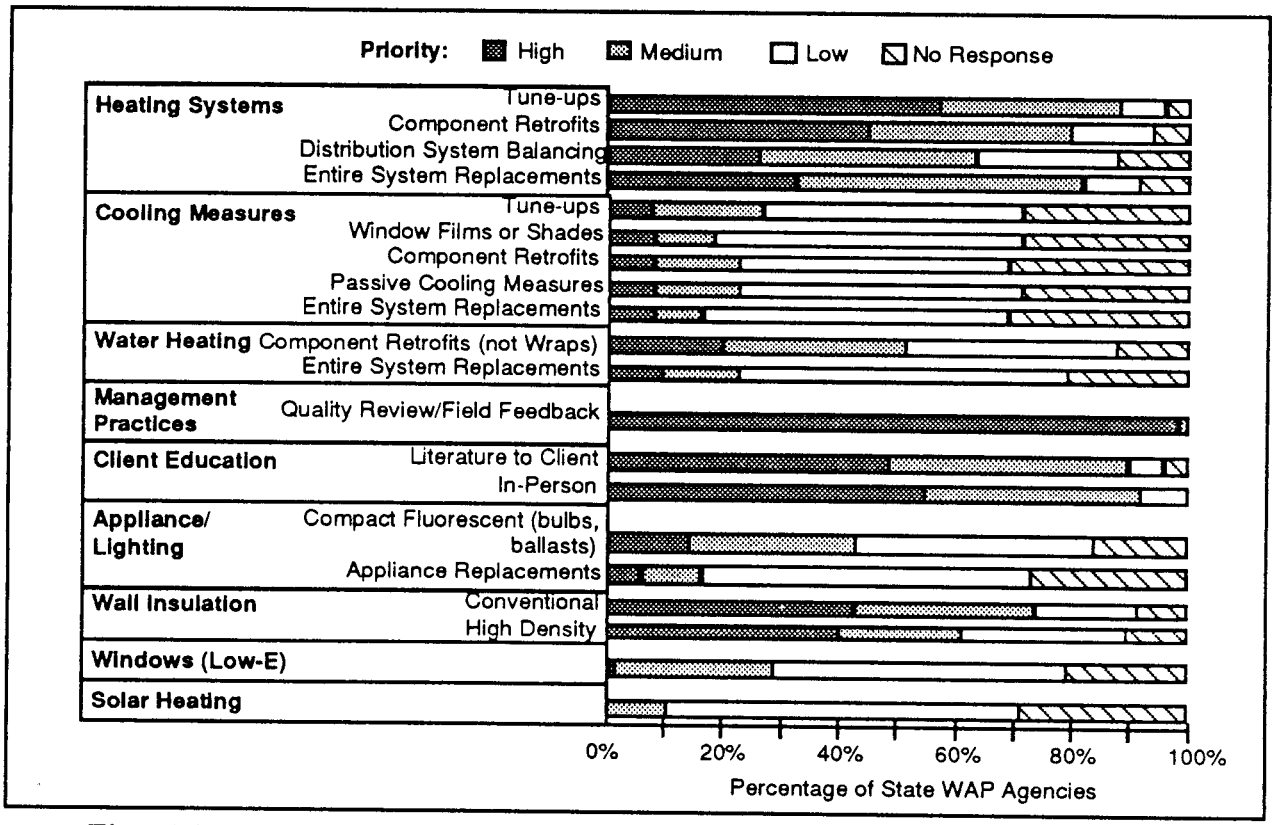

Fig. 6.12. (S12) State WAP Agency Regulatory Approach to Selected Building Energy-efficiency Measures.

Many State WAP agencies prohibit cooling measures, water heating, lighting measures, low-e windows, and solar heating systems, while requiring or allowing heating system measures and wall insulation by local WAP agencies. Almost all State WAP agencies require quality review/field feedback as a management practice, and the vast majority of State WAP agencies require or allow client education.

Though many State WAP agencies prohibit cooling measures, approximately 20 percent allow them, and local WAP agencies are beginning to employ them. This will provide a sound experience base for those State and local WAP agencies planning to employ cooling measures under the new WAP legislation. Other nascent measures are beginning to be allowed, and in some cases required by State WAP agencies. These include compact fluorescent lamps, appliance replacements, and use of low-e windows.

As was the case with diagnostic and screening techniques, not all local WAP agencies in jurisdictions where the use of selected building energy-efficiency measures are allowed, use them, as is shown in Figure 6.13. For example, 28 States allow use of high density insulation. Yet of

the 527 local WAP agencies allowed to use high density insulation, only 83 report using the measure. Those 83 local WAP agencies reported performing 18,484 weatherizations in PY 1989 and performing the measure in 8,847 of these, or 48 percent of the time. These 8.847 weatherizations are but 5 percent of all weatherizations performed in the allowing jurisdictions in PY 1989. Figure 6.13 suggests that those local WAP agencies which employ innovative techniques tend to do so with frequency, suggesting satisfaction with the measures employed.

Measure	State WAP Agencies Allowing	Total Local Agencies in States Allowing	Total Local Agencies Performing	Total Weatheri-zations	Total Weatheri-zations by Local Agencies Performing Measure	Total Weatherizations Where Measure is Performed
Heating SystemTune-Up	23	457	162	116,806	49,876	23,675
Heating System Retrofit	31	539	188	135,915	50,879	21,440
Heating Distribution Balance	29	560	151	162,368	49,593	17,365
Entire Heating System Replacement	32	591	320	175,132	97,505	24,214
Cooling System Tune-Up	13	215	21	66,091	10,249	3,005
Cooling Component Retrofit	11	239	16	67,094	2,182	693
Window Films/Shades	10	220	19	68,983	8,575	2,324
Passive Cooling	11	209	5	60,886	1,381	944
Water Heater Retrofit (not Wraps)	22	373	88	77,455	21,523	8,048
Water Heating Replacement	12	286	86	62,838	24,412	8,508
Solar Heat Retrofits	3	49	0	7,921	0	0
Appliance Replacement	5	80	3	17,171	742	23
Compact Fluorescent Bulbs/Ballasts	14	184	20	48,527	7,435	2,433
Low-E Windows	25	602	102	142,337	23,275	9,873
Conventional Wall Insulation	22	473	151	119,439	32,420	12,984
High Density Wall Insulation	28	527	83	162,703	18,484	8,847
Mail Literature to Clients	23	438	291	106,678	79,275	54,676
In-Person Client Education	26	479	373	110,006	91,575	64,806
Workmanship QC/Staff Feedback	5	63	55	11,711	10,676	8,792

Fig. 6.13. (S11, L15) Local WAP Agency and Weatherization Census in States Where State WAP Agency Allows Measure.

Local WAP agencies who perform advanced techniques and measures tend to do so frequently. The average use of the 15 techniques and 19 measures shown in Figures 6.10 and 6.13 by local WAP agencies who use them is 43 percent and 40 percent respectively. These local WAP agencies are developing significant skills in the use of these measures and techniques and could offer the opportunity for the transfer of this technical experience to other local WAP agencies and State WAP agencies.

State WAP Agency Priorities for Building Energy-efficiency Measures

State WAP agencies assign priorities to energy-efficiency measures much the same as they approach them. Cooling measures, solar systems, and low-e windows, which are often prohibited by State WAP agencies, also receive a low priority rating by most of those responding. Heating

system measures and management practices priorities mirror the approach as well -- most State WAP agencies place a medium to high priority on these measures (Figure 6.12). Almost all State WAP agencies place high priority on workmanship quality review and feedback to field staff. Similarly, State and local WAP agencies hold similar priorities for efficiency measures, as shown in Figures 6.5 and 6.14.

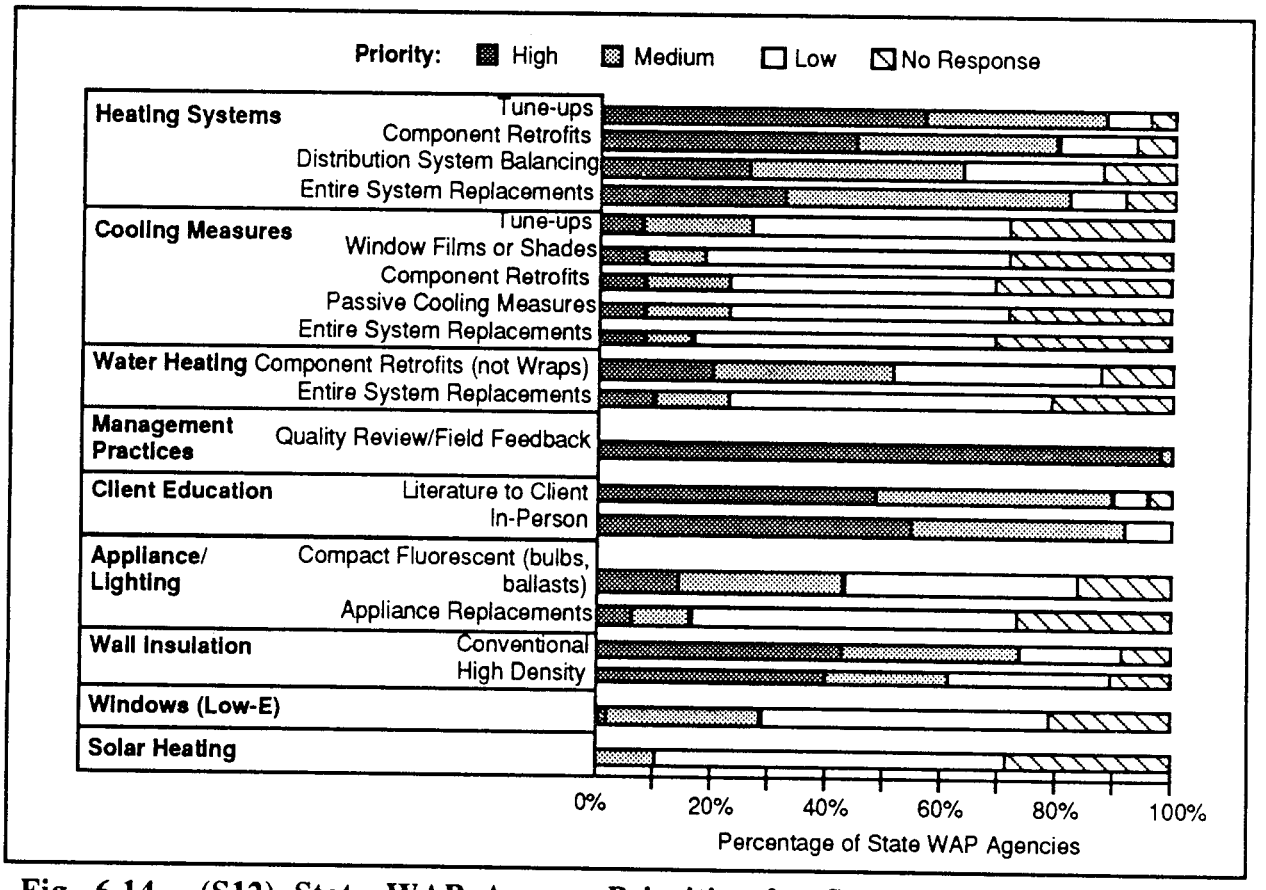

Fig. 6.14. (S12) State WAP Agency Priorities for Selected Building Energy-efficiency Measures.

6.2.4 Other Innovative Activities Performed by State WAP Agencies

State WAP agencies were asked to provide data on their participation and interest in selected energy-efficiency research projects and pilot programs (Figure 6.15).

More than half the State WAP agencies have provided test sites for new technologies or implemented new pilot level programs over the past five years. More than 80 percent are interested in doing so. Less than 20 percent of the State WAP agencies have conducted end-use metering, although almost 60 percent express an interest in this activity. State WAP agencies have also been heavily involved in implementing new energy-efficiency programs and are most interested in this activity, indicating an interest in adopting and using more innovative technologies than they currently employ. A significant percentage of State WAP agencies (e.g., 50 percent for test site monitoring) expressed a willingness to cost-share this work. The WAP is interested in improving

the state-of-the-art of building energy-efficiency science, and the State WAP agency network may provide a strong partner for future research and demonstration efforts.

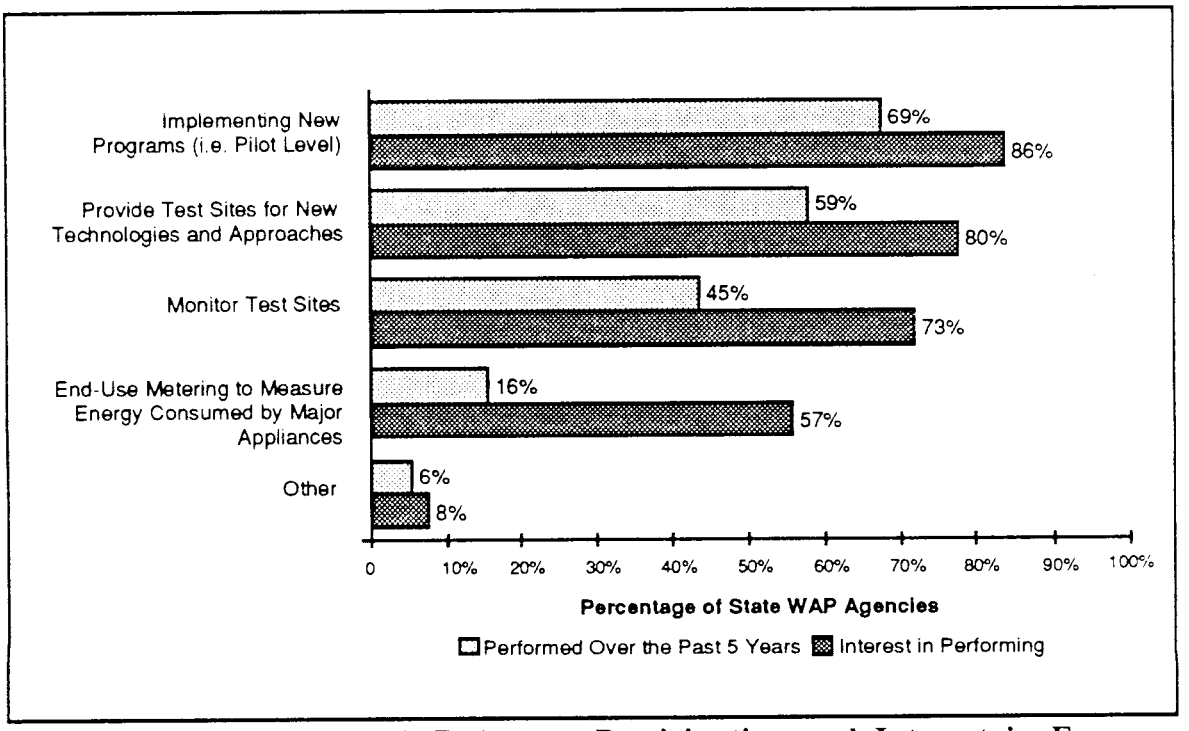

Fig. 6.15. (S13) State WAP Agency Participation and Interest in Energy-efficiency Research and Development Projects.

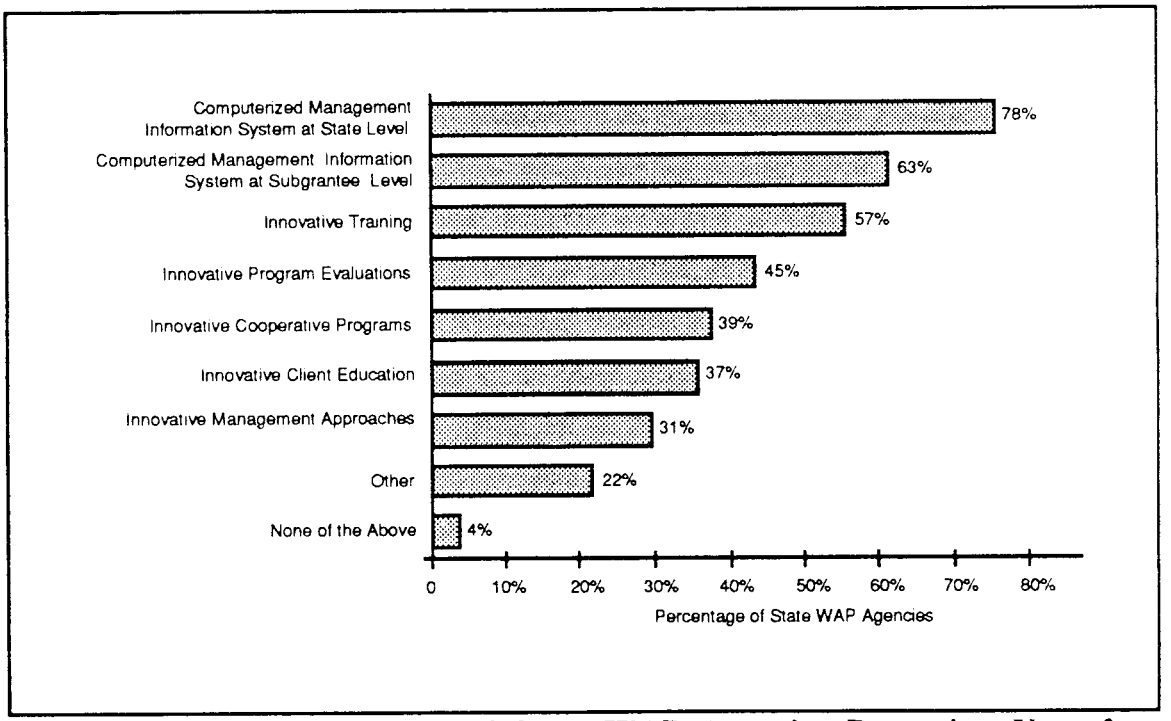

Fig. 6.16. (S14) Number of State WAP Agencies Reporting Use of Innovative Systems or Methods Independent of Funding.

Programmatic innovations reported by State WAP agencies relate to the use of innovative systems and methods in their day-to-day operations (Figure 6.16).

Only two State WAP agencies report that they do not perform any of the activities reported in Figure 6.16. The most frequently used innovative system is the computerized management information system at the State level, used by more than 75 percent of the State WAP agencies. State WAP agencies report that they have promoted the use of computerized management information systems by local WAP agencies in over 60 percent of the States. Innovative management approaches are the least used, employed by less than 35 percent of State WAP agencies. The following are examples of State WAP agency programmatic innovations in each of the categories as they reported them:

Computerized Management Information System at the State Level:

- Automated data collection
- Extensive use of sophisticated software
- State WAP agency management system
- Production, funding, communications, reporting, reimbursements

Computerized Management Information System at the Local WAP Agency Level Implemented as a Result of State Initiative:

- Client database
- State WAP agency-local WAP agency computer link
- Inventory tracking
- Report preparation
- State supplied computers
- Tracking system for household information

Innovative Management Approaches:

- "Fly in/Drive in" contracting for one stop training and contracting
- Provide "high-energy user" names to weatherization agencies
- Quality improvement management
- Standardized screening/audit tool
- State developed implementation manual

Innovative Training:

- Blower door training for all local WAP agencies
- Employment Initiative Demonstration Program for weatherization crew
- Mandatory attendance at training
- On-site crew training for new technologies
- Peer exchange monitoring and teaching
- Small group on-site training
- Space heater certification for local WAP agencies

- State weatherization camp for hands-on training
- Local WAP agency staff at State WAP agency in small groups for training
- Training center

Innovative Client Education:

- Brochure/slide, flip chart/video presentations
- Client education package
- Cooperative partnership agreements with clients
- Limited-income counseling program
- Post-weatherization client education manual
- State client education coordinator

Innovative Cooperative Programs:

- Cooling measures tests with DOE and a national laboratory
- Data sharing with utilities
- DOE/utility mobile home project measure evaluation
- Full utilities cost sharing
- Housing rehabilitation funding
- Pilot with DOE and utility to assess home climate changes pre- and post-weatherization
- Standardized monitoring instrument
- Local WAP agency coordination with other federal agencies
- Utility performs no cost weatherization audit
- Utility investment program
- Utility/State weatherization special projects
- Weatherization of rental units with utilities
- Zero interest loan program for residential conservation

Innovative Program Evaluations:

- Case study analysis of technologies
- Client life-style analysis
- Computerized audits
- Fuel usage analysis
- House/mobile home measure testing
- Metering impact of specific weatherization measures
- Periodic program evaluation with each local WAP agency on program status
- Pre- and post-weatherization furnace metering
- PRISM evaluation of weatherization results
- Team approach program assessments
- University research funded to develop and test new measures

Other:

- Asbestos abatement funding
- Blower door standards
- Mobile home weatherization testing and training
- Cost/benefit analysis of single family home weatherization
- Electronic bulletin board
- Weatherization standards manual

Almost all State WAP agencies are concerned with quality workmanship, health and safety, targeting priorities, energy education, training and technical assistance, technology transfer, implementation of new initiatives, and WAP partnerships with utilities (Figure 6.17). Marketing and energy-efficiency for new housing are performed or promoted by less than half the State WAP agencies. Thus, there are existing models of how to leverage funds and market the program for better impact. Many of the areas indicated in Figure 6.17 are therefore strong candidates for improved training and greater program activity.

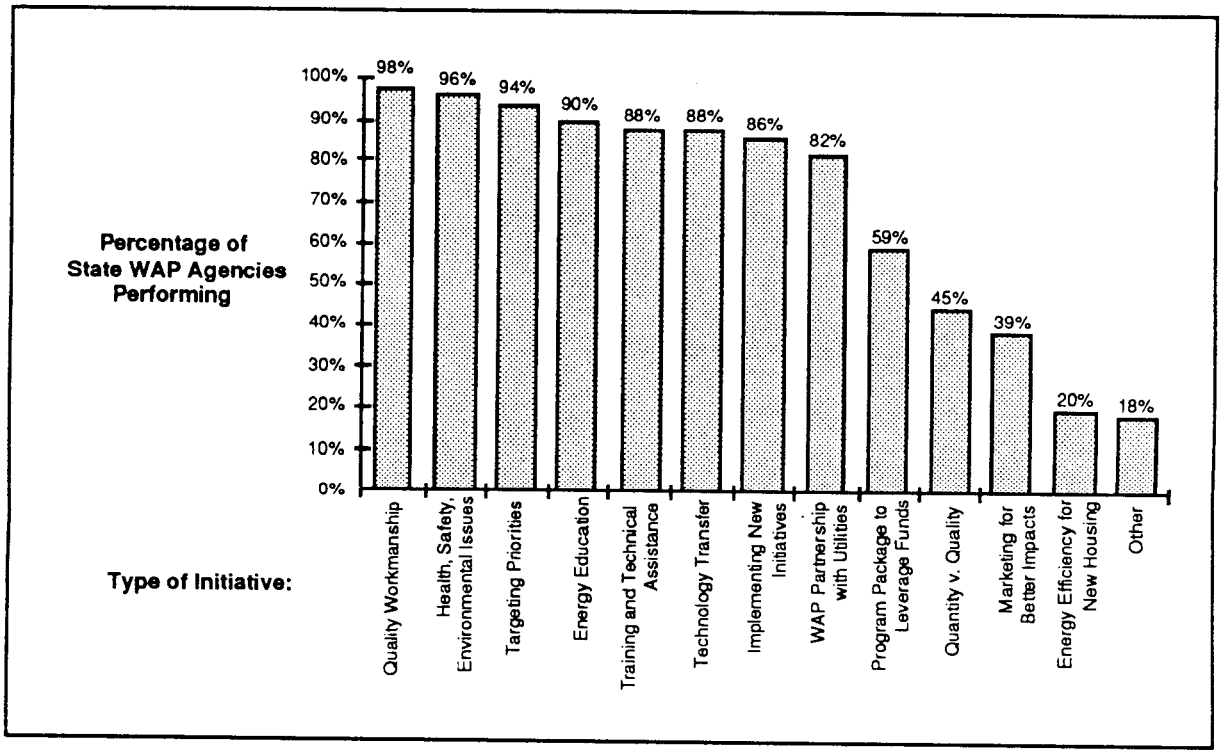

Fig. 6.17. (S10) State WAP Agency Performance of WAP Related Initiatives.

State WAP agencies again prioritize these initiatives in much the same order as they perform them, although they do not assign them a "high priority" at the same frequency as they perform them (Figure 6.18). For example, 86 percent report that they implement new initiatives, while 42 percent assign the category a high priority. State WAP agencies rate quality workmanship as the highest priority, followed by health, safety and environmental issues, targeting of priorities, and

WAP partnership with utilities. Remaining areas offer potential opportunities for enhanced program activity.

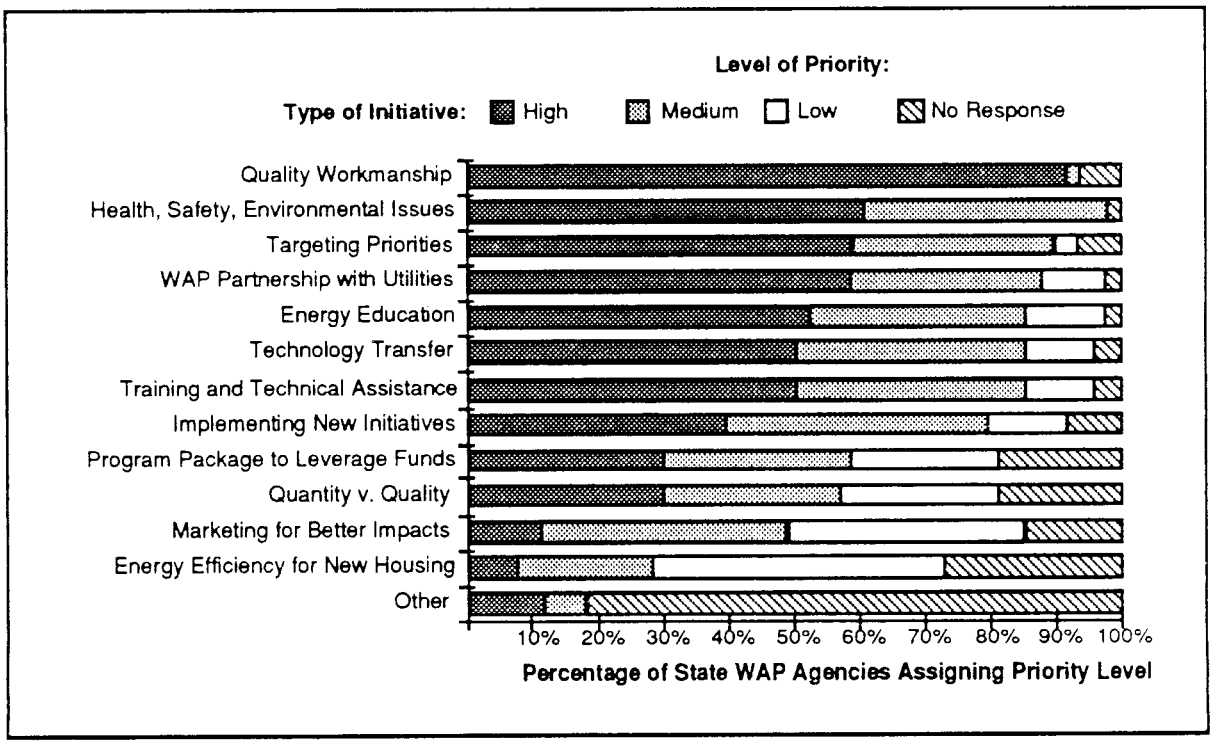

Fig. 6.18. (S10) State WAP Agencies Assigning Priorities for WAP Related Initiatives.

6.2.5 Programmatic Initiatives

> *"I was pleased to note that many of the grantees and subgrantees felt significant responsibility for problems they identified at the local level that were beyond the current purview of the WAP. This attitude of 'knowledge means responsibility' speaks well for the maturity and, if you will, morality, of the delivery system."*
>
> **- Karl Pnazek,**
> **CAP Services, Stevens Point, WI.**

Based upon their response to survey descriptions of weatherization initiatives State WAP agencies have been active in using the discretion provided in the program rules to adopt these enhanced weatherization approaches (Figure 6.19). Over 90 percent of State WAP agencies are involved in health, safety, environmental issues, and the delivery of energy education. This includes training of local WAP agency staff and preparation of client education materials. Over 80 percent of State WAP agencies are involved in implementing some form of WAP partnership with utilities. Examples of cooperative efforts with utilities include data sharing, cost sharing, utility performance of free weatherization audits, and utility assistance in weatherization of rental units. Technology transfer is also a significant area of State WAP agency involvement. This includes provision of information on new techniques and methods, participation in conferences, and publication of new findings. Fifty-nine

percent of State WAP agencies are obtaining non-WAP funds, and 39 percent are actively marketing to improve program impact.

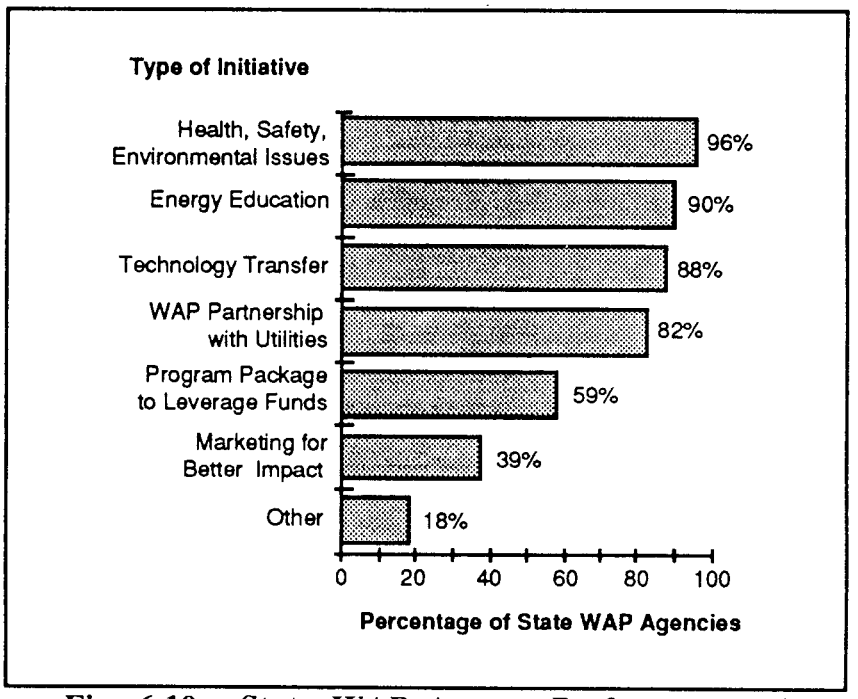

Fig. 6.19. State WAP Agency Performance of Weatherization Initiatives.

"The fact that there are numerous initiatives and innovations occuring within the WAP network (use of blower doors, addressing health/safety concerns, etc.) which are taking WAP well beyond the basic DOE program structure, reflects a strong commitment in the network to providing high quality, cost-effective services."

- Jeff Ackermann
Department of Local Affairs, Colorado

Nearly 60 percent of State WAP agencies report that they have taken the initiative in adopting techniques, measures, and standards, within the discretion of the program rules, that take advantage of outside resources. For example, 43 percent of the State WAP agencies adopted HHS income qualifications. Several of their initiatives will provide useful models for the implementation of the new WAP legislation.

Examples of other modifications which have been adopted by State WAP agencies include:

- blower door standards
- field standards of workmanship
- health and safety guidelines
- higher material standards
- higher average cost per unit

- higher monitoring standards
- installation standards
- owner investment requirements
- payback period standards
- resources/authority for labor/materials ratio alternatives
- State certification of specific materials and suppliers

States have also taken initiative in modifying the program rules where possible. Several of their initiatives were driving forces in the new WAP legislation.

7. SUMMARY AND CONCLUSIONS

The WAP Network is a large and diverse resource which has played and can continue to play a significant role in the federal government's efforts to promote energy-efficient buildings. The network serves the specific mission requirement of the DOE/WAP, but also has far reaching impact on non-DOE energy-efficiency initiatives.

The WAP network provides significant linkages to other organizations and programs promoting energy-efficiency. These include other federal programs, such as LIHEAP, State and local programs, and utility company efforts. The network also serves as an important link in the provision of a range of services to the low-income population.

The WAP network has a significant degree of participation and interest in future energy initiatives. The network also is a key resource for energy-efficiency technical assistance, education, and training. Many elements of the network are already utilizing advanced diagnostic and screening techniques and building energy-efficiency measures, and this provides a "hands-on" experience base for these techniques and measures. Insofar as there is a continuing demand for low-income weatherization services, the network can provide a real world laboratory for testing new techniques and measures.

Finally, elements of the WAP network are in the forefront of advanced energy-efficiency technologies and initiatives. This in-place resource can play an important role in DOE's general mission to promote greater energy-efficiency in the nation's building sector.

Relative to the objectives established for the WAP network characterization, the following broad conclusions can be drawn:

- Overall the WAP network would appear to provide an excellent vehicle for obtaining market information on client needs. The network has performed weatherization completions on nearly a quarter of a million homes annually. Local WAP agencies in particular, as community based organizations, appear to have a sound comprehension of energy service program needs of their constituencies, as well as the particular characteristics of their local housing stock. A small but significant number of State and local WAP agencies also appear to have the technical capability to provide feedback on the performance of new technologies and techniques. This is based on experience and prior research efforts and interest of local WAP agencies and State WAP agencies; and the availability, training, and technical expertise of staff resources.

- Many innovations and "cutting-edge" initiatives are being implemented or tested throughout the WAP network. State and local WAP agencies are involved in new technological initiatives, such as the use of blower doors and low-e windows, as

well as new programmatic and regulatory initiatives, such as health, safety and environmental considerations, energy education, and increasing partnership with utility programs.

- Overall the WAP network exhibits a wide range of experience and technical expertise for diagnosing weatherization needs and installing retrofit measures. Many innovative diagnostic and screening techniques and building energy-efficiency measures are currently being utilized throughout the network. This experience and expertise is not uniformly distributed, however. Some State and local WAP agencies are highly advanced in their delivery of weatherization services. In most cases the majority do not employ advanced techniques and measures, but deliver basic weatherization services making best use of the resources available to them. Thus, significant opportunities exist for enhancing weatherization program delivery through adoption of measures and diagnostics, training and technical assistance.

- State and local WAP agencies have extensive interactions in such areas as training and management practices. Further, the WAP network exhibits a significant degree of interaction with external programs and organizations, such as utilities.

- The WAP network appears to be a capable and highly willing potential partner for future energy-efficiency efforts. WAP staff on average are well trained and have experience with a variety of innovative techniques and measures (e.g., blower doors). State and local WAP agencies also report a high degree of interest in participating in energy-efficiency research activities.

- The WAP network is very active in client education. A significant degree of training also exists, with evidence of opportunities for further training and technical assistance throughout the network.

Major areas of opportunity exist for WAP in increased training, greater regulatory flexibility and advanced technology transfer throughout the WAP network. By taking advantage of the opportunities, an even more effective WAP network could provide greater services to its clientele.

8. REFERENCES

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APPENDIX A

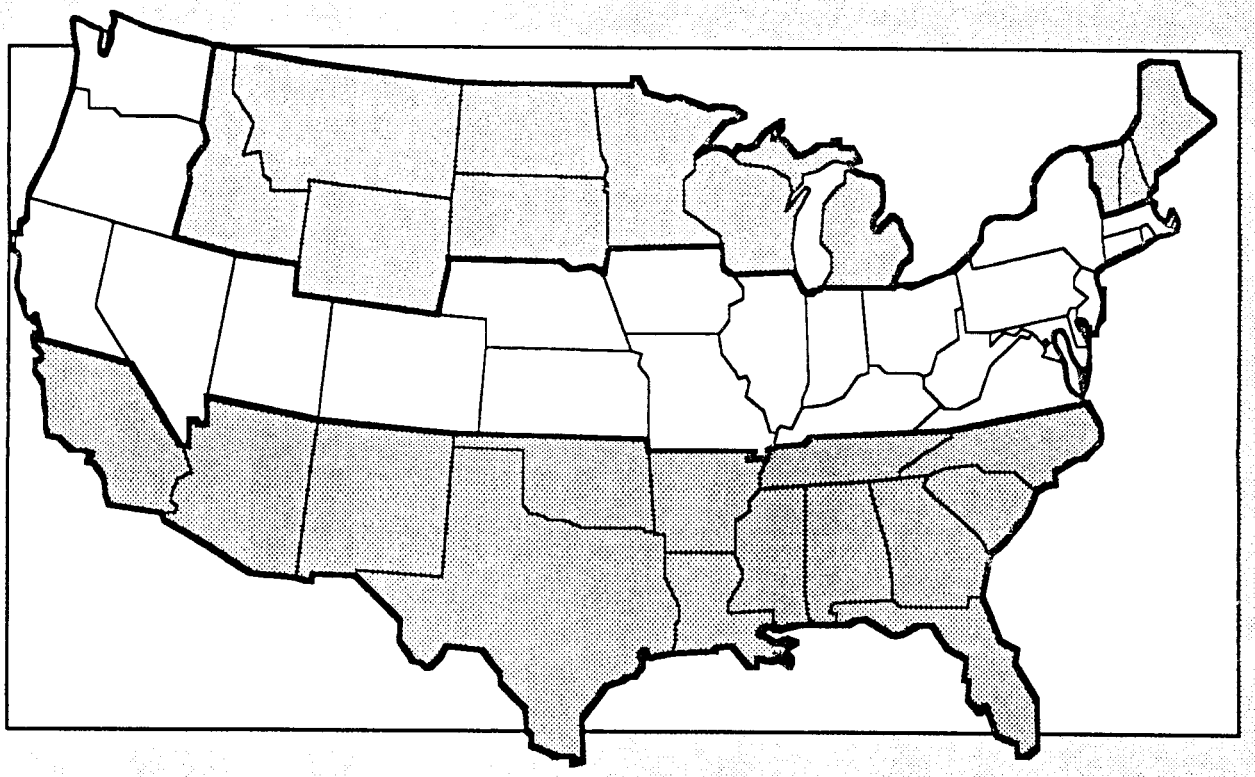
CHARACTERIZATION OF THE WAP NETWORK
LOCAL WAP AGENCY QUESTIONNAIRE

The National
Weatherization
Assistance Program
Evaluation

Mailing Label
Survey ID No.

CHARACTERIZATION OF THE
WEATHERIZATION ASSISTANCE PROGRAM
NETWORK

SURVEY OF SUBGRANTEES



U.S. Department of Energy
Weatherization Assistance Program

October, 1990

CHARACTERIZATION OF THE WAP NETWORK
SUBGRANTEE QUESTIONNAIRE

BACKGROUND

The Characterization of the WAP Network is part of the national evaluation of the U.S. Department of Energy's Weatherization Assistance Program (WAP). The study is designed to characterize the current and potential contributions of the WAP State and subgrantee network in promoting energy efficiency.

Major network features to be analyzed in this study are:

- the relationships between subgrantees and other programs and service providers;
- the extent of external program relationships;
- the interest and availability of potential partners for future energy efficiency efforts;
- technical assistance, client education, and training skills;
- range of experience and technical expertise for diagnosing weatherization needs and installing retrofit measures;
- the ability of subgrantees to provide market information on client needs and to provide feedback on the performance of new technologies; and
- innovations and cutting edge initiatives being implemented or tested in the field.

By understanding the size, scope, skills, and innovative capabilities of the current Weatherization Assistance Program Network, DOE can better work with the network to enhance program performance and establish links with other programs aimed at promoting energy efficiency in the nation's building stock. This questionnaire is designed to collect information from WAP subgrantees which will enable DOE to gain a thorough understanding of the capabilities and resources of the WAP network. At the end of the questionnaire is space for you to provide direct feedback to DOE on program issues which you feel are important. Your cooperation in promptly completing this questionnaire and returning it in the enclosed reply envelope is greatly appreciated. In the report describing the results of this survey, your specific answers will be aggregated and reported only at the State and national levels. You will receive feedback on the key study results.

Local WAP Agency

The name of the variable, as it appears in the dataset, is provided to assist in interpretation of the data presented in Volume 2 of the report.

GENERAL SUBGRANTEE CHARACTERISTICS

Questions 1 through 4 will allow DOE to determine the size and scope of the energy programs operated by the WAP Network. (In percent)

ORGTYPE

1. Which of the following best characterizes your organization? (Please check one answer which best applies):

   A. ☐ Community Action Agency (CAA)--Please specify type of CAA:

      1. ☐ Local Government Agency 4.2%

      2. ☐ Private Non-Profit Organization 69.7%

      3. ☐ County Government Agency 7.1%

   B. ☐ Local Government Agency (other than CAA) 8.9%

   C. ☐ Community-Based Organization (other than CAA)--please specify 5.4%

   D. ☐ Other (please specify) 4.7%

--PLEASE PROCEED TO NEXT PAGE--

Question 2 will help us identify trends in the types of clients served by the Weatherization Assistance Program.

2. Please estimate the total number and percentage breakdown of low-income housing units that your agency weatherized in Program Year 1986 and Program Year 1989 with any source of funding. (Program Year (PY) 1986 is typically April 1, 1986 through March 31, 1987. PY 1989 is typically April 1, 1989 through March 31, 1990.)

1986	1989		Program Year 1986			Program Year 1989		
			Mean	Median	Sum	Mean	Median	Sum
V2A1PY86	V2A1PY89	1. Approximate **Total** Number of Housing Units Weatherized (enter #)	278.7	187	236,319	271.2	184	243,268
V2A2PY86	V2A2PY89	2. Approximate Number of Publicly Owned Housing Units Weatherized (enter #)	33.2	0	25,620	32.4	0	26,180
V2A3PY86	V2A3PY89	3. Approximate Number of Mobile Homes Weatherized (enter #)	39.1	25	32,171	40.1	25.5	35,366

For the Total Number of Housing Units weatherized in Py 1986 and PY 1989 (line 1 above), please provide an **approximate percentage breakdown** as follows (treat mobile homes as single family):

1986	1989		Program Year 1986		Program Year 1989	
			Mean	Median	Mean	Median
V2B1PY86	V2B1PY89	1. Owner Occupied (Single Family)	63.5%	65%	62.7%	65%
V2B2PY86	V2B2PY89	2. Renter Occupied (Single Family)	21.7%	20%	21.5%	21%
V2B3PY86	V2B3PY89	3. Renter Occupied (Multi Family, 2-4 units)	8.5%	2%	8.6%	2%
V2B4PY86	V2B4PY89	4. Renter Occupied (Multi Family, 5 or more units)	5.3%	0	6.0%	0
V2B5PY86	V2B5PY89	5. Other (please specify)_____	0.7%	0	0.6%	0

Local WAP Agency

3. Please check the approximate average length of your waiting list of eligible clients for weatherization services in each of the periods indicated. (Please check only one answer in each column): (In percent)

Average Number of Eligible Clients on Waiting List at Any One Time During Year	Program Year 1986		Program Year 1989	
	Actual Income-Qualified	Potential Client List (not income-qualified)	Actual Income-Qualified	Potential Client List (not income-qualified
	ACQUAL86	PCQUAL86	ACQUAL89	PCQUAL89
0--Did not maintain a waiting list	7.5%	28.1%	4.8%	23.3%
1-10	7.7%	15.7%	10.6%	16.3%
11-50	27.7%	17.9%	29.8%	20.2%
51-100	21.4%	14.5%	24.0%	12.6%
101-200	13.4%	8.3%	18.3%	10.4%
201-500	11.0%	6.5%	0%	8.4%
More than 500	11.3%	8.9%	12.5%	8.8%

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Local WAP Agency

V4A

4. At present, does your organization operate any **energy programs** aside from the Department of Energy (DOE) Weatherization Assistance Program (WAP) and LIHEAP? Do not include Fuel Payment Programs. (Please check one answer.)

1. Yes 39.7%

2. No 60.3%

If yes, please specify the program name, funding source, and provide a brief description and the eligible or target population (An example is filled in below. Please print.):

Name of Energy Program	Source of Funding	Brief Description	Eligible or Target Population
Example: *Energy Fitness Program*	*USA Power Co.*	*Install compact fluorescent bulbs/ballasts*	*18,000 Residential customers*

Brief Description: *Neighborhood blitz to install compact fluorescents and other low cost measures.*

Number indicating a program:

V41A 1. 366

Brief Description:

V42A 2. 173

Brief Description:

V43A 3. 83

Brief Description:

Local WAP Agency

WAP NETWORK STAFF RESOURCES

The information requested in Questions 5 through 8 will assist DOE in understanding the range of staff capabilities and resources which exist in the WAP Network relative to energy programs. For Question 5, if you cannot provide the detailed breakdown requested, please fill in the approximate totals.

5. Please characterize your in-house staff working on **energy programs** [Enter approximate number of full-time equivalent employees (FTE)--for example, one person working 1/2 time as an Energy Auditor/Estimator equals 0.5 FTE in the Energy Auditor/Estimator box]:

Calculated Totals

Program / X Staff	DOE WAP V5xA			Non-WAP Energy Programs V5xB			TOTAL V5xT		
	Mean	Median	Sum	Mean	Median	Sum	Mean	Median	Sum
1 Engineers	0.01	0	13.3	.01	0	7	0.02	0	20.3
2 Energy Auditors/Estimators	1.09	1	977.2	.19	0	168.4	1.28	1	1145.6
3 Envelope Crew Chiefs	1.08	0	974.7	.11	0	98.5	1.19	0	1073.3
4 Envelope Crew Members	1.8	0.5	1630	.23	0	206.2	2.03	1	1836.2
5 HVAC Crew Chiefs	0.12	0	105	.02	0	20.7	0.14	0	125.5
6 HVAC Crew Members	0.16	0	142	.01	0	12.8	0.17	0	155.1
7 Other Technical Staff	0.24	0	216.7	.1	0	91.4	0.34	0	308.1
8 Management/Administrative	1.13	1	1021	.33	0	298	1.46	1	1319.4
9 Outreach Staff	0.73	0	654.1	.6	0	537.3	1.33	0.3	1191.4
10 Client Education Staff	0.20	0	182.9	.1	0	88.2	.29	0	271.1
11 Clerical/Support	0.74	0.5	667.4	.31	0	276.9	1.05	0.7	944.3
12 Other Special Skills _____ (specify)	0.15	0	138.2	.06	0	57.1	0.21	0	195.3
Total (calculated)	7.46	5.1	6723	2.07	0	1862.6	9.53	6.5	8585.6
	V513TA			**V513TB**			**V513TT**		

Insert row number in "X" in variable name to determine specific cell name.

Local WAP Agency

N=Checked box
Absolute # of checked boxes per cell

Question 6 requests information on non-agency personnel who work with or for your WAP organization to implement energy programs.

30.1%--No outside contacts at all

6. Please indicate the source of non-agency personnel with whom you work on **a continuing** basis to implement energy programs. Do not include special or short-term projects. **(Please check all appropriate boxes):**

Source	Contractor	Consultants	University	State	Utility	Local Govt.	Volunteers	Other (specify)
Non-Agency Personnel	V6xA	V6xB	V6xC	V6xD	V6xE	V6xF	V6xG	V6xH
X	46.3%=0	90.8=0	96.4=0	79.5=0	82.5=0	86.2=0	86.8=0	90.2=0
1 Engineers	26	15	8	14	23	1	5	4
2 Energy Auditors/Estimators	76	8	4	45	59	15	1	8
3 Envelope Crew Chiefs	247	1	MISS	6	3	5	7	7
4 Envelope Crew Members	226	1	MISS	7	3	4	27	19
5 HVAC Crew Chiefs	196	5	1	3	3	1	MISS	4
6 HVAC Crew Members	160	1	1	2	1	1	3	3
7 Other Technical	102	31	19	107	40	21	6	7
8 Management/ Administrative	55	22	8	129	69	59	12	18
9 Outreach Staff	20	5	2	24	35	58	60	34
10 Client Education Staff	19	14	7	40	49	28	23	12
11 Clerical/ Support	29	5	2	29	18	30	28	16
12 Other special skills (specify) _____	62	10	1	12	6	12	9	1
TOTAL	1218	128	53	417	310	245	181	151

Insert row number in "X" in variable name to determine specific cell name.

7. For the staff categories listed in Questions 5 and 6, please indicate any certification or licensing requirements which your organization or the State maintains for your in-house staff or contractors.

	Staff Category	Certification or License Required? OF THOSE RESPONDING (IN PERCENTAGES) YES NO	Source and Type of Certification or License (e.g.,State-Certified Energy Auditor)
ENGLC	a. Engineers	1. 7.8 2. 92.2	
ENAUD	b. Energy Auditors	1. 48.2 2. 51.8	
ECC	c. Envelope Crew Chiefs	1. 27.9 2. 72.1	
ECM	d. Envelope Crew Members	1. 20.5 2. 79.5	
HVACCC	e. HVAC Crew Chiefs	1. 37.3 2. 62.7	
HVACCM	f. HVAC Crew Members	1. 25.5 2. 74.5	
OTS	g. Other Technical Staff	1. 21.0 2. 79.0	
MAAD	h. Management/ Administrative	1. 21.6 2. 78.4	
ORS	i. Outreach Staff	1. 3.5 2. 96.5	
CES	j. Client Education Staff	1. 13.5 2. 86.5	
CLSUP	k. Clerical/Support	1. 4.5 2. 95.5	
OSS	l. Other Special Skills _____ (specify)	1. 17.6 2. 82.4	

Local WAP Agency

8. Does your staff receive additional formal training beyond technical certification, licensing, or degree requirements? This could include participation in a workshop at your State's training center, in-house training, or attendance at a training session at a regional or national conference. (In percent)

TRAIN
1. Yes 97.8%
2. No 2.2%

If yes, please indicate the type of training your staff receives (check all that apply):

IN PERCENT

		One-Time	Continuing Education*	Do Not Do
BDT	a. Blower Door Training	1. 29.2	2. 54.8	16.0
OTECT	b. Other Technical Training	1. 12.1	2. 79.1	8.8
MT	c. Management Training	1. 12.5	2. 66.6	20.9
CLEDT	d. Client Education Training	1. 18.8	2. 59.2	22.0
OTSTTR	e. Other (please specify)			
	_____	1. 5.4	2. 17.6	77.0

* At least one training activity per year

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WAP NETWORK INTERACTIONS AND ACTIVITY LEVELS

Questions 9 through 13 will provide information to assist DOE in understanding the extent of the WAP Network, the level of interaction within the WAP Network, and the level of interaction between the network and related organizations.

9. Please print the names of the programs funded next to each source of funds, and enter the dollar value of the financial and in-kind support your organization received for each program in PY 1989:

	V9xA	V9xB TYPES OF SUPPORT V9xC					
X Source of Funds	Name of Program Funded	Financial* ($1,000) Mean	Median	Sum	In-kind** ($1,000) Mean	Median	Sum
1 DOE	WAP	166.4	117	149,730	1.41	0	1,268
2 Oil Overcharge (PVE) Program No. 1 **V9PVEB**	TOTAL	151.3	56	136,150	1.25	0	1,124
3 Oil Overcharge (PVE) Program No. 2							
4 Oil Overcharge (PVE) Program No. 3							
5 HHS	LIHEAP Weatherization	93.9	38	84,485	1.10	0	987
7 State Program No. 1*** **V9STATE**	TOTAL	25.89	0	23,303	0.31	0	283
8 State Program No. 2							
9 State Program No. 3							
10 HUD		19.2	0	17,276	0.53	0	475
11 USDA-Farmers Home Administration		6.91	0	6,216	0.33	0	301
12 USDA	(specify)	1.86	0	1,674	0.1	0	87
13 Landlords		2.1	0	1,889	0.78	0	702
14 Utility 1 (specify) **V9UTIL**	TOTAL	47.1	0	42,435	2.10	0	1,893
15 Utility 2 (specify)							
16 Utility 3 (specify)							
17 Utility 4 (specify)							
18 Volunteers not included in above (specify)		.22	0	195	1.02	0	922
19 (specify)	Charitable Donations TOTAL	15.61	0	14,364	2.18	0	1,008
20 Other (specify)							
TOTAL (calculated)		530.6	357	477,522	10.1	0	9,122

TOTAL DIRECT AND IN-KIND

MEAN	MEDIAN	SUM
540.7	363	486,600

10. Please provide your best estimate of the total funding for low-income weatherization services which you are aware of in your geographic area and which did not pass through your organization (e.g., a utility sponsored lighting program). (In $1000)

V10

	PY 1989	
Mean	Median	Sum
$223.71K	$0	$137,584K

11. Approximately what percentage of your PY 1989 weatherization applications resulted in referrals to other public services such as rehabilitation, nutrition, family counseling, etc.? Do not include referrals for LIHEAP fuel assistance.

V11A

Mean	Median
25.31%	15%

Please briefly describe the one or two major services to which you referred weatherization applicants in PY 1989: (Please print.)

12. Approximately what percentage of your PY 1989 weatherization completions involved additional on-site services (using any source of funds) such as radon testing, rehabilitation, housing repair, water conservation, smoke detector installation, etc.?

V12A

Mean	Median
18.1%	5%

Please briefly describe and indicate the funding source of one or two of the additional on-site services associated with weatherization which were provided by your organization in PY 1989. (Please print):

_____

_____

_____

_____

_____

_____

_____

_____

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Local WAP Agency

13. Has your organization been involved with electric or gas utilities in any of the following ways? (Please check the appropriate response): (In percent)

			Yes	No
HDUP	1.	Helped Design Utility Programs (e.g., DSM Programs)*	18.6%	81.4%
PUTF	2.	Participated on Utility Task Force(s)	23.2%	76.8%
PCUP	3.	Provided Comments on Utility Plans (e.g., Integrated Resource Planning)**	21.7%	78.3%
IURP	4.	Intervened in Utility Regulatory Proceedings	12.5%	87.5%
OUP	5.	Other (specify)_____	30.6%	69.4%

* Demand Side Management (DSM) is a general term used by utilities to describe measures taken to influence the amount and timing of energy consumption by customers.

** Integrated Resource Planning (IRP) is a process by which utilities plan to meet customer energy and power demand using the least-cost mix of supply and demand management approaches.

Local WAP Agency

WAP NETWORK TECHNOLOGY TRANSFER

Question 14 will provide DOE with insights concerning the most appropriate methods to transfer new energy efficient technologies to the WAP Network.

14. Please score the following organizations with respect to how frequently they were a useful source of technical, management, or market information over the past 2 years. Use the following score values, and circle the appropriate score for each source:

SCORE
(Please circle one for each information source)
IN PERCENT

	SOURCE	Never	Once a Year	Quarterly	Once a Month	Weekly or More
TTWXCOW	Weatherization Contractors	36.7	12.3	12.2	14.3	24.4
TTHC	Heating Contractors	29.9	16.1	16.3	14.2	23.5
	Other WAP Agencies (specify):					
TTWAP1	_____	24.7	16.7	32.5	19.6	6.5
TTWAP2	_____	28.4	20.8	25.1	20.2	5.5
TTWAP3	_____	44.4	18.5	22.6	11.3	3.2
	Colleges and Universities (specify):					
TTUNIV1	_____	69.1	21.1	7.5	1.6	0.7
TTUNIV2	_____	73.7	18.2	5.1	1.0	2.0
TTUNIV3	_____	88.0	7.2	2.4	1.2	1.2
	Consultants / T and TA Contractors (specify):					
TTCTTA1	_____	45.8	26.3	17.8	6.9	3.2
TTCTTA2	_____	46.6	19.7	12.7	9.3	1.7
TTCTTA3	_____	69.1	14.8	12.3	1.2	2.5
	Utilities (specify):					
TTUTIL1	_____	38.0	21.7	19.7	13.2	7.4
TTUTIL2	_____	34.3	25.4	18.8	16.6	5.0
TTUTIL3	_____	62.6	12.1	15.4	7.7	2.2
	State Weatherization Office (specify):					
TTSOW1	_____	2.5	9.4	26.2	40.9	21.1
TTSOW2	_____	18.4	15.4	28.7	28.7	8.8
TTSOW3	_____	34.6	9.9	22.2	24.7	8.6
	State Energy Office (specify):					
TTSEO1	_____	46.2	20.8	17.7	10.4	5.0
TTSEO2	_____	70.6	10.3	8.8	8.8	1.5
TTSEO3	_____	88.9	-0-	5.6	3.7	1.9
	Other State Agencies (specify):					
TTOSA1	_____	59.3	16.2	14.0	7.2	3.4
TTOSA2	_____	54.5	16.2	18.2	5.1	6.1
TTOSA3	_____	74.0	8.2	11.0	4.1	2.7

NOTE: LIST OF SOURCES CONTINUED ON NEXT PAGE

Local WAP Agency

SCORE

(Please circle one for each information source)

IN PERCENT

SOURCE	Never	Once a Year	Quarterly	Once a Month	Weekly or More
DOE (specify office)					
TTDOE1 _____	44.7	37.7	9.7	5.2	2.7
TTDOE2 _____	73.1	21.2	3.8	1.9	-0-
TTDOE3 _____	92.9	2.4	2.4	2.4	-0-
Other Federal Agencies (specify):					
TTOFA1 _____	80.1	10.5	5.3	3.1	1.0
TTOFA2 _____	69.4	12.5	6.9	9.7	1.4
TTOFA3 _____	94.5	3.6	1.8	-0-	-0-
National Laboratories (specify):					
TTNL1 _____	80.1	14.8	3.8	0.8	0.5
TTNL2 _____	75.7	15.7	8.6	-0-	-0-
TTNL3 _____	89.7	8.6	1.7	-0-	-0-
Books (please specify three most important):					
TTBOOK1 _____	46.0	9.3	12.5	14.9	17.3
TTBOOK2 _____	24.2	9.1	19.4	22.4	24.8
TTBOOK3 _____	35.7	8.0	14.3	21.4	20.5
Conferences (please specify three most important):					
TTCONF1 _____	10.8	72.8	13.6	2.1	0.7
TTCONF2 _____	6.8	72.6	17.7	2.2	0.8
TTCONF3 _____	14.5	67.2	13.4	3.8	1.1
Periodicals* (please specify three most important):					
TTPER1 _____	39.6	6.7	25.2	24.8	3.7
TTPER2 _____	17.6	7.4	32.8	38.5	2.0
TTPER3 _____	32.4	4.3	28.8	33.1	1.4
Other (specify)					
TTOTH1 _____	65.2	7.6	9.4	12.7	5.1
TTOTH2 _____	60.3	7.4	16.2	13.2	2.9
TTOTH3 _____	85.4	2.1	2.1	10.4	-0-

* Please score periodicals based on the number of times they were **consulted** over the past 2 years as opposed to how frequently they are published.

Local WAP Agency

WAP NETWORK TECHNICAL INNOVATIONS AND INITIATIVES

Questions 15 through 17 will provide information on the experience of the subgrantee network in utilizing selected energy efficiency diagnostic/screening techniques and measures. The techniques and technologies listed in Questions 15 through 17 are not meant to be an exhaustive list of all procedures used, but indicate examples of types of procedures which may be currently used by the subgrantee network. Please attach any readily available documentation concerning your organization's use of techniques and measures which you feel may be new or different in your area.

15. On approximately what percentage of building energy efficiency completions in PY 1989 have you employed the following techniques (with any source of funding)? What percentage do you anticipate in PY 1991?

		Approximate Percentage of Completions in PY 1989		Approximate Percentage of Completions Anticipated in PY 1991	
		V15xA		V15xB	
Client Selection:		Mean	Median	Mean	Median
1	Based on House or Occupant Characteristics (e.g., handicapped, elderly, small children, etc.)	73.5%	86%	71.92%	85%
2	Based on Current Energy Consumption & Anticipated Savings	26.25	10	34.06	20
3	Based on Landlord or Other Contributions	4.87	-0-	7.72	-0-
4	Other (specify)_____	21.57	-0-	20.47	-0-
Determining Investment Level:					
5	Based on Current Energy Consumption/Anticipated Savings	39.69	25	45.55	40
6	Based on Energy Savings per Dollar Invested	45.32	30	50.11	50
7	Based on Landlord or Other Contributions	4.57	-0-	7.94	-0-

NOTE: LIST OF TECHNIQUES CONTINUED ON NEXT PAGE

Local WAP Agency

		Approximate Percentage of Completions in PY 1989 V15xA		Approximate Percentage of Completions Anticipated in PY 1991 V15xB	
Selection of Measures (Audits)		Mean	Median	Mean	Median
8	For Each House, Building Envelope Measures Selected Based on Analysis of Energy Savings Per Dollar Invested	63%	90%	69.7%	95%
9	Integrated Building Envelope and HVAC Audit (Selection of Building Envelope and Space Heating/Cooling System Measures Simultaneously Using One Approach)	28.26	-0-	37.86	10
Blower Door Procedures					
10	Blower Door Testing to find Leakage Areas for Sealing	31.37	10	51.29	50
11	Blower Door Procedures that Include Cost Effectiveness Guideline	21.29	-0-	43.70	25
Distribution System Testing*					
12	Distribution System Leak Detection	18.88	-0-	32.57	-0-
13	Distribution System Balancing	10.12	-0-	21.03	-0-
Heating/Cooling System Testing/Inspection					
14	Heating/Cooling System Performance and Efficiency Testing* (where applicable)	47.94	50	57.19	80
15	Heating/Cooling System Safety Inspections (where applicable)	52.62	60	61.81	100
Infrared Scanning					
16	Infrared Scanning	2.22	-0-	5.44	-0-
Indoor Air Quality*					
17	Indoor Air Quality Testing	6.34	-0-	12/64	-0-

* Assumes the use of diagnostic equipment to take actual field measurements.

Local WAP Agency

16. On approximately what percentage of possible building energy efficiency completions in PY 1989 have you employed the following measures (with any source of funding)? What percentage do you anticipate in PY 1991? Please answer as a percentage of possible completions (that is, do not include completions in which the measure was not technically or physically able to be installed). For example, if only 40 of your total weatherization completions last year had wall cavities, and you installed wall insulation in all of these, then you would enter 100% of possible completions in the space provided:

		Approximate Percentage of Completions in PY 1989 V16xA		Approximate Percentage of Completions Anticipated in PY 1991 V16xB	
Heating Systems		Mean	Median	Mean	Median
1	Heating System Tune-ups	39.7%	25%	48.3%	50%
2	Heating System Component Retrofits	23.49	3	29.68	10
3	Heating System Distribution Balancing	12.01	-0-	21.32	-0-
4	Entire Heating System Replacements	16.24	2	19.34	5
Cooling Measures					
5	Cooling System Tune-ups	2.18	-0-	4.31	-0-
6	Cooling System Component Retrofits	1.03	-0-	2.37	-0-
7	Entire Cooling System Replacements	0.76	-0-	1.52	-0-
8	Window Films or Shades	1.68	-0-	2.86	-0-
9	Passive Cooling Measures	1.58	-0-	1.98	-0-
10	Other (specify)_____	1.59	-0-	1.58	-0-
Water Heating					
11	Water Heating Component Retrofits (other than wraps)	9.84	-0-	12.61	-0-
12	Entire Water Heating System Replacement	5.29	-0-	6.10	-0-

NOTE: LIST OF TECHNIQUES CONTINUED ON NEXT PAGE.

Local WAP Agency

		Approximate Percentage of Completions in PY 1989 V16xA		Approximate Percentage of Completions Anticipated in PY 1991 V16xB	
		Mean	Median	Mean	Median
Solar Systems					
13	Solar System Retrofits	0.21%	-0-	0.24%	-0-
Appliance/Lighting					
14	Appliance Replacements	0.79	-0-	1.72	-0-
15	Compact Fluorescent Light Bulbs/Ballasts	1.87	-0-	8.59	-0-
Windows					
16	Low E. (Emissivity) Windows	13.63	-0-	14.51	-0-
Wall Insulation					
17	Conventional Wall Insulation	36.42	20	37.25	20
18	High Density Wall Insulation	13.22	-0-	23.75	-0-
Client Education					
19	Literature Mailed or Left with Client	60.91	80	69.76	100
20	In-Person Client Education	71.56	100	79.22	100
Management Practices					
21	Workmanship Quality Review/Feedback to Field Staff	81.29	100	84.68	100
22	Other Quality Control Practices (specify) _____	45.71	25	49.88	45
Other					
23	Other Non-Traditional or Unconventional Measures (specify) _____	7.76	-0-	9.38	-0-

Local WAP Agency

17. If you had the authority and resources to use them, please indicate the level of priority you would assign to the following diagnostic/screening techniques and measures. (Please circle one priority level for each diagnostic/screening technique and each measure):

Diagnostic/Screening Techniques	Level of Priority High	Medium	Low
Client Selection:	IN PERCENT		
PRIHC Based on House or Occupant Characteristics (e.g., handicapped, elderly, small children, etc.)	82.5	14.7	2.8
PRICE Based on Current Energy Consumption & Anticipated Savings	58.1	32.5	6.5
PRILL Based on Landlord or Other Contributions	10.2	28.6	61.2
PRIOTH Other (specify) _____	41.8	15.7	42.5
Determining Investment Level:			
PRICEAS Based on Current Energy Consumption/Anticipated Savings	63.2	29.9	7.0
PRIESDI Based on Energy Savings per Dollar Invested	60.1	32.6	7.3
PRILLD Based on Landlord or Other Contributions	11.5	30.2	58.3
Selection of Measures (Audits):			
PRIHBE For Each House, Building Envelope Measures Selected Based on Analysis of Energy Savings Per Dollar Invested	61.6	31.2	7.2

Measures	Level of Priority High	Medium	Low
Heating Systems	IN PERCENT		
PRIHST Heating System Tune-ups	66.5	23.6	9.9
PRIHSCR Heating System Component Retrofits	42.7	37.0	20.2
PRIHSDB Heating System Distribution Balancing	33.6	41.8	25.5
PRIHSR Entire Heating System Replacements	46.4	28.1	24.6
Cooling Measures			
PRICST Cooling System Tune-ups	20.5	22.3	57.2
PRICSCR Cooling System Component Retrofits	10.6	25.3	64.1
PRICSR Entire Cooling System Replacements	9.4	17.1	73.5
PRIWFS Window Films or Shades	14.2	26.4	59.5
PRIPCM Passive Cooling Measures	12.3	26.9	60.9
PRICOTH Other (specify) _____	12.8	5.0	82.1
Water Heating			
PRIWHCR Water Heating Component Retrofits (other than wraps)	8.8	40.4	30.8

Local WAP Agency

Diagnostic/Screening Techniques	Level of Priority High	Medium	Low
Selection of Measures (Audits) (continued):			
PRIBE Integrated Building Envelope and HVAC Audit (Selection of Building Envelope and Space Heating/Cooling System Measures Simultaneously Using One Approach)	40.5	39.6	19.9
Blower Door Procedures			
PRIBDRT Blower Door Testing to find Leakage Areas for Sealing	60.3	22.9	16.8
PRIBDPIC Blower Door Procedures that Include Cost Effectiveness Guideline	54.2	29.0	16.8
Distribution System Testing*			
PRIDSLD Distribution System Leak Detection	45.6	36.2	18.3
PRIDSB Distribution System Balancing	28.4	48.7	22.9
Heating/Cooling System Testing/Inspection			
PRIHCSTI Heating/Cooling System Performance and Efficiency Testing* (where applicable)	58.7	26.1	15.2
PRIHCSSI Heating/Cooling System Safety Inspections (where applicable)	69.4	19.6	11.1
Infrared Scanning			
PRIIS Infrared Scanning	21.1	36.0	43.0
Indoor Air Quality*			
PRIIAQT Indoor Air Quality Testing	37.4	37.5	35.2

Measures	Level of Priority High	Medium	Low
Water Heating			
PRIEWHSR Entire Water Heating System Replacements	32.9	30.4	36.7
Solar Systems			
PRISST Solar System Retrofits	10.3	20.3	69.5
Appliance/Lighting			
PRIAR Appliance Replacements	13.9	29.1	57.0
PRIFBB Compact Light Bulbs/Ballasts	27.3	31.6	41.1
Windows			
PRILOWE Low E. (Emissivity) Windows	24.7	37.1	38.2
Wall Insulation			
PRICWI Conventional Wall Insulation	51.8	28.2	19.9
PRIHDWI High Density Wall Insulation	45.8	29.9	24.3
Client Education			
PRILM Literature Mailed/Left with Client	56.5	29.3	14.2
PRINCE In-Person Client Education	76.9	17.4	5.7
Management Practices			
PRIWQC Workmanship Quality Review/Feedback to Field Staff	86.8	11.2	2.1
PRIOQC Other Quality Control Practices (specify)_____	62.5	20.7	16.9
Other			
PRIONT Other Non-Traditional or Unconventional Measures (specify)_____	27.1	22.3	50.6

Local WAP Agency

Information from Question 18 through 20 will allow DOE to develop a detailed understanding of the innovations and initiatives which are taking place in the WAP Network. This information will also enable DOE to more effectively work with the WAP Network in promoting new technologies and approaches to energy efficiency in the building sector.

18. Over the past 5 years, which of the following activities has your organization performed at a significant level of effort with any source of funding? Which would you be interested in becoming involved with, and with what degree of participation? Please check all that apply, and please attach any readily available relevant documentation):

	Performed Over Past 5 Years?		Interest in Performing?		Degree of Participation*	
	Yes	No	Yes	No	Full Funding Needed	Cost Sharing Possible**
	A		B		C	
INTSTA a. Provide Test Sites for New Technologies or Approaches	37.8%	62.2%	85.2%	14.8%	76.3%	23.7%
INMTS b. Monitor Test Sites	28.3	71.7	77.9	22.1	76.5	23.5
INEUM c. End Use Metering to Measure Energy Consumed by Major Appliances	8.4	91.6	62.3	37.7	81.0	19.0
INPP d. Implementing New Programs (e.g., on a pilot level)	47.5	52.5	91.9	8.1	81.8	18.2
INTECHO e. Other (specify) _____	26.5	73.5	76.5	23.5	68.0	32.0
INTECHN f. None of the Above	N=145		N=62			

* Other Requirements or Needs for Participation_____

_____

** Financial or in-kind, e.g., provide equipment or staff time

Local WAP Agency

N CHECKING BOX

19. What other innovations has your organization participated in, irrespective of funding source? (Please check all that apply, and attach any readily available documentation of the innovation and/or its impact):

V191 1. Computerized Management Information System (describe): 308

V192 2. Innovative Management Approaches (describe:) 111

V193 3. Innovative Training (describe:) 193

V194 4. Innovative Client Education (describe:) 196

V195 5. Innovative Cooperative Programs (describe:) 173

V196 6. Innovative Program Evaluations (describe:) 80

V197 7. Other (please specify)

45

V198 8. None of the Above 336

--PLEASE PROCEED TO NEXT PAGE--

N CHECKING BOX

20. Please indicate ways in which your organization has influenced the energy initiatives of others (check all that apply and please attach any readily available documentation).

V201 1. Serve on Advisory Committee(s) (specify)

336 _____

_____

V202 2. Work with Product/Equipment Manufacturers (specify)

76 _____

_____

V203 3. Contribute to Newspaper/Magazine Articles 287

V204 4. Work as an Energy Consultant 144

V205 5. Participate on Professional or Technical Committees/Boards (specify)

163 _____

_____

V206 6. Other (specify)

124 _____

_____

V207 7. None of the Above 288

FEEDBACK TO DOE

Questions 21 and 22 will provide DOE with direct feedback from the WAP Subgrantee Network on how WAP services and general program delivery can be improved.

21. Please rate the level of importance of the following in improving the delivery of low-income weatherization services. Circle one answer for each item. Please do not allow current program rules to limit your answers. (IN PERCENT)

		Very Important	Important	Unimportant	Very Unimportant	No Opinion
DOEIT	a. Improved Training (describe) _____	56.8	37.2	2.9	0.0	3.0
DOEECE	b. Enhanced Client Education (describe) _____	38.9	49.9	6.1	0.3	4.8
DOEGFRR	c. Greater Flexibility in DOE Rules or Regulations (specify) _____	61.9	27.2	3.8	0.2	6.9
DOEGFWAP	d. Greater Flexibility in WAP Legislation (specify) _____	47.3	29.1	5.4	0.7	17.5
DOEETS	e. Enhanced Technical Support (describe) _____	34.4	41.5	9.1	1.4	13.5
DOESWF	f. Stable Weatherization Funding (specify) _____	84.4	12.3	0.3	0.4	2.5
DOEFFG	g. Funding Outside of Formula Grants for Innovative or Leveraged Activities (describe) _____	39.1	32.3	8.2	1.7	18.7

LIST IS CONTINUED ON NEXT PAGE

		Very Important	Important	Unimportant	Very Unimportant	No Opinion
DOEGI	h. Greater Interaction with Other Organizations Engaged in Weatherization (e.g., utilities) (describe) _____	43.2	46.3	4.3	0.1	6.1
DOEHRF	i. Housing Rehabilitation For from other Federal Agencies (e.g., HUD) (describe) _____	58.6	31.9	3.2	0.5	5.9
DOEHSE	j. Greater Attention to Health, Safety, and Environmental Issues (e.g., indoor air quality) (describe) _____	42.2	42.5	6.0	0.7	8.6
DOEABE	k. Greater Attention to Broader Environmental Issues (e.g., global climate change) (describe) _____	24.9	39.2	13.1	3.5	19.3
	l. Other (specify) _____					
	_____					
	_____					
	_____					

Local WAP Agency

22. Please use the space below to provide any additional comments you may care to make. In particular, DOE is interested in your goals and aspirations for WAP, and how the program can be enhanced.

Zone (Climate Zone)

North 14.8%
Central 53.7%
South 31.5%

Local WAP Agency

IN CLOSING

23. Finally, would you please provide the name, address, and telephone number of the person completing this form, just in case we have questions about your answers.

Name: _____

Title: _____

Organization:_____

Street/P.O. Box:_____

City, State:_____

ZIP Code:_____

Area code/telephone number:(_____)_____

Thank you for completing this questionnaire and helping DOE to promote effective energy efficiency programs. Please return this questionnaire at your earliest convenience in the pre-paid envelope provided. Return to:

National WAP Evaluation
c/o Applied Management Sciences, Inc.
962 Wayne Avenue
Suite 700
Silver Spring, MD 20910-4486

If you desire, you may obtain assistance in completing the questions or replace a lost questionnaire by calling 1-800-638-2784, Monday through Friday between the hours of 8:30 a.m. and 5:30 p.m. Eastern time, and asking for Operator 26.

If we have not received your questionnaire by November 5, 1990, we will contact you by telephone to obtain your input. It would greatly facilitate the interview if you could have this questionnaire available.

Please check and sign below if you are requesting that your specific answers not be identified. (The survey data will be aggregated and reported at the State and national levels.)

Specific answers on this questionnaire should not be identified with our agency.

Signature:_____ Date:_____

Local WAP Agency

APPENDIX B

CHARACTERIZATION OF THE WAP NETWORK
STATE WAP AGENCY QUESTIONNAIRE

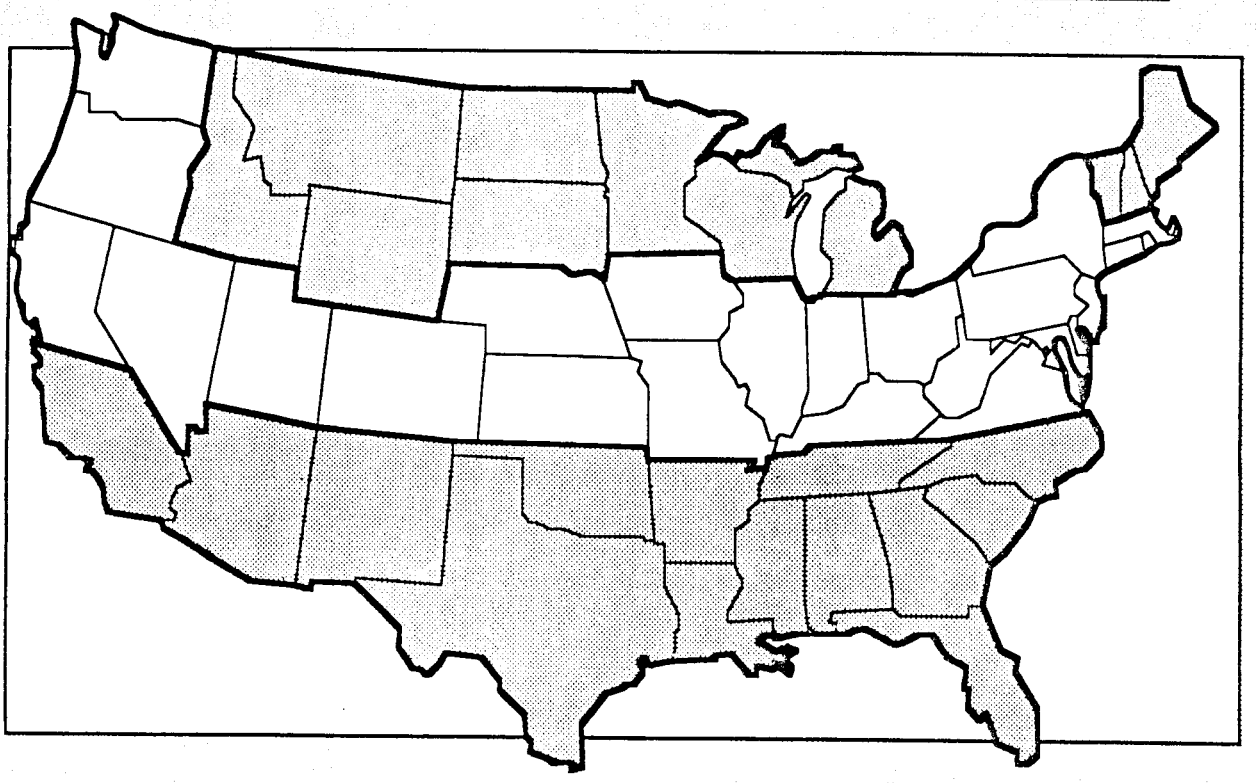
OMB Approval No.: 1910-1400

Mailing Label
Survey ID No.

The National
Weatherization
Assistance Program
Evaluation

CHARACTERIZATION OF THE WEATHERIZATION ASSISTANCE PROGRAM NETWORK

SURVEY OF GRANTEES



U.S. Department of Energy
Weatherization Assistance Program

January, 1991

CHARACTERIZATION OF THE WAP NETWORK
GRANTEE QUESTIONNAIRE

BACKGROUND

The Characterization of the WAP Network is part of the national evaluation of the U.S. Department of Energy's Weatherization Assistance Program (WAP). The study is designed to characterize the current and potential contributions of the WAP State grantee and subgrantee network in promoting energy efficiency.

Major network features to be analyzed in this study are:

- the relationships between grantees, subgrantees, and other programs and service providers;
- the extent of external program relationships;
- the interest and availability of potential partners for future energy efficiency efforts;
- technical assistance, client education, and training skills;
- range of experience and technical expertise for diagnosing weatherization needs and installing retrofit measures;
- the ability of grantees and subgrantees to provide market information on client needs and to provide feedback on the performance of new technologies; and
- innovations and cutting edge initiatives being implemented or tested in the field.

By understanding the size, scope, skills, and innovative capabilities of the current Weatherization Assistance Program Network, DOE can better work with the network to enhance program performance and establish links with other programs aimed at promoting energy efficiency in the nation's building stock. This questionnaire is designed to collect information from WAP grantees which will enable DOE to gain a thorough understanding of the capabilities and resources of the WAP network. At the end of the questionnaire is space for you to provide direct feedback to DOE on program issues which you feel are important. Your cooperation in promptly completing this questionnaire and returning it in the enclosed reply envelope is greatly appreciated. In the report describing the results of this survey, your specific answers will be aggregated and reported only at the regional and national levels. You will receive feedback on the key study results.

State WAP Agency

GENERAL GRANTEE CHARACTERISTICS

Question 1 will allow DOE to determine the size and scope of the energy programs operated by the WAP Network.

1. At present, does your organization administer or operate any **energy programs** aside from the Department of Energy (DOE) Weatherization Assistance Program (WAP) and LIHEAP? Do not include direct or indirect Fuel Payment Programs. (Please check one answer.)

ENPRO 1. Yes 51.1%

2. No 49.1%

If yes, please specify the program name and funding source, provide a brief description, and describe the eligible or target population of the three largest programs (An example is filled in below. Please print.):

Name of Energy Program	Source of Funding	Brief Description	Eligible or Target Population
Example: *Energy Design Assistance*	*State Appropriations*	*Design assistance for new commercial building construction*	*New commercial construction in State*

Brief Description: *Design assistance to incorporate energy efficient technologies in new commercial construction.*

1. 47.9	47.9	33.3	45.8

Brief Description: 43.7 ENPRO1E

2. 35.4	35.4	25.0	33.3

Brief Description: 33.3 ENPRO2E

3. 27.1	25.0	20.8	22.9

Brief Description: 22.9 ENPRO3E

WAP NETWORK STAFF RESOURCES

The information requested in Questions 2 through 5 will assist DOE in understanding the range of staff capabilities and resources which exist in the WAP Network relative to energy programs. For Question 2, if you cannot provide the detailed breakdown requested, please fill in the approximate totals.

2. Please characterize your in-house staff working on **energy programs** [Enter approximate number of full-time equivalent employees (FTE)--for example, one person working 1/2 time as an Engineer equals 0.5 FTE in the Engineer box and 1/2 time as a Field Monitor equals 0.5 FTE in the Field Monitor box]:

VARIBLE NAME: ROW CODE COLUMN CODE EG WAPENG

Program / Staff		DOE WAP			Non-WAP Energy Programs			TOTAL As reported by Grantees		
		WAP			N			T		
		Sum	Mean	Median	Sum	Mean	Median	Sum	Mean	Median
Engineers	ENG	2.6	.05	0	19	.39	0	21.6	.44	0
Field Monitors/Auditors	AUD	134.5	2.74	2	45.3	.92	0	178.8	3.65	3
Other Technical Staff	OTS	20.6	.42	0	27.9	.57	0	48.5	.99	0
Management/Administrative/Fiscal	MAF	126	3.57	2	115.9	2.34	1	240.2	4.9	3.5
Training Staff	TS	30.7	.63	0	5.5	.11	0	34.4	.70	0.2
Outreach Staff	OS	2	.04	0	2.1	.04	0	4.1	.08	0
Client Education Staff	CES	5.8	.12	0	7.7	.16	0	12.9	.26	0
Clerical/Support	CS	62.1	1.27	1	64.7	1.37	0.5	122.5	2.6	2
Other Special Skills _____ (specify)	OSS	5.7	.12	0	8.8	.18	0	14.4	.29	0
Total	EMP	390	7.96	6.6	296.9	6.06	3	686.9	14.02	11

[Should add to your total in-house Energy Program staff.]

State WAP Agency

3. For the staff categories listed in Questions 2, please indicate any certification or licensing requirements for your in-house staff or contracted staff.

Staff Category	Certification or License Required? % A YES NO NO ANSWER	Source and Type of Certification or License (e.g., State-Certified Energy Auditor) B Percent giving an answer
a. Engineers LICENG	1. 14 2. 31 3. 65	14.6
b. Field Monitors/Auditors LICAUD	1. 37.5 2. 56.3 3. 6.2	37.5
c. Other Technical Staff LICOTS	1. 6.2 2. 58.3 3. 35.4	8.3
d. Management/Administrative/ Fiscal LICAMF	1. 12.5 2. 79.2 3. 8.3	12.5
e. Training Staff LICTS	1. 10.4 2. 56.3 3. 33.3	10.4
f. Outreach Staff LICOS	1. 0 2. 54.2 3. 45.8	0
g. Client Education Staff LICES	1. 4.2 2. 43.7 3. 52.1	4.2
h. Clerical/Support LICCS	1. 2.1 2. 77.1 3. 20.8	2.1
i. Other Special Skills		
LICSP1 (specify) LICOS1	1. 6.2 2. 20.8 3. 72.9	6.2
LICSP2 (specify) LICOS2	1. 0 2. 10.4 3. 89.6	0
LICSP3 (specify) LICOS3	1. 0 2. 8.3 3. 91.7	0
LICSP4 (specify) LICOS4	1. 0 2. 8.3 3. 91.7	0

Please explain if necessary 25.1

4. Please indicate staff certification or licensing requirements of your State weatherization office for subgrantee staff or their contractors:

Staff Category	Certification or License Required? A			Source and Type of Certification or License (e.g., State-Certified Energy Auditor) B
	YES	NO	NO ANSWER	
a. Engineers SGLENG	1. 8.3	2 33.3	3. 58.3	10.4
b. Inspectors SGLINS	1. 37.5	2. 43.7	3. 18.8	37.5
c. Energy Auditors/ Estimators SGLAUD	1. 41.7	2. 43.7	3. 14.6	39.6
d. Envelope Crew Chiefs SGLECC	1. 16.7	2. 22.9	3. 22.9	18.8
e. Envelope Crew Members SGLECM	1. 8.3	2. 66.7	3. 25.0	6.2
f. HVAC Crew Chiefs SGLHCC	1. 33.3	2. 27.1	3. 39.6	33.3
g. HVAC Crew Members SGLHCM	1. 27.1	2. 39.6	3. 39.6	22.9
h. Other Technical Staff SGLOTS	1. 60.4	2. 4.2	3. 35.4	4.2
i. Management/ Administrative SGLMAD	1. 64.6	2. 8.3	3. 27.1	6.2
j. Training Staff SGLTS	1. 4.2	2. 56.3	3. 39.6	6.2
k. Outreach Staff SGLOS	1. 2.1	2. 62.5	3. 35.4	0
l. Client Education Staff SGLCES	1. 4.2	2. 62.5	3. 33.3	4.2
m. Clerical Support SGLCS	1. 2.1	2. 66.7	3. 31.3	0
n. Other Special Skills SGLOSS 4.2 (specify) OSSPEC	1. 4.2	2. 47.9	3. 47.9	4.2

Please explain if necessary SGLEXP 27.1

State WAP Agency

5. Does your organization provide formal training for either in-house or subgrantee staff? This could include workshops at your State's training center, in-house training, or attendance at a training session at a regional or national conference.

1. Yes 100%

TRAIN

2. No 0%

If yes, please indicate the type of training your staff or subgrantee staff receives (check all that apply):

	STATE STAFF			SUBGRANTEE STAFF		
	One-Time	On-Going*	No Answer	One Time	On-Going*	No Answer
a. Blower Door Training BDT	20.8	62.5	16.7	20.8	66.7	12.5
b. Other Technical Training OTT	4.2	77.1	18.8	6.2	83.3	10.4
c. Management Training MT	14.6	56.3	29.2	16.7	47.9	35.4
d. Client Education Training CET	12.5	37.5	50.0	20.8	43.7	35.4
e. Weatherization Skill Training WST	6.2	72.9	20.8	8.3	85.4	6.2
f. Auditor/Estimator Training AET	14.6	54.2	31.3	14.6	70.8	14.6
g. Fiscal Training FT	14.6	54.2	31.3	20.8	54.2	25.0
h. Other (Specify)						
OTSPEC1 31.3 OT1	6.2	22.9	70.8	6.2	22.9	70.8
OTSPEC2 18.8 OT2	8.3	8.3	83.3	8.3	6.2	85.4
OTSPEC3 2.1 OT3	2.1	0	97.9	2.1	0	97.9

* At least one training activity per year

Please explain if necessary TRAIN EXP 31.3%

State WAP Agency

WAP NETWORK INTERACTIONS AND ACTIVITY LEVELS

Questions 6 through 8 will provide information to assist DOE in understanding the extent of the WAP Network, the level of interaction within the WAP Network, and the level of interaction between the network and related organizations.

6. Please print the names of the energy programs funded or administered by your organization next to each source of funds, and enter the dollar value of the financial and in-kind support your organization received for each program in PY 1989:

(In $1000)
A

MEDIANS
B C

Source of Funds	Name of Energy Programs Funded				TYPES OF SUPPORT: Financial* ($)	TYPES OF SUPPORT: In-kind**
DOE WAP	WAP				2024	0
Total Oil Overcharge (PVE) PVE1	Financial Mean	Median	In-Kind Mean	Median	1798	0
Total Oil Overcharge (PVE) PVE2	253454	755	5172.5	15.4	0	0
Total Oil Overcharge (PVE) PVE3					0	0
HHS LIHEAPW	LIHEAP-Weatherization				1312	0
State Program No. 1*** STATE1	Financial		In-Kind		0	0
State Program No. 2*** STATE2	Mean	Median	Mean	Median	0	0
State Program No. 3*** STATE3	51494	0	1059.9	0	0	0
HUD HUD					0	0
USDA--Farmers Home Administration FHA					0	0
USDA USDA	(specify)				0	0
Other Federal OFED					0	0
Utility 1 (specify) UTIL1	Financial		In-Kind		0	0
Utility 2 (specify) UTIL2	Mean	Median	Mean	Median	0	0
Utility 3 (specify) UTIL3	1062	0	21.7	0.8	0	0
Utility 4 (specify) UTIL4					0	0
Volunteers not included in above (specify) VOL					0	0
(specify) CHARITY	Charitable Donations				0	0
Other (specify) MOTH1	Financial		In-Kind		0	0
Other (specify) MOTH2	Mean	Median	Mean	Median	0	0
Other (specify) MOTHE	806	0	16.4	0.0	0	0
TOTAL TOTDOL					6011	0

ALLDOL1 = 6011

State WAP Agency

WAP NETWORK INTERACTIONS AND ACTIVITY LEVELS

Questions 6 through 8 will provide information to assist DOE in understanding the extent of the WAP Network, the level of interaction within the WAP Network, and the level of interaction between the network and related organizations.

6. Please print the names of the energy programs funded or administered by your organization next to each source of funds, and enter the dollar value of the financial and in-kind support your organization received for each program in PY 1989:

In $1000

Source of Funds	TYPES OF SUPPORT			
	Financial* ($)		In-kind**	
	Sums	Means	Sums	Means
DOE/WAP	162,603	3318.4	1248	25.5
Oil Overcharge (PVE) Program No. 1	171,016	3490.1	0	0
Oil Overcharge (PVE) Program No. 2	54,506	1112.4	0	0
Oil Overcharge (PVE) Program No. 3	27,932	570.0	755	15.4
HHS/LIHEAP-Weatherization	120,005	2449.1	0	0
State Program No. 1***	49,463	1009.5	0	0
State Program No. 2	2,031	41.5	0	0
State Program No. 3	0	0	0	0
HUD	1015	20.7	15	0.3
USDA--Farmers Home Administration	180	3.7	0	0
USDA (specify)	0	0	0	0
Other Federal	0	0	0	0
Utility 1 (specify)	962	19.6	0	0
Utility 2 (specify)	0	0	40	0.8
Utility 3 (specify)	100	2.0	0	0
Utility 4 (specify)	0	0	0	0
Volunteers not included in above (specify)	0	0	20	0.4
(specify) Charitable Donations	0	0	125	2.6
Other (specify)	124	2.5	0	0
Other (specify)	650	13.3	0	0
Other (specify)	32	0.8	0	0
TOTAL	590,627	12053.6	2203	45.0

SUM / MEAN

ALL DOLLARS = 592,822 / 12098.6

State WAP Agency

7. Approximately what percentage of your State's PY 1989 weatherization completions involved additional state-initiated on-site services (using any source of funds)? These include: radon testing, rehabilitation, housing repair, water conservation, smoke detector installation, etc. (include only those which were initiated or precipitated by State action or policy).

ONSITEA

A 21.6 percent

Please briefly describe and indicate the funding source of one or two of the additional on-site services associated with weatherization which were provided or promulgated statewide by your State in PY 1989. (Please print):

B

ONSITEB 43.7%

State WAP Agency

8. Has your organization been involved with electric or gas utilities in any of the following ways? (Please check the appropriate response):

		Yes	No	No Answer
HDUP	1. Helped Design Utility Programs (e.g., DSM Programs)*	35.4	52.1	12.5
PTUF	2. Participated on Utility Task Forces(s)	41.7	47.9	10.4
PCUP	3. Provided Comments on Utility Plans (e.g., Integrated Resource Planning)**	58.3	29.2	12.5
IURP	4. Intervened in Utility Regulatory Proceedings	70.8	16.7	12.5
EGOTH(A,B)	5. Other (specify) 41.7	35.4	6.2	58.3
	2.1	2.1	4.2	93.7
	2.1	4.2	4.2	91.7

* Demand Side Management (DSM) is a general term used by utilities to describe measures taken to influence the amount and timing of energy consumption by customers.

** Integrated Resource Planning (IRP) is a process by which utilities plan to meet customer energy and power demand using the least-cost mix of supply and demand management approaches.

State WAP Agency

Question 9 will provide DOE with insights concerning the most appropriate methods to transfer new energy efficient technologies to the WAP Network.

9. Please score the following organizations with respect to how frequently they were a useful source of technical, management, or market information over the past 2 years. Use the following score values, and circle the appropriate score for each source:

SCORE

(Please circle one for each information source)

OF THOSE RESPONDING PERCENT RESPONDING	SOURCE	Never	Once a Year	Quar-terly	Once a Month	Weekly or More
TTLOXCON	Weatherization Contraactors	17	40.4	23.4	12.8	6.4
TTHC	Heating Contractors	34.8	37.0	15.2	8.7	4.3
	State WAP Agencies in other states (specify):					
TTWAP1	79.2	6.7	35.6	42.2	13.3	2.2
TTWAP2	52.1	4.5	50.0	31.8	9.1	4.5
	Colleges and Universities (specify):					
TTUNIV1	54.2	34.1	40.9	9.1	9.1	6.8
TTUNIV2	16.7	20	60	0	10	10
TTUNIV3	4.2	50	50	0	0	0
	Consultants / T and TA Contractors (specify):					
TTCTTA1	70.8	11.6	44.2	16.3	16.3	11.6
TTCTTA2	31.3	0	42.9	28.6	21.4	7.1
TTCTTA3	16.7	0	37.5	50	12.5	0
	WAP Subgrantees (specify):					
TTSG1	85.4	2.1	6.4	38.3	29.8	23.4
TTSG2	35.4	0	12.5	43.7	31.3	12.5
TTSG3	20.8	0	22.2	55.6	22.2	0
	State Energy Offices (specify):					
TTSED1	54.2	10.5	42.1	28.9	10.5	7.9
TTSED2	12.5	16.7	33.3	33.3	16.7	0
TTSED3	6.2	25	25	25	25	0
	Other State Agencies (specify):					
TTOSA1	56.3	18.4	44.7	26.3	5.3	5.3
TTOSA2	20.8	8.3	58.3	16.7	8.3	8.3
TTOSA3	10.4					

State WAP Agency

	SOURCE	SCORE (Please circle one for each information source)				
		Never	Once a Year	Quarterly	Once a Month	Weekly or More
	DOE (specify office)					
TTDOE1	91.7	0	13.0	23.9	52.2	10.9
TTDOE2	39.6	0	38.9	27.8	27.8	5.6
TTDOE3	8.3	0	0	0	100	0
	Other Federal Agencies (specify):					
TTOFA1	41.7	27.6	51.7	17.2	3.4	0
TTOFA2	14.6	0	57.1	28.6	14.3	0
TTOFA3	4.2	0	100	0	0	0
	National Laboratories (specify):					
TTNL1	54.2	18.9	51.4	29.7	0	0
TTNL2	25.0	0	75	25	0	0
TTNL3	2.1	0	0	0	0	0
	Books (please specify three most important):					
TTBOOK1	41.7	9.5	4.8	28.6	23.8	33.3
TTBOOK2	20.8	0	0	42.9	57.1	0
TTBOOK3	12.5	0	16.7	50.0	33.3	0
	Conferences (please prioritize):					
TTCONF1	91.7	2.3	90.9	6.8	0	0
TTCONF2	79.2	0	97.1	2.9	0	0
TTCONF3	60.4	0	87.5	12.5	0	0
TTCONF4	31.3	0	87.5	12.5	0	0
TTCONF5	18.8	0	75	25	0	0
TTCONF6	10.4	0	0	0	0	0
	Periodicals* (please specify three most important):					
TTPER1	83.3	5.4	5.4	40.5	37.8	10.8
TTPER2	66.7	0	14.3	28.6	50.0	7.1
TTPER3	47.9	0	10.5	47.4	31.6	10.5
	Other (specify)					
TTOTH1	31.3	6.7	26.7	40.0	20	6.7
TTOTH2	16.7	0	25	25	25	25
TTOTH3	14.6	0	14.3	57.1	28.6	0

* Please score periodicals based on the number of times they were **consulted** over the past 2 years as opposed to how frequently they are published.

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10. Please indicate whether your State performs or promotes any of the following by checking the appropriate box. Also, please indicate the priority your organization places on the following WAP-related initiatives independent of whether you perform or promote them (circle one priority level for each initiative.):

Initiative DK: Do Not Know NA: No Answer	Do You Perform/Promote?				Priority Level			
	YES	NO	DK	NA	HI	MED	LOW	NA
INP WAP Partnership with Utilities	81.2	18.8	0	0	58.3	29.2	10.4	2.1
INEE Energy Education	89.6	10.4	0	0	54.2	31.3	12.5	2.1
INTF Targeting Priorities	93.7	0	0	6.2	58.3	31.3	4.2	6.2
INQQ Quantity vs. Quality	43.7	47.9	0	8.3	29.2	27.1	25.0	18.8
INHSE Health, Safety, Environmental Issues	95.8	4.2	0	0	60.4	37.5	0	2.1
INPPLF Program Package to Leverage Funds	58.3	33.3	6.2	2.1	31.3	27.1	22.9	18.8
INTTA Training and Technical Assistance	100	0	0	0	87.5	10.4	0	2.1
INEENH Energy Efficiency for New Housing	20.8	72.9	2.1	2.1	8.3	20.8	43.7	27.1
INQW Quality Workmanship	97.9	0	0	2.1	91.7	2.1	0	6.2
INTT Technology Transfer	87.5	8.3	2.1	2.1	52.1	33.3	10.4	4.2
INMBI Marketing for Better Impacts	39.6	29.6	14.6	6.2	12.5	35.4	37.5	14.6
ININI Implementing New Initiatives	85.4	8.3	0	6.2	41.7	37.5	12.5	8.3
INOTH1 Other_____	18.8	0	0	81.2	12.5	6.2	0	81.2
INOTH2 Other_____	6.2	0	0	93.7	0	0	6.2	93.7

Please explain if necessary_____

INEXP 27.1

Questions 11 and 12 will provide information on your State's approach to the use of selected energy efficiency diagnostic/screening techniques and measures, and the priority your State places on the use of these techniques and measures. The techniques and measures listed in Questions 11 and 12 are not meant to be an exhaustive list of all procedures used, but indicate examples of types of procedures which may be currently used by the WAP network.

11. Please indicate your State's approach to each of the following diagnostic/screening techniques by checking the appropriate box. Please also indicate the level of priority you would assign to the following diagnostic/screening techniques. (Please circle one priority level for each diagnostic/screening technique):

NA: No Answer

Diagnostic/Screening Techniques	A State Approach				B Level of Priority			
	Require	Allow	Prohibit	NA	High	Medium	Low	NA
DTHQC Client Selection: Based on House or Occupant Characteristics (e.g., handicapped, elderly, small children, etc.)	83.3	14.6	2.1	0	81.2	14.6	4.2	0
DTCEC Based on Current Energy Consumption & Anticipated Savings	29.2	58.3	8.3	4.2	39.6	43.7	6.2	10.4
DTLL Based on Landlord or Other Contributions	8.3	68.7	18.8	4.2	6.2	45.8	41.7	6.2
DTOTHSP Other (specify) _____	8.3	6.2	0	86.4	14.6	0	0	85.4
DTICEC Determining Investment Level: Based on Current Energy Consumption/Anticipated Savings	43.7	47.9	6.2	2.1	50.0	33.3	12.5	4.2
DTESD Based on Energy Savings per Dollar Invested	43.7	43.7	8.3	4.2	52.1	27.1	14.6	6.2
DTILL Based on Landlord or Other Contributions	4.2	60.4	25	10.4	6.2	31.3	52.1	10.4
DTIOTH Other (specify) _____	6.2	2.1	0	91.7	2.1	4.2	0	93.7

LIST CONTINUED ON NEXT PAGE

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Diagnostic/Screening Techniques	State Approach				Level of Priority			
	Require	Allow	Prohibit	N/A	High	Medium	Low	N/A
DTBEM Selection of Measures (Audits): For Each House, Building Envelope Measures Selected Based on Analysis of Energy Savings Per Dollar Invested	47.9	35.4	8.3	8.3	58.3	18.8	10.4	12.5
DTIBM Integrated Building Envelope and HVAC Audit (Selection of Building Envelope and Space Heating/Cooling System Measures Simultaneously Using One Approach)	29.2	37.5	14.6	18.8	41.7	16.7	16.7	25.0
DTDOE DOE Approved Alternative Audit (specify)_____	35.4	14.6	6.2	43.7	37.5	6.2	12.5	43.7
Blower Door Procedures								
DTBDT Blower Door Testing to find Leakage Areas for Sealing	47.9	41.7	2.1	8.3	66.7	16.7	8.3	8.3
DTBDP Blower Door Procedures that Include Cost Effectiveness Guideline	43.7	47.9	2.1	6.2	60.4	20.8	12.5	0
DTDSLD Distribution System Testing* Distribution System Leak Detection	25.0	60.4	4.2	10.4	41.7	31.3	14.6	12.5
DTDSB Distribution System Balancing	12.5	64.6	6.2	16.7	25.0	33.3	20.8	20.8
DTHCET Heating/Cooling System Testing/Inspection Heating/Cooling System Performance and Efficiency Testing* (where applicable)	41.7	43.7	6.2	8.3	60.4	22.9	6.2	10.4
DTHCCSS Heating/Cooling System Safety Inspections (where applicable)	50.0	37.5	6.2	6.2	68.7	10.4	8.3	12.5

LIST CONTINUED ON NEXT PAGE

Diagnostic/Screening Techniques	State Approach				Level of Priority			
	Require	Allow	Prohibit	NA	High	Medium	Low	NA
DTIS								
Infrared Scanning								
Infrared Scanning	4.2	68.7	10.4	16.7	8.3	43.7	31.3	16.7
DTIAQ								
Indoor Air Quality*								
Indoor Air Quality Testing	12.5	54.2	14.6	18.8	29.2	29.2	22.9	18.8
DTAQOTH 2.1								
Other								
_____	2.1	2.1	0	95.8	2.1	2.1	0	95.8

DTEXP

Please explain if necessary DTEXP 25%

* Assumes the use of diagnostic equipment to take actual field measurements.

--PLEASE PROCEED TO NEXT PAGE--

12. Please indicate your State's approach to each of the following measures by checking the appropriate box. Please also indicate the level of priority you would assign to the following measures. (Please circle one priority level for each measure):

NA: No Answer

Measures	A State Approach				B Level of Priority			
	Require	Allow	Prohibit	NA	High	Medium	Low	NA
Heating SystemsDMHSTO Heating System Tune-ups	37.5	47.9	12.5	2.1	56.3	31.3	8.3	4.2
DMHSCR Heating System Component Retrofits	18.8	64.6	16.7	0	43.7	35.4	14.6	6.2
DMHSDB Heating System Distribution Balancing	14.6	60.4	18.8	6.2	25.0	37.5	25.0	12.5
DMEHSR Entire Heating System Replacements	10.4	66.7	20.8	2.1	31.3	50.0	10.4	8.3
Cooling MeasuresDMCSTU Cooling System Tune-ups	0	27.1	58.3	14.6	8.3	18.8	43.7	29.2
DMCSCR Cooling System Component Retrofits	0	22.9	60.4	16.7	8.3	14.6	45.8	31.3
DMECSR Entire Cooling System Replacements	0	18.8	66.7	14.6	8.3	8.3	52.1	31.3
DMWFS Window Films or Shades	2.1	20.8	60.4	16.7	8.3	10.4	52.1	29.2
DMPCM Passive Cooling Measures	0	22.9	60.4	16.7	8.3	14.6	47.9	29.2
DMCOTH Other (specify) _____	2.1	0	2.1	95.8	2.1	0	2.1	95.8
Water HeatingDMWHCR Water Heating Component Retrofits (other than wraps)	10.4	45.8	41.7	2.1	20.8	31.3	35.4	12.5
DMEWHR Entire Water Heating System Replacements	0	25.0	68.7	6.2	10.4	12.5	56.3	20.8
Solar SystemsDMSSRS Solar System Retrofits	0	6.2	83.3	10.4	0	10.4	60.4	29.2

NOTE: LIST CONTINUED ON NEXT PAGE

Measures	State Approach				Level of Priority			
	Require	Allow	Prohibit	NA	High	Medium	Low	NA
Appliance/LightingDMAR								
Appliance Replacements DMCFLB	2.1	10.4	83.3	4.2	6.2	10.4	56.3	27.1
Compact Fluorescent Light Bulbs/Ballasts DMALOT	2.1	29.2	66.7	2.1	14.6	27.1	41.7	16.7
Other (specify) 0	0	2.1	4.2	93.7	0	0	6.2	93.7
WindowsDMLOWE								
Low E. (Emissivity) Windows	0	52.1	43.7	4.2	2.1	27.1	50.0	20.8
Wall InsulationDMCWI								
Conventional Wall Insulation DMDWI	39.6	45.8	10.4	4.2	41.7	31.3	18.8	8.3
High Density Wall Insulation	18.8	58.3	16.7	6.2	41.7	20.8	27.1	10.4
Client EducationDMCE								
Literature Mailed or Left with Client DMIPCE	45.8	47.9	2.1	4.2	47.9	41.7	6.2	4.2
In-Person Client Education	43.7	54.2	2.1	0	54.2	37.5	8.3	0
Management PracticesDMWQ								
Workmanship Quality Review/Feedback to Field Staff DMOQC	89.6	10.4	0	0	97.9	2.1	0	0
Other Quality Control Practices (specify) 27.7	27.1	8.3	0	64.6	31.3	4.2	0	64.6
OtherDMONT1								
Other Non-Traditional or Unconventional Measures (specify) DMONT1SP 10.4	6.2	2.1	2.1	89.6	4.2	4.2	0	91.7
DMONT2SP 10.4	4.2	6.2	0	89.6	6.2	4.2	0	89.6

Information from Questions 13 and 14 will allow DOE to develop a detailed understanding of the innovations and initiatives which are taking place in the WAP Network. This information will also enable DOE to more effectively work with the WAP Network in promoting new technologies and approaches to energy efficiency in the building sector.

13. Over the past 5 years, which of the following activities has your State sponsored or initiated at a significant level of effort with any source of funding? Which would you be interested in becoming involved with, and with what degree of participation? Please check all that apply, and please attach any readily available relevant documentation):

NA: No Answer

	Performed Over Past 5 Years? A			Interest in Performing? B			Degree of Participation* C		
	Yes	No	NA	Yes	No	NA	Full Funding Needed	Cost Sharing Possible**	NA
IIPTS a. Provide Test Sites for New Technologies or Approaches	60.4	33.3	6.2	81.2	4.2	14.6	35.4	0	10.4
IIMTS b. Monitor Test Sites	45.8	45.8	8.3	75	16.7	16.7	33.3	50.0	16.7
IIEUM c. End Use Metering to Measure Energy Consumed by Major Appliances	16.7	70.8	12.5	58.3	25	16.7	41.7	29.2	29.2
IIINP d. Implementing New Programs (e.g., on a pilot level)	70.8	20.8	0	85.4	0	41.7	52.1	41.7	6.2
IIOTH e. Other (specify) _____	4.2	0	95.8	6.2	0	93.7	2.1	4.2	93.7
IIOTH2 _____	2.1	0	97.9				2.1	0	97.9
IINONE f. None of the Above	4.2			2.1					

* Other Requirements or Needs for Participation _____ IIREQ 8.3 _____

** Financial or in-kind, e.g., provide equipment, staff time, or external resources

State WAP Agency

14. What other innovations has your organization participated in, irrespective of funding source? (Please check all that apply, and attach any readily available summary documentation of the innovation and/or its impact):

PERCENT GIVING AN ANSWER

NVCMIST
1a. 77.1 Computerized Management Information System at the State Level (describe):

70.8

NVCMISG
1b. 62.5 Computerized Management Information System at the Subgrantee Level Implemented as a Result of State Initiative (describe:)

62.5

NVIMA
2. 31.3 Innovative Management Approaches (describe:)

33.3

NVIT
3. 58.3 Innovative Training (describe:)

56.3

NVICE
4. 37.5 Innovative Client Education (describe:)

39.6

NVCE
5. 39.6 Innovative Cooperative Programs (describe:)

37.5

NVPE
6. 43.7 Innovative Program Evaluations (describe:)

45.8

7. Other (please specify)

NVOTH
18.8

NVOTH2
4.2

NVOTH3
0

NONONE
8. 4.2 None of the Above

State WAP Agency

15. Has your State implemented standards beyond 10CFR440?

Yes=52.1 No=37.5 No Answer=10.4

If yes, please indicate type of standards implemented.

20.8 Adjustments to 40-60 Rule
41.7 Adopted HHS Income Qualifications
29.2 Other (please describe):_____

_____

FEEDBACK TO DOE

Questions 16 and 17 will provide DOE with direct feedback from the WAP Grantee Network on how WAP services and general program delivery can be improved.

16. Please rate the level of importance of the following in improving the delivery of low-income weatherization services. Circle one answer for each item. Please do not allow current program rules to limit your answers.

VI=Very Important
I =Important
UI=Unimportant
VUI=Very Unimportant
NO=No Opinion
NA=No Answer

A	B					
	VI	I	UI	VUI	NO	NA
DOEIT a. Improved Training (describe)	60.4	39.6	0	0	0	0
39.6% NOT ANSWERING						
DOEECE b. Enhanced Client Education (describe)	33.3	58.3	8.3	0	0	0
54.2						
DOEGFR c. Greater Flexibility in DOE Rules or Regulations (specify)	66.7	20.8	10.4	0	2.1	0
37.5						
DOEGFL d. Greater Flexibility in WAP Legislation (specify)	45.8	31.3	10.4	0	4.2	8.3
50.0						

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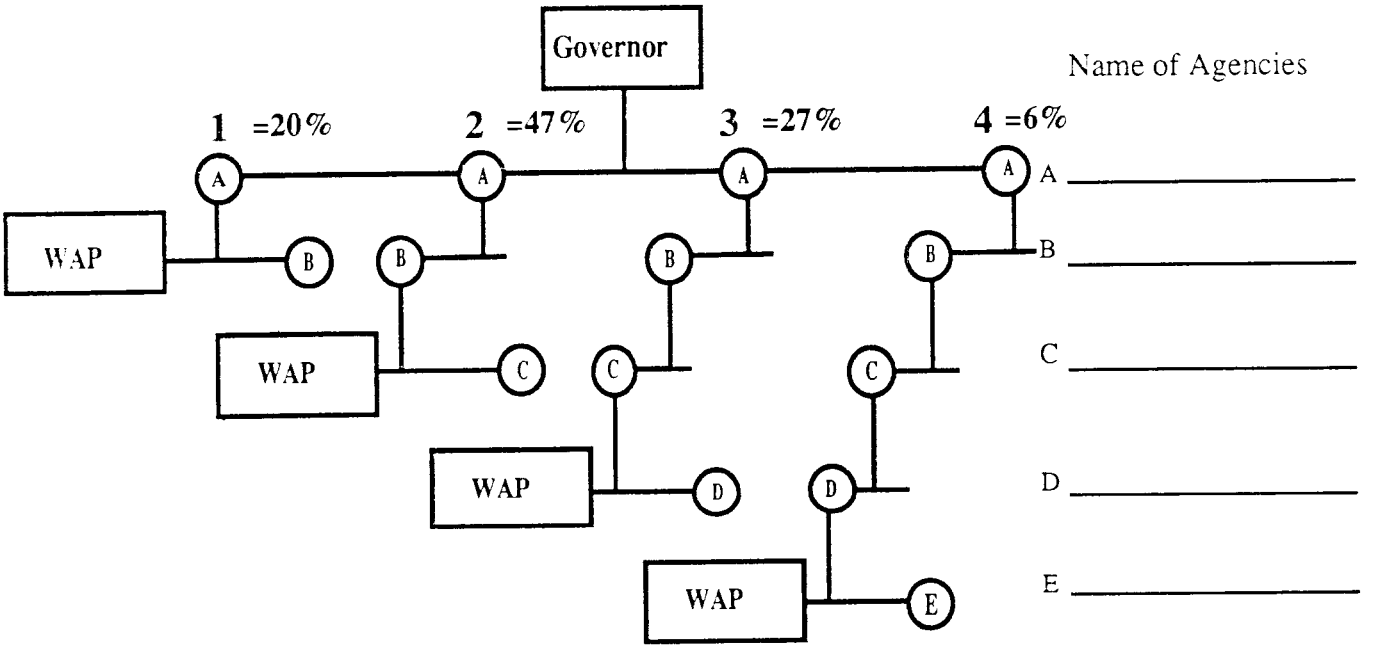
VI=Very Important
I =Important
UI=Unimportant
VUI=Very Unimportant
NO=No Opinion
NA=No Answer

	VI	I	UI	VUI	NO	NA
DOEETS						
e. Enhanced Technical Support (describe)	27.1	62.5	4.2	0	2.1	4.2
45.8% NOT ANSWERING						
DOESWF						
f. Stable Weatherization Funding (specify)	72.9	22.9	0	0	0	4.2
45.8						
DOEFO						
g. Funding Outside of Formula Grants for Innovative or Leveraged Activities (describe)	18.8	54.2	12.5	4.2	8.3	2.1
64.6						
DOEGI						
h. Greater Interaction with Other Organizations Engaged in Weatherization (e.g., utilities) (describe)	39.6	47.9	6.2	0	6.2	0
52.1						
DOEHRF						
i. Housing Rehabilitation Funds from other Federal Agencies (e.g., HUD) (describe)	52.1	41.7	4.2	0	2.1	0
43.7						
DOEHSE						
j. Greater Attention to Health, Safety, and Environmental Issues (e.g., indoor air quality) (describe)	52.1	41.7	6.2	0	0	0
37.5						
DOEBEI						
k. Greater Attention to Broader Environmental Issues (e.g., global climate change) (describe)	6.2	50.0	29.2	2.1	8.3	4.2
66.7						

17. Which of the following best characterizes your organization? Please circle the number corresponding to the organizational structure currently in place which best typifies the line of responsibility for WAP Programs in your State. Fill in the names of the relevant agencies at the right of the chart below.



IF THE ORGANIZATION IN YOUR STATE DIFFERS FROM THE EXAMPLE ABOVE, PLEASE PROVIDE US WITH AN ORGANIZATION CHART OR EXPLAIN BELOW:

[ ]

State WAP Agency

18. What do you perceive to be obstacles to the optimal operation of the weatherization program? Please provide recommendations for program improvements to overcome these obstacles.

PERCENTAGE GIVING ANSWERS

BST1

1. 87.5

BST2

2. 70.8

BST3

3. 60.4

BST4

4. 31.3

BST5

5. 20.8

BST6

6. 12.5

BST7

7. 8.3

BST8

8. 2.1

State WAP Agency

19. Please use the space below to provide any additional comments you may care to make. In particular, DOE is interested in your State's goals and aspirations for WAP, and how the program can be enhanced.

52.1 Additional Comments

State WAP Agency

IN CLOSING

20. Finally, would you please provide the name, address, and telephone number of the person completing this form, just in case we have questions about your answers.

Name: _____

Title: _____

Organization: _____

Street/P.O. Box: _____

City, State: _____

ZIP Code: _____

Area code/telephone number: (_____) _____

Thank you for completing this questionnaire and helping DOE to promote effective energy efficiency programs. Please return this questionnaire at your earliest convenience in the pre-paid envelope provided. Return to:

National WAP Evaluation
c/o Applied Management Sciences, Inc.
962 Wayne Avenue
Suite 700
Silver Spring, MD 20910-4486

If you desire, you may obtain assistance in completing the questions or replace a lost questionnaire by calling 1-800-638-2784, Monday through Friday between the hours of 8:30 a.m. and 5:30 p.m. Eastern Time, and asking for Operator 26.

If we have not received your questionnaire by January 16, 1991, we will contact you by telephone to obtain your input. It would greatly facilitate the interview if you could have this questionnaire available.

Please check and sign below if you are requesting that your specific answers not be identified. (The survey data will be aggregated and reported at the regional and national levels.)

22.9% Specific answers on this questionnaire should not be identified with our agency.

Signature: 31.3 Date: _____

State WAP Agency

APPENDIX C

GLOSSARY

DEFINITIONS

BALANCING: Equitably allocating the distribution of heating or cooling to the various areas of the building envelope.

BLOWER DOOR TESTING: Identifying and quantifying air leakage in a building with a calibrated fan and gauges set.

COMBUSTION EFFICIENCY: The percentage of the heating fuel energy which is not lost in exhausting combustion gases while combustion is taking place. Stack losses are:

(i) loss due to sensible heat in dry flue gas;
(ii) loss due to incomplete combustion; and
(iii) loss due to sensible and latent heat in moisture formed by combustion of hydrogen in the fuel.

COMPACT FLORESCENT BULBS AND BALLASTS: Small florescent lamps typically of 9-22 watts which may be used to replace equivalent incandescent lamps of 40-100 watts. Compact florescent lamps can often be used in fixtures designed for incandescent lamps at an energy savings of 60 percent.

COOLING SYSTEM TUNE-UP: A normal maintenance inspection and servicing of the cooling system. The system is tested for proper operation and system components are cleaned, reset or replaced as required. Tune-ups often greatly improve efficiency at a low cost.

DISTRIBUTION BALANCING: See balancing.

DISTRIBUTION SYSTEM TESTING: Testing the efficiency of the distribution system to detect losses which occur during the transmission of conditioned air or water from the heating or cooling system to the conditioned space.

END-USE METERING: The sub-metering of end use appliances such as heating and cooling equipment, refrigerators, washing and drying machines etc. This is usually done as part of an energy audit to determine the energy consumption of various appliances and systems.

ENERGY AUDIT: Determining cost effective ways of reducing the energy consumption of a building; typically focusing on the building envelope and its mechanical systems.

ENVELOPE: The exterior wall, floor, and roof/ceiling materials of a building that enclose conditioned spaces and through which thermal energy may be transmitted to or from the interior to an unconditioned space. These include doors and windows.

HEATING SYSTEM TUNE-UP: A normal maintenance inspection and servicing of the heating system. The tune-up consists of testing the system for proper operation and ensuring that components are cleaned, reset or replaced as required. Tune-ups often greatly increase efficiency at a low cost.

HIGH DENSITY INSULATION: Installing insulation at a higher than conventional density so insulation voids and air leakage paths are reduced to an absolute minimum.

HVAC: Heating, ventilating, and air conditioning.

INDOOR AIR QUALITY TESTING:

INFRARED SCANNING: Identifying temperature difference patterns with a thermal ongoing device to determine excessive conductive and corrective heat loss areas.

LEAK DETECTION: Leak detection is the process of identifying openings in the envelope which allow air flow into or out of the building envelope.

LOW-E WINDOW: Windows which have been coated with a special film to reduce emissivity. This coating reduces radiant heat loss: emissivity.

MEASURES OF CENTRAL TENDENCY: Measures which provide an indication of the center or middle of data. There are four common measures of central tendency:

(i) Mean is the arithmetic average. All valid observations are summed and divided by the number of observations for the variable.
(ii) Median is the value found at the 50th percentile, it is the number at the middle of the data.
(iii) Mode is the number which occurs most often.
(iv) Standard deviation is a measure of variability around the mean. The greater the standard deviation, the greater the differences of values reported for the variable.

PASSIVE SOLAR SYSTEM: A system taking advantage of solar gain through siting and construction techniques.

PVE FUNDS: Petroleum Violation Escrow Funds (Exxon, Stripper Well, Diamond Shamrock, and Texaco funds) set aside by the courts for State energy conservation funding as a result of the Warner Amendment.

RADON TESTING: Testing for radon, a naturally occurring radioactive gas known to be carcinogenic. Radon build-up may occur in tightly insulated structures.

SYSTEM RETROFIT: The redesign or rebuilding of a heating or cooling system. Usually done to extend the life of the system and to reduce operating costs by improving energy efficiency.

60/40 RULE: 10 CFR 440.18 requires that 40 percent of DOE/WAP funds be spent for materials and 60 percent for labor, net of administrative, T&TA, insurance, and low-cost/no-cost expenses.

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