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Energy Division

Characterization of the Weatherization Assistance Program Network

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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.]

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 LICOS1 (specify)	1. 6.2 2. 20.8 3. 72.9	6.2
LICSP2 LICOS2 (specify)	1. 0 2. 10.4 3. 89.6	0
LICSP3 LICOS3 (specify)	1. 0 2. 8.3 3. 91.7	0
LICSP4 LICOS4 (specify)	1. 0 2. 8.3 3. 91.7	0

Please explain if necessary 25.1

State WAP Agency

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 YES	NO	NO ANSWER	Source and Type of Certification or License (e.g., State-Certified Energy Auditor) B
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	Quarterly	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	Quar-terly	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.

State WAP Agency

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

State WAP Agency

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

State WAP Agency

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

State WAP Agency

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

State WAP Agency

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

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

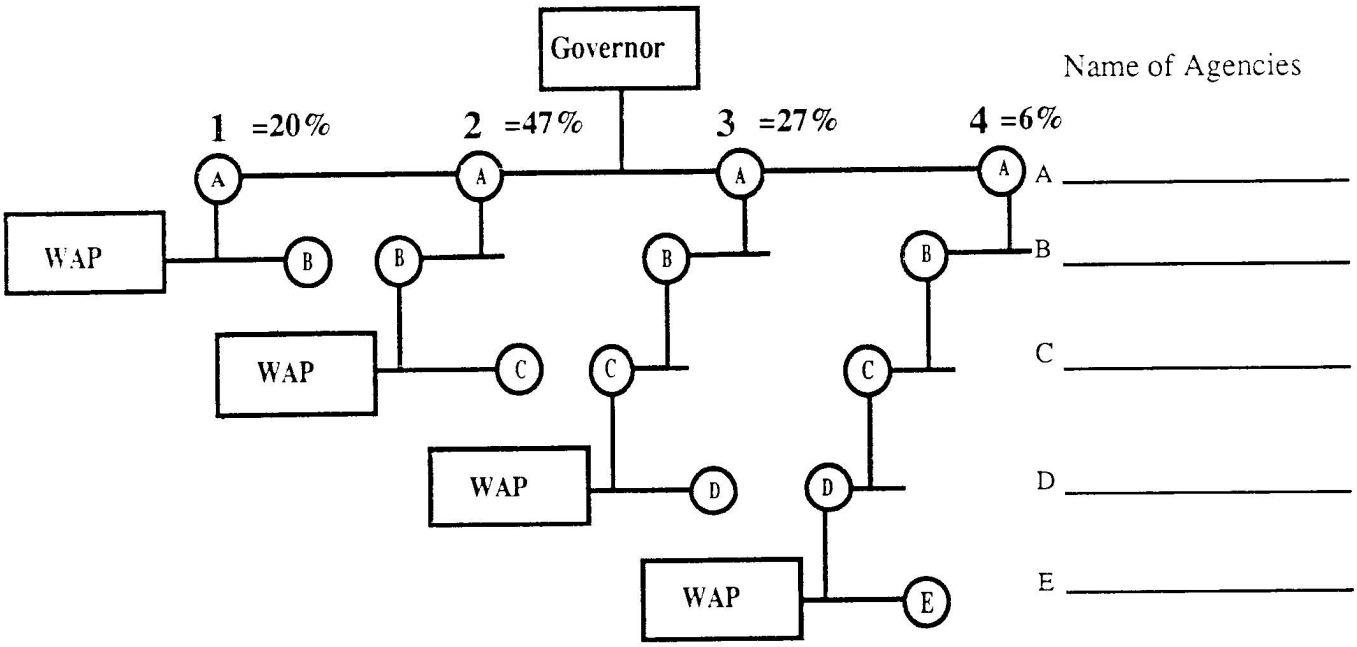
A		B					
		VI	I	UI	VUI	NO	NA
DOEIT	a. Improved Training (describe)	60.4	39.6	0	0	0	0
	39.6% NOT ANSWERING						
DOEECE	b. Enhanced Client Education (describe)	33.3	58.3	8.3	0	0	0
	54.2						
DOEGFR	c. Greater Flexibility in DOE Rules or Regulations (specify)	66.7	20.8	10.4	0	2.1	0
	37.5						
DOEGFL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

State WAP Agency

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

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%

--PLEASE PROCEED TO NEXT PAGE--

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 Non-Agency Personnel X "	Contractor V6xA 46.3%=0	Consultants V6xB 90.8=0	University V6xC 96.4=0	State V6xD 79.5=0	Utility V6xE 82.5=0	Local Govt. V6xF 86.2=0	Volunteers V6xG 86.8=0	Other (specify) _____ V6xH 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

--PLEASE PROCEED TO NEXT PAGE--

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.)

Local WAP Agency

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):

_____

_____

_____

_____

_____

_____

_____

_____

--PLEASE PROCEED TO NEXT PAGE--

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:

	SOURCE	SCORE (Please circle one for each information source) IN PERCENT				
		Never	Once a Year	Quar-terly	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

		Approximate Percentage of Completions in PY 1989 V15xA		Approximate Percentage of Completions Anticipated in PY 1991 V15xB	
Selection of Measures (Audits)					
8	For Each House, Building Envelope Measures Selected Based on Analysis of Energy Savings Per Dollar Invested	Mean 63%	Median 90%	Mean 69.7%	Median 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	
Solar Systems		Mean	Median	Mean	Median
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

Local WAP Agency

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) _____					
	_____					
	_____					
	_____					

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

ORNL/CON-325

Energy Division

The Scope of the Weatherization Assistance Program: The Weatherizated Population and the Resource Base

May 1992

Meg Power*
Joel F. Eisenberg*
Eugene Michels*
Marjorie J. Witherspoon**
Marilyn A. Brown

Research Sponsored by the
Weatherization Assistance Program
Conservation and Renewable Energy
U. S. Department of Energy

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Washington, DC 20037

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Washington, DC 20001

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MARTIN MARIETTA ENERGY SYSTEMS, INC.
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under Contract No. DE-AC05-84OR21400

PROGRAM YEARS 1978-85

STATE: S: 51

THE SCOPE OF FULL SCALE LOW INCOME WEATHERIZATION PROGRAMS

STATE MANAGERS' SURVEY

TOTALS REPORTED

1. DOE/WAP. Include data from all funding sources administered by the state DOE/WAP program under DOE Rules.

A. Total PY 78-85 funds $ 1,795,024,856

Please itemize any non DOE/WAP funds administered under DOE rules in this total:

aa. PVE	$ 27,069,494
ab. LIHEAP	$ 439,620,841
ac. STATE	$ 22,789,930
ad. Other (please specify source)	$ 14,139,352

B. Total PY 78-85 units 1,664,369

Unit types	no. of units
single family own.-occ.	864,823
single family rental	247,879
multi-family rental	187,440
mobile homes	42,670

No. Responding: 18

2. LIHEAP not administered under DOE rules. Include all funding sources administered through the LIHEAP weatherization program. Please enter PY 78-85 dates if different from DOE/WAP: _____

A. Total PY 78-85 funds $ 229,819,672

Please itemize any Non-HHS funds included in this total:

aa. PVE	$ 10.582.204
ab. STATE	$ 0
ac. Other (please specify source)	$ 2,614,813

B. Total PY 78-85 units 225,244

ba. How many if any of these units were also units reported in 1B. above? (estimate if necessary) 18,283

bb.

Unit types	no. of units
single family own.-occ	92,174
single family rental	17,486
multi-family rental	13,592
mobile homes	2,993

No. Responding: 15

C. Brief description of program purposes

	(check if applicable)
ca. same as DOE but exceeds DOE cost limits	4
cb. heating system work not permitted under state DOE program plan	9
cc. other: (please describe)	7

STATE:_____

3. Utility Full Scale Weatherization for eligible households. (Please enter dates used by most utilities which are comparable to PY 78-85 DOE/WAP: _____)

A. Total PY 78-85 funds $ 29,394,055
Please list names of utilities included in this count:

1. (22)
2. _____
3. _____
4. _____
5. _____

B. Total PY 78-85 units 7,054

ba. Of these units, how many are listed above in: 1B. 2,500 2B. 0
Please estimate how many, if any, of the total number of units represent re-weatherization of DOE, PVE or LIHEAP units completed in previous years:
0

bb.

Unit types	no. of units
single family own.-occ.	1,478
single family rental	886
multi-family	500
mobile home	250

No. Responding: 10

C. Were the utility programs listed in 3.A. mandated by the State P.U.C.? Yes 7 No 3

D. Brief description of utility programs' relationships, if any, to DOE/WAP. Check if applicable.

	Check if Yes	No. of Utilities	Est. Value
1. Use DOE subgrantees to implement	4	4	$ 0
2. Contribute material to DOE program	1	1	$ 0
3. Contribute services to DOE program	0	0	$ 0
4. Contribute funds to DOE program	1	1	$ 0
5. Other. (Please specify)	2	5	$ 0

_____

4. Other significant full-scale low income weatherization: Please list any program(s) not listed in A, B, or C, if any, which contributed 10% or more of funding available for full-scale weatherization in PY 78-85.

A. Program Name	Total PY 78-85 Funds	B. Total Units	Units also included in items above	
			No. of units	No. of Item
1. (3)	$ 19,733,387	8,675	2,327	_____
2. _____	$ _____	_____	_____	_____

C. Brief program descriptions. (Use additional pages if necessary. Please include any data available on types of units.)

1. (4) _____
2. _____

STATE:_____

5. If any housing repair or rehabilitation programs contributed funding to any units listed in items 1-4 above, please list:

Rehab. Program Name	Total $	Total Units Above	Energy Program Name
(4)	$1,869,666	4,671	(2)

6. If some units are entered as having multiple funding sources under items 1.B, 2.B, 3.B, and 4.B above, please enter the average cost for expenditures on such "mixed" units. Estimate if necessary.

a.	Units with DOE and LIHEAP funds (item 2.ba)	$ 2,285	(n=9)
b.	Units with DOE and utility funds (item 3.ba.1)	$ 1,000	(n=1)
c.	Units with LIHEAP utility funds (item 3.ba.2)	$	
d.	Units with LIHEAP, DOE & utility funds (item 3.ba.3)	$	
e.	Units with "Other" program funds & DOE (item 4.B)	$ 1,962	(n=3)
f.	Other combinations (please specify):		
	_____	$ 1,294	(n=2)

7. Resources combined with Full-Scale Weatherization

a. Please check off state, local, or private and landlord contributions which were combined with, and add to, the resources of any of the full scale low-income weatherization programs above, but which were not themselves full-scale programs.

	Type of Support (check all that apply)							
Please List Funds' Source	No-cost/ Low-cost	Materials	Funds	Labor	Other	No. of Units	Est. Value	Combined with which Program?
(5)	0	2	0	4	0	5,263	$ 732,880	(5)
							$	
							$	
							$	

(use more pages if necessary)

Please circle any of the above which, in your judgement, would not have been available to eligible households without the existence of the Weatherization Assistance Program.

If you entered data on Items 3 or 4, please answer the following:

Can the availability and/or scope of the full scale utility programs or other programs listed in Items 3 and 4 be attributed to existence of the DOE Weatherization Assistance Program? Yes 8 No 0

If yes, please explain briefly (1)

_____

PROGRAM YEAR 1986

STATE: S: 5.

THE SCOPE OF FULL SCALE LOW INCOME WEATHERIZATION PROGRAMS

STATE MANAGERS' SURVEY

TOTALS REPORTED

1. DOE/WAP. Include data from all funding sources administered by the state DOE/WAP program under DOE Rules.

A. Total PY 86 funds $ 358,127,612

Please itemize any non DOE/WAP funds administered under DOE rules in this total:

aa. PVE	$ 57,351,931
ab. LIHEAP	$ 113,194,449
ac. STATE	$ 3,182,200
ad. Other (please specify source)	$ 0

B. Total PY 86 units 272,383

Unit types	no. of units
single family own.-occ.	116,391
single family rental	45,3-3
multi-family rental	49,012
mobile homes	10,068

No. Responding: 14

2. LIHEAP not administered under DOE rules. Include all funding sources administered through the LIHEAP weatherization program. Please enter PY 86 dates if different from DOE/WAP: _____

A. Total PY 86 funds $ 46,150,560

Please itemize any Non-HHS funds included in this total:

aa. PVE	$ 4,000,000
ab. STATE	$ 0
ac. Other (please specify source)	$ 0

B. Total PY 86 units 40,536

ba. How many if any of these units were also units reported in 1B. above? (estimate if necessary) 9,869

bb.

Unit types	no. of units
single family own.-occ	9,535
single family rental	4,937
multi-family rental	5,716
mobile homes	1,157

No. Responding: 13

C. Brief description of program purposes (check if applicable)

ca. same as DOE but exceeds DOE cost limits	6
cb. heating system work not permitted under state DOE program plan	9
cc. other: (please describe)	7

STATE:_____

3. Utility Full Scale Weatherization for eligible households. (Please enter dates used by most utilities which are comparable to PY 86 DOE/WAP: _____)

A. Total PY 86 Funds $ 9,976,263

Please list names of utilities included in this count:

1. (11)
2. _____
3. _____
4. _____
5. _____

B. Total PY 86 Units 18,830

ba. Of these units, how many are listed above in: 1B. 1,228 2B. 128
Please estimate how many, if any, of the total number of units represent re-weatherization of DOE, PVE or LIHEAP units completed in previous years: 128

bb.

Unit types	no. of units
single family own.-occ.	924
single family rental	412
multi-family	251
mobile home	114

No. Responding: 5

C. Were the utility programs listed in 3.A. mandated by the State P.U.C.? Yes 4 No 1

D. Brief description of utility programs' relationships, if any, to DOE/WAP. Check if applicable.

	Check if Yes	No. of Utilities	Est. Value
1. Use DOE subgrantees to implement	6	8	$ 206,863
2. Contribute material to DOE program	1	1	$ 0
3. Contribute services to DOE program	0	0	$ 0
4. Contribute funds to DOE program	1	1	$ 0
5. Other. (Please specify)	2	5	$ 0

_____

4. Other significant full-scale low income weatherization: Please list any program(s) not listed in A, B, or C, if any, which contributed 10% or more of funding available for full-scale weatherization in PY 86.

A. Program Name	Total PY 86 Funds	B. Total Units	Units also included in items above	
			No. of units	No. of Item
1. (5)	$ 7,448,654	4,073	1,002	
2. _____	$ _____	_____	_____	_____

C. Brief program descriptions. (Use additional pages if necessary. Please include any data available on types of units.)

1. (3) _____
2. _____

5. If any housing repair or rehabilitation programs contributed funding to any units listed in items 1-4 above, please list

Rehab. Program Name	Total $	Total Units Above	Energy Program Name
(11)	$2,855,239	2,586	(8)

6. If some units are entered as having multiple funding sources under items 1.B, 2.B, 3.B, and 4.B above, please enter the average cost for expenditures on such "mixed" units. Estimate if necessary.

a.	Units with DOE and LIHEAP funds (Item 2.ba)	$ 2,725	(n=5)
b.	Units with DOE and utility funds (Item 3.ba.1)	$ 2,120	(n=1)
c.	Units with LIHEAP utility funds (Item 3.ba.2)	$ 2,411	(n=2)
d.	Units with LIHEAP, DOE & utility funds (Item 3.ba.3)	$	
e.	Units with "Other" program funds & DOE (Item 4.B)	$ 2,450	(n=2)
f.	Other combinations (please specify): _____	$ 2,100	(n=2)

7. Resources combined with Full-Scale Weatherization

a. Please check off state, local, or private and landlord contributions which were combined with, and add to, the resources of any of the full scale low-income weatherization programs above, but which were not themselves full-scale programs.

	Type of Support (check all that apply)							
Please List Funds' Source	No-cost/ Low-cost	Materials	Funds	Labor	Other	No. of Units	Est. Value	Combined with which Program?
(4)	0	3	0	4	0	208	$ 522,378	(4)
							$	
							$	
							$	

(use more pages if necessary)

Please circle any of the above which, in your judgement, would not have been available to eligible households without the existence of the Weatherization Assistance Program.

If you entered data on Items 3 or 4, please answer the following:

Can the availability and/or scope of the full scale utility programs or other programs listed in Items 3 and 4 be attributed to existence of the DOE Weatherization Assistance Program? Yes 6 No 1

If yes, please explain briefly (0)

PROGRAM YEAR 1987

STATE: S: 50

THE SCOPE OF FULL SCALE LOW INCOME WEATHERIZATION PROGRAMS

STATE MANAGERS' SURVEY

TOTALS REPORTED

1. DOE WAP Include data from all funding sources administered by the state DOE/WAP program under DOE Rules.

A. Total PY 87 funds $ 408,384,527

Please itemize any non DOE/WAP funds administered under DOE rules in this total:

aa. PVE $ 130,228,194

ab. LIHEAP $ 99,346,902

ac. STATE $ 3,000,000

ad. Other $ 0
(please specify source)

B. Total PY 87 units 247,652

Unit types	no. of units
single family own.-occ.	123,609
single family rental	45,757
multi-family rental	53,175
mobile homes	11,887

No. Responding: 19

2. LIHEAP not administered under DOE rules. Include all funding sources administered through the LIHEAP weatherization program. Please enter PY 87 dates if different from DOE/WAP: _____

A. Total PY 87 funds $ 85,626,388

Please itemize any Non-HHS funds included in this total:

aa. PVE $ 13,856,770

ab. STATE $ 200,000

ac. Other $ 0
(please specify source)

B. Total PY 87 units 57,478

ba. How many if any of these units were also units reported in 1B. above? (estimate if necessary) 11,753

bb.

Unit types	no. of units
single family own.-occ	15,858
single family rental	6,558
multi-family rental	4,021
mobile homes	1,234

No. Responding: 16

C. Brief description of program purposes

	(check if applicable)
ca. same as DOE but exceeds DOE cost limits	7
cb. heating system work not permitted under state DOE program plan	8
cc. other: (please describe)	8

STATE:_____

3. Utility Full Scale Weatherization for eligible households. (Please enter dates used by most utilities which are comparable to PY 87 DOE/WAP: _____)

A. Total PY 87 Funds $ 2,862,209

B. Total PY 87 Units 4,132

Please list names of utilities included in this count:

1. (12)
2. _____
3. _____
4. _____
5. _____

ba. Of these units, how many are listed above in: 1B. 2,170 2B. 170
Please estimate how many, if any, of the total number of units represent re-weatherization of DOE, PVE or LIHEAP units completed in previous years:
170

bb.

Unit types	no. of units
single family own.-occ.	1,464
single family rental	687
multi-family	456
mobile home	203

No. Responding: 3

C. Were the utility programs listed in 3.A. mandated by the State P.U.C.? Yes 3 No _____

D. Brief description of utility programs' relationships, if any, to DOE/WAP. Check if applicable.

	Check if Yes	No. of Utilities	Est. Value
1. Use DOE subgrantees to implement	5	5	$ 275,809
2. Contribute material to DOE program	2	1	$ 0
3. Contribute services to DOE program	0	0	$ 0
4. Contribute funds to DOE program	1	1	$ 0
5. Other. (Please specify)	2	5	$ 0

_____

4. Other significant full-scale low income weatherization: Please list any program(s) not listed in A, B, or C, if any, which contributed 10% or more of funding available for full-scale weatherization in PY 87.

A. Program Name	Total PY 87 Funds	B. Total Units	Units also included in items above	
			No. of units	No. of Item
1. (5)	$ 5,345,473	4,107	1,468	_____
2. _____	$ _____	_____	_____	_____

C. Brief program descriptions. (Use additional pages if necessary. Please include any data available on types of units.)

1. (3) _____
2. _____

5. If any housing repair or rehabilitation programs contributed funding to any units listed in items 1-4 above, please list.

Rehab. Program Name	Total $	Total Units Above	Energy Program Name
(12)	$ 6,517,532	3,963	(9)

6. If some units are entered as having multiple funding sources under items 1.B, 2.B, 3.B, and 4.B above, please enter the average cost for expenditures on such "mixed" units. Estimate if necessary.

a.	Units with DOE and LIHEAP funds (item 2.ba)	$ 3,131	(n=3)
b.	Units with DOE and utility funds (item 3.ba.1)	$ 2,306	(n=2)
c.	Units with LIHEAP utility funds (item 3.ba.2)	$ 2,726	(n=2)
d.	Units with LIHEAP, DOE & utility funds (item 3.ba.3)	$ 3,000	(n=1)
e.	Units with "Other" program funds & DOE (item 4.B)	$ 2,250	(n=1)
f.	Other combinations (please specify):		
	_____	$ 1,825	(n=3)

7. Resources combined with Full-Scale Weatherization

a. Please check off state, local, or private and landlord contributions which were combined with, and add to, the resources of any of the full scale low-income weatherization programs above, but which were not themselves full-scale programs.

	Type of Support (check all that apply)							
Please List Funds' Source	No-cost/ Low-cost	Materials	Funds	Labor	Other	No. of Units	Est. Value	Combined with which Program?
(11)	0	5	1	7	0	4,072	$ 1,655,240	(9)
							$	
							$	
(use more pages if necessary)							$	

Please circle any of the above which, in your judgement, would not have been available to eligible households without the existence of the Weatherization Assistance Program.

If you entered data on Items 3 or 4, please answer the following:

Can the availability and/or scope of the full scale utility programs or other programs listed in Items 3 and 4 be attributed to existence of the DOE Weatherization Assistance Program? Yes 7 No 1

If yes, please explain briefly (0)

PROGRAM YEAR 1988

STATE: 51

THE SCOPE OF FULL SCALE LOW INCOME WEATHERIZATION PROGRAMS

STATE MANAGERS' SURVEY

TOTALS REPORTED

1. DOE/WAP. Include data from all funding sources administered by the state DOE/WAP program under DOE Rules.

A. Total PY 88 funds $ 398,920,856

Please itemize any non DOE/WAP funds administered under DOE rules in this total:

aa. PVE $ 173,209,048

ab. LIHEAP $ 53,918,995

ac. STATE $ 3,200,000

ad. Other $ 243,000
(please specify source)

B. Total PY 88 units 241,921

Unit types	no. of units
single family own.-occ.	116,88-
single family rental	47,01-
multi-family rental	55,798
mobile homes	11,529

No. Responding: 17

2. LIHEAP not administered under DOE rules. Include all funding sources administered through the LIHEAP weatherization program. Please enter PY 88 dates if different from DOE/WAP: _____

A. Total PY 88 funds $ 100,824,583

Please itemize any Non-HHS funds included in this total:

aa. PVE $ 33,362,296

ab. STATE $ 0

ac. Other $ 0
(please specify source)

B. Total PY 88 units 48,255

ba. How many if any of these units were also units reported in 1B. above? (estimate if necessary) 11,858

bb.

Unit types	no. of units
single family own.-occ	14,482
single family rental	5,173
multi-family rental	6,587
mobile homes	1,985

No. Responding: 16

C. Brief description of program purposes (check if applicable)

ca. same as DOE but exceeds DOE cost limits 7

cb. heating system work not permitted under state DOE program plan 10

cc. other: (please describe) 5

STATE:_____

3. Utility Full Scale Weatherization for eligible households. (Please enter dates used by most utilities which are comparable to PY 88 DOE/WAP: _____)

A. Total PY 88 Funds $ 16,318,184

B. Total PY 88 Units 20,477

Please list names of utilities included in this count:

1. (14)
2. _____
3. _____
4. _____
5. _____

ba. Of these units, how many are listed above in: 1B. 3,200 2B. 0
Please estimate how many, if any, of the total number of units represent re-weatherization of DOE, PVE or LIHEAP units completed in previous years: 0

bb.

Unit types	no. of units
single family own.-occ.	1,631
single family rental	984
multi-family	640
mobile home	323

No. Responding: 5

C. Were the utility programs listed in 3.A. mandated by the State P.U.C.? Yes 4 No 1

D. Brief description of utility programs' relationships, if any, to DOE/WAP. Check if applicable.

	Check if Yes	No. of Utilities	Est. Value
1. Use DOE subgrantees to implement	6	6	$ 0
2. Contribute material to DOE program	1	1	$ 0
3. Contribute services to DOE program	0	0	$ 0
4. Contribute funds to DOE program	1	1	$ 0
5. Other. (Please specify)	2	5	$ 0

_____

4. Other significant full-scale low income weatherization: Please list any program(s) not listed in A, B, or C, if any, which contributed 10% or more of funding available for full-scale weatherization in PY 88.

A. Program Name	Total PY 88 Funds	B. Total Units	Units also included in items above	
			No. of units	No. of Item
1. (4)	$ 2,324,512	3,156	1,689	
2. _____	$ _____	_____	_____	_____

C. Brief program descriptions. (Use additional pages if necessary. Please include any data available on types of units.)

1. (2)
2. _____

5. If any housing repair or rehabilitation programs contributed funding to any units listed in items 1-4 above, please list:

Rehab. Program Name	Total $	Total Units Above	Energy Program Name
(11)	$2,066,014	1,809	(8)

6. If some units are entered as having multiple funding sources under items 1.B, 2.B, 3.B, and 4.B above, please enter the average cost for expenditures on such "mixed" units. Estimate if necessary.

a.	Units with DOE and LIHEAP funds (item 2.ba)	$ 3,002	(n=4)
b.	Units with DOE and utility funds (item 3.ba.1)	$ 2,600	(n=1)
c.	Units with LIHEAP utility funds (item 3.ba.2)	$ 3,000	(n=1)
d.	Units with LIHEAP, DOE & utility funds (item 3.ba.3)	$ 3,000	(n=1)
e.	Units with "Other" program funds & DOE (item 4.B)	$ 2,472	(n=1)
f.	Other combinations (please specify): _____	$ 1,923	(n=3)

7. Resources combined with Full-Scale Weatherization

a. Please check off state, local, or private and landlord contributions which were combined with, and add to, the resources of any of the full scale low-income weatherization programs above, but which were not themselves full-scale programs.

	Type of Support (check all that apply)							
Please List Funds' Source	No-cost/ Low-cost	Materials	Funds	Labor	Other	No. of Units	Est. Value	Combined with which Program?
(10)	0	6	1	7	0	4,536	$ 1,865,555	(9)
							$	
							$	
							$	

(use more pages if necessary)

Please circle any of the above which, in your judgement, would not have been available to eligible households without the existence of the Weatherization Assistance Program.

If you entered data on Items 3 or 4, please answer the following:

Can the availability and/or scope of the full scale utility programs or other programs listed in Items 3 and 4 be attributed to existence of the DOE Weatherization Assistance Program? Yes 7 No 1

If yes, please explain briefly (0)

PROGRAM YEAR 1989

STATE: S: 5

THE SCOPE OF FULL SCALE LOW INCOME WEATHERIZATION PROGRAMS

STATE MANAGERS' SURVEY

TOTALS REPORTED

1. DOE/WAP. Include data from all funding sources administered by the state DOE/WAP program under DOE Rules.

A. Total PY 89 funds $ 379,935,664

B. Total PY 89 units 227,672

Please itemize any non DOE/WAP funds administered under DOE rules in this total:

aa. PVE	$ 170,450,735
ab. LIHEAP	$ 58,065,855
ac. STATE	$ 450,000
ad. Other (please specify source)	$ 3,709,395

Unit types	no. of units
single family own.-occ.	113,676
single family rental	45,438
multi-family rental	46,815
mobile homes	13,861

No. Responding: 16

2. LIHEAP not administered under DOE rules. Include all funding sources administered through the LIHEAP weatherization program. Please enter PY 89 dates if different from DOE/WAP: _____

A. Total PY 89 funds $ 61,305,823

B. Total PY 89 units 55,502

Please itemize any Non-HHS funds included in this total:

aa. PVE	$ 4,127,731
ab. STATE	$ 0
ac. Other (please specify source)	$ 0

ba. How many if any of these units were also units reported in 1B. above? (estimate if necessary) 12,609

bb.

Unit types	no. of units
single family own.-occ	16,176
single family rental	10,151
multi-family rental	24,811
mobile homes	2,740

No. Responding: 15

C. Brief description of program purposes (check if applicable)

ca. same as DOE but exceeds DOE cost limits	6
cb. heating system work not permitted under state DOE program plan	12
cc. other: (please describe) _____	5

STATE:_____

3. Utility Full Scale Weatherization for eligible households. (Please enter dates used by most utilities which are comparable to PY 89 DOE/WAP: _____)

A. Total PY 89 Funds $ 16,566,966

B. Total PY 89 Units 15,779

Please list names of utilities included in this count:

1. (14)
2. _____
3. _____
4. _____
5. _____

ba. Of these units, how many are listed above in: 1B. 1,350 2B. 0
Please estimate how many, if any, of the total number of units represent re-weatherization of DOE, PVE or LIHEAP units completed in previous years: 0

bb.

Unit types	no. of units
single family own.-occ.	687
single family rental	411
multi-family	275
mobile home	138

No. Responding: 4

C. Were the utility programs listed in 3.A. mandated by the State P.U.C.? Yes 3 No 1

D. Brief description of utility programs' relationships, if any, to DOE/WAP. Check if applicable.

	Check if Yes	No. of Utilities	Est. Value
1. Use DOE subgrantees to implement	5	6	$ 0
2. Contribute material to DOE program	1	1	$ 0
3. Contribute services to DOE program	0	0	$ 0
4. Contribute funds to DOE program	0	0	$ 0
5. Other. (Please specify)	2	5	$ 0

_____

4. Other significant full-scale low income weatherization: Please list any program(s) not listed in A, B, or C, if any, which contributed 10% or more of funding available for full-scale weatherization in PY 89.

A. Program Name	Total PY 89 Funds	B. Total Units	Units also included in items above	
			No. of units	No. of Item
1. (9)	$ 24,306,021	4,094	1,776	
2. _____	$ _____	_____	_____	_____

C. Brief program descriptions. (Use additional pages if necessary. Please include any data available on types of units.)

1. (5)
2. _____

STATE:_____

5. If any housing repair or rehabilitation programs contributed funding to any units listed in items 1-4 above, please list:

Rehab. Program Name	Total $	Total Units Above	Energy Program Name
(13)	$3,810,506	2,069	(7)

6. If some units are entered as having multiple funding sources under items 1.B, 2.B, 3.B, and 4.B above, please enter the average cost for expenditures on such "mixed" units. Estimate if necessary.

a.	Units with DOE and LIHEAP funds (item 2.ba)	$ 3,214	(n=2)
b.	Units with DOE and utility funds (item 3.ba.1)	$	
c.	Units with LIHEAP utility funds (item 3.ba.2)	$	
d.	Units with LIHEAP, DOE & utility funds (item 3.ba.3)	$	
e.	Units with "Other" program funds & DOE (item 4.B)	$ 2,716	(n=2)
f.	Other combinations (please specify):		
	_____	$ 2,267	(n=4)

7. Resources combined with Full-Scale Weatherization

a. Please check off state, local, or private and landlord contributions which were combined with, and add to, the resources of any of the full scale low-income weatherization programs above, but which were not themselves full-scale programs.

	Type of Support (check all that apply)							
Please List Funds' Source	No-cost/ Low-cost	Materials	Funds	Labor	Other	No. of Units	Est. Value	Combined with which Program?
(17)	0	9	1	10	3	1,540	$ 6,191,655	(16)
							$	
							$	
							$	

(use more pages if necessary)

Please circle any of the above which, in your judgement, would not have been available to eligible households without the existence of the Weatherization Assistance Program.

If you entered data on items 3 or 4, please answer the following:

Can the availability and/or scope of the full scale utility programs or other programs listed in items 3 and 4 be attributed to existence of the DOE Weatherization Assistance Program? Yes 11 No 1

If yes, please explain briefly (1) _____

PY 1978-85
mo/yr - mo/yr

Company Name _____

No. Responding: 98

US DEPARTMENT OF ENERGY
WEATHERIZATION ASSISTANCE EVALUATION

THE SCOPE OF UTILITY LOW INCOME WEATHERIZATION PROGRAMS

1. Please provide the following data on any **full scale low income weatherization** (see instructions) offered in PY 1978-85. If your company did not run such programs, please go to Question 3.

A. Total funds spent on weatherization program: $ 113,803,660 (n=24)

B. Total units completed in whole or in part with utility resources: 306,719 (n=24)

Unit Types (n=15)	No. of Units
1. single family, owner occupied	53,005
2. single family, rental	23,564
3. multi-family, rental	38,103
4. mobile homes	303

C. Was the program mandated by the body that regulates the utility?

Yes	No
11	0

D. If any of the units listed in item B above involved combining your program with publicly-funded program resources, please indicate the following:

1. Number of units among those in 1.B. with combined utility and public program resources: 76,840 (n=11)

2. The publicly funded program(s):

	Please Check
a. U.S. Department of Energy Weatherization	5
b. U.S. Department of Health and Human Services Low-Income Home Energy Assistance Program's Weatherization (LIHEAP)	4
c. State program (please give name) _____	4
d. Other (please specify) _____	6

E. If this utility program used local agencies which are also Department of Energy Weatherization subcontractors as its subcontractors, please check here. 13

F. Please check any of the measures below offered by the utility weatherization program as part of a full scale weatherization program.

1. Insulation, heat loss
   - a. attic insulation 22
   - b. wall insulation 11
   - c. basement insulation 9
   - d. wrap water heater/ducts 24
   - e. other (please specify) 11

2. Air or water leakage
   - a. weatherstrip/caulk 2
   - b. window replacement 8
   - c. storm windows/doors 15
   - d. home repairs 10
   - e. other (please specify) 7

3. Heating system
   - a. repair/tune up 5
   - b. replacement 5
   - c. other 1

4. Hot water system
   - a. repair/tune up 5
   - b. replacement 2
   - c. other 1

5. Major appliance replacement 0

6. Lighting measures 1

7. Miscelllaneous
   - a. water saving measures 7
   - b. cooling measures 1
   - c. other (please specify) 2

2. In addition to the activities above, did the company in PY 1978-85 donate energy conservation resources directly to public sector low-income weatherization programs? If yes, please indicate:

Total funding $_____ No. of units assisted _____

Type of Resource (please check all applicable)

cash	_____	equipment	_____
materials	_____	training	_____
personnel	_____	Other (please specify)	_____
vehicles	_____		

Program receiving resources (please check all applicable)

Department of Energy Weatherization _____

State Program (please name) _____

Other (please specify) _____

3. If your company provided other forms of energy conservation assistance to low income households at no charge, please indicate below:

Measure	Check If Yes	No. of Low Income Recipient Households (Only)	Average Cost Per Household Max/Min
blower door test	0	0	
heating system performance test	8	6,251	$55/8
cooling system performance test	1	0	
heating/cooling system safety test	2	800	
indoor air quality instrumented test	2	27	$25/25
light bulbs, lighting measures	3	0	$25/25
attic insulation	8	26,610	$25/25
wall insulation	6	0	
heating system:			
repair/tune up	7	1,978	$561/70
replacement	4	251	$1,680/1,500
water heater:			
repair/tune up	3	175	
replacement			
window replacement	3	0	
storm windows/door	12	29	$25/25
home repairs	5	0	$25/25
caulk or weather strip	17	61,976	$50/6
low cost/no cost kit	9	26,004	$80/4
water system wrap up	6	69	$12/7
duct wrap up	3	615	
client education/information			
if yes: by mail	15	332,055	$397/0.04
at home training	18	21,542	$150/10
center based training	7	240	$100/10
cooling measures	2	0	
major appliance replacement	2	0	
Other (please specify)	3	35	$30/30

PY 1986
mo/yr - mo/yr

Company Name _____

_____

No. Responding: 57

US DEPARTMENT OF ENERGY
WEATHERIZATION ASSISTANCE EVALUATION

THE SCOPE OF UTILITY LOW INCOME WEATHERIZATION PROGRAMS

1. Please provide the following data on any **full scale low income weatherization** (see instructions) offered in PY 1986. If your company did not run such programs, please go to Question 3.

A. Total funds spent on weatherization program: $ 40,069,871 (n=22)

B. Total units completed in whole or in part with utility resources: 136,868 (n=23)

Unit Types (n=18)	No. of Units
1. single family, owner occupied	73,645
2. single family, rental	8,755
3. multi-family, rental	35,788
4. mobile homes	170

C. Was the program mandated by the body that regulates the utility?

Yes	No
11	16

D. If any of the units listed in item B above involved combining your program with publicly-funded program resources, please indicate the following:

1. Number of units among those in 1.B. with combined utility and public program resources: 22,274 (n=10)

2. The publicly funded program(s):

	Please Check
a. U.S. Department of Energy Weatherization	4
b. U.S. Department of Health and Human Services Low-Income Home Energy Assistance Program's Weatherization (LIHEAP)	5
c. State program (please give name) _____	7
d. Other (please specify) _____	4

E. If this utility program used local agencies which are also Department of Energy Weatherization subcontractors as its subcontractors, please check here. 10

1986

F. Please check any of the measures below offered by the utility weatherization program as part of a full scale weatherization program.

1. Insulation, heat loss
   - a. attic insulation: 21
   - b. wall insulation: 10
   - c. basement insulation: 9
   - d. wrap water heater/ducts: 22
   - e. other (please specify): 10

2. Air or water leakage
   - a. weatherstrip/caulk: 25
   - b. window replacement: 9
   - c. storm windows/doors: 15
   - d. home repairs: 12
   - e. other (please specify): 10

3. Heating system
   - a. repair/tune up: 7
   - b. replacement: 5
   - c. other: 0

4. Hot water system
   - a. repair/tune up: 5
   - b. replacement: 4
   - c. other: 0

5. Major appliance replacement: 0

6. Lighting measures: 1

7. Miscelllaneous
   - a. water saving measures: 8
   - b. cooling measures: 1
   - c. other (please specify): 2

2. In addition to the activities above, did the company in PY 1986 donate energy conservation resources directly to public sector low-income weatherization programs? If yes, please indicate:

Total funding $_____ No. of units assisted _____

Type of Resource (please check all applicable)

cash	_____	equipment	_____
materials	_____	training	_____
personnel	_____	Other (please specify)	_____
vehicles	_____		

Program receiving resources (please check all applicable)

Department of Energy Weatherization _____

State Program (please name) _____

Other (please specify) _____

3. If your company provided other forms of energy conservation assistance to low income households at no charge, please indicate below:

Measure	Check If Yes	No. of Low Income Recipient Households (Only)	Average Cost Per Household Max/Min
blower door test	3	1,050	$50/50
heating system performance test	8	3,042	$100/9
cooling system performance test	1	0	
heating/cooling system safety test	4	4,375	$30/30
indoor air quality instrumented test	3	9	$25/25
light bulbs, lighting measures	2	0	$30/30
attic insulation	8	11,728	$30/30
wall insulation	6	0	$30/30
heating system:			
repair/tune up	8	1,331	$590/75
replacement	6	204	$1,680/906
water heater:			
repair/tune up	5	503	$30/30
replacement			
window replacement	4	0	$17/17
storm windows/door	9	0	$500/500
home repairs	7	0	$500/30
caulk or weather strip	16	43,337	$250/4
low cost/no cost kit	10	13,876	$147/0
water system wrap up	10	2,206	$59/9
duct wrap up	3	48	$20/20
client education/information			
if yes: by mail	15	89,432	$381/0.03
at home training	18	5,247	$166/30
center based training	6	40	$100/100
cooling measures	1	0	
major appliance replacement	1	0	
Other (please specify)	6	113	$62/32

PY 1987
mo/yr - mo/yr

Company Name _____

No. Responding: 59

US DEPARTMENT OF ENERGY
WEATHERIZATION ASSISTANCE EVALUATION

THE SCOPE OF UTILITY LOW INCOME WEATHERIZATION PROGRAMS

1. Please provide the following data on any **full scale low income weatherization** (see instructions) offered in PY 1987. If your company did not run such programs, please go to Question 3.

A. Total funds spent on weatherization program — $ 78,900,949 (n=30)

B. Total units completed in whole or in part with utility resources — 182,042 (n=31)

Unit Types (n=23)	No. of Units
1. single family, owner occupied	30,664
2. single family, rental	8,492
3. multi-family, rental	31,316
4. mobile homes	734

C. Was the program mandated by the body that regulates the utility?

Yes	No
12	20

D. If any of the units listed in item B above involved combining your program with publicly-funded program resources, please indicate the following:

1. Number of units among those in 1.B. with combined utility and public program resources — 25,717 (n=16)

2. The publicly funded program(s):

	Please Check
a. U.S. Department of Energy Weatherization	7
b. U.S. Department of Health and Human Services Low-Income Home Energy Assistance Program's Weatherization (LIHEAP)	8
c. State program (please give name) _____	8
d. Other (please specify) _____	5

E. If this utility program used local agencies which are also Department of Energy Weatherization subcontractors as its subcontractors, please check here. — 14

F. Please check any of the measures below offered by the utility weatherization program as part of a full scale weatherization program.

1. Insulation, heat loss
   - a. attic insulation 29
   - b. wall insulation 15
   - c. basement insulation 16
   - d. wrap water heater/ducts 28
   - e. other (please specify) 13

2. Air or water leakage
   - a. weatherstrip/caulk 30
   - b. window replacement 16
   - c. storm windows/doors 21
   - d. home repairs 15
   - e. other (please specify) 10

3. Heating system
   - a. repair/tune up 10
   - b. replacement 7
   - c. other 0

4. Hot water system
   - a. repair/tune up 5
   - b. replacement 4
   - c. other 2

5. Major appliance replacement 0

6. Lighting measures 3

7. Miscelllaneous
   - a. water saving measures 8
   - b. cooling measures 0
   - c. other (please specify) 3

2. In addition to the activities above, did the company in PY 1987 donate energy conservation resources directly to public sector low-income weatherization programs? If yes, please indicate:

Total funding $_____ No. of units assisted _____

Type of Resource (please check all applicable)

cash	_____	equipment	_____
materials	_____	training	_____
personnel	_____	Other (please specify)	_____
vehicles	_____		

Program receiving resources (please check all applicable)

Department of Energy Weatherization _____

State Program (please name) _____

Other (please specify) _____

3. If your company provided other forms of energy conservation assistance to low income households at no charge, please indicate below:

Measure	Check If Yes	No. of Low Income Recipient Households (Only)	Average Cost Per Household Max/Min
blower door test	5	1,301	$538/50
heating system performance test	7	3,500	$35/9
cooling system performance test	1	0	
heating/cooling system safety test	4	4,075	$35/35
indoor air quality instrumented test	3	9	$25/25
light bulbs, lighting measures	3	77	$376/30
attic insulation	11	7,869	$630/30
wall insulation	9	77	$630/30
heating system:			
repair/tune up	7	1,030	$90/90
replacement	6	315	$1,500/906
water heater:			
repair/tune up	5	530	$30/30
replacement			
window replacement	5	0	$20/20
storm windows/door	9	0	$500/500
home repairs	7	0	$500/30
caulk or weather strip	18	41,583	$30/4
low cost/no cost kit	12	15,565	$186/4
water system wrap up	10	2,431	$59/9
duct wrap up	6	44	$20/20
client education/information			
if yes: by mail	17	92,719	$775/0.03
at home training	17	7,631	$150/30
center based training	8	690	$100/93
cooling measures	2	0	
major appliance replacement	2	0	
Other (please specify)	6	240	$500/34

PY 1988
mo/yr - mo/yr

Company Name _____

_____

No. Responding: 55

US DEPARTMENT OF ENERGY
WEATHERIZATION ASSISTANCE EVALUATION

THE SCOPE OF UTILITY LOW INCOME WEATHERIZATION PROGRAMS

1. Please provide the following data on any **full scale low income weatherization** (see instructions) offered in PY 1988. If your company did not run such programs, please go to Question 3.

A. Total funds spent on weatherization program — $ 77,561,119 (n=31)

B. Total units completed in whole or in part with utility resources — 178,238 (n=29)

Unit Types (n=22)	No. of Units
1. single family, owner occupied	28,104
2. single family, rental	7,669
3. multi-family, rental	28,223
4. mobile homes	205

C. Was the program mandated by the body that regulates the utility?

Yes	No
14	16

D. If any of the units listed in item B above involved combining your program with publicly-funded program resources, please indicate the following:

1. Number of units among those in 1.B. with combined utility and public program resources — 21,600 (n=15)

2. The publicly funded program(s):

	Please Check
a. U.S. Department of Energy Weatherization	5
b. U.S. Department of Health and Human Services Low-Income Home Energy Assistance Program's Weatherization (LIHEAP)	5
c. State program (please give name) _____	11
d. Other (please specify) _____	6

E. If this utility program used local agencies which are also Department of Energy Weatherization subcontractors as its subcontractors, please check here. — 16

1988

F. Please check any of the measures below offered by the utility weatherization program as part of **a full scale weatherization** program.

1. Insulation, heat loss
   - a. attic insulation 29
   - b. wall insulation 15
   - c. basement insulation 15
   - d. wrap water heater/ducts 26
   - e. other (please specify) 11

2. Air or water leakage
   - a. weatherstrip/caulk 29
   - b. window replacement 13
   - c. storm windows/doors 21
   - d. home repairs 16
   - e. other (please specify) 12

3. Heating system
   - a. repair/tune up 13
   - b. replacement 14
   - c. other 2

4. Hot water system
   - a. repair/tune up 8
   - b. replacement 6
   - c. other 4

5. Major appliance replacement 0

6. Lighting measures 2

7. Miscelllaneous
   - a. water saving measures 10
   - b. cooling measures 2
   - c. other (please specify) 4

2. In addition to the activities above, did the company in PY 1988 donate energy conservation resources directly to public sector low-income weatherization programs? If yes, please indicate:

Total funding $_____ No. of units assisted _____

Type of Resource (please check all applicable)

cash	_____	equipment	_____
materials	_____	training	_____
personnel	_____	Other (please specify)	_____
vehicles	_____		

Program receiving resources (please check all applicable)

Department of Energy Weatherization _____

State Program (please name) _____

Other (please specify) _____

3. If your company provided other forms of energy conservation assistance to low income households at no charge, please indicate below:

Measure	Check If Yes	No. of Low Income Recipient Households (Only)	Average Cost Per Household Max/Min
blower door test	6	7,629	$538/50
heating system performance test	9	9,110	$35/9
cooling system performance test	2	0	
heating/cooling system safety test	5	6,915	$35/35
indoor air quality instrumented test	2	0	
light bulbs, lighting measures	3	10,164	$326/7
attic insulation	10	9,336	$1,265/1,265
wall insulation	8	5	$945/945
heating system:			
repair/tune up	8	6,046	$95/65
replacement	11	1,846	$1,800/691
water heater:			
repair/tune up	6	3,530	$45/30
replacement			
window replacement	6	175	$320/320
storm windows/door	7	0	
home repairs	5	0	
caulk or weather strip	18	40,418	$6/4
low cost/no cost kit	14	16,633	$182/4
water system wrap up	15	4,502	$490/9
duct wrap up	9	9	
client education/information			
if yes: by mail	17	93,336	$40/0.03
at home training	18	4,336	$180/40
center based training	7	867	$180/93
cooling measures	3	3,372	$550/550
major appliance replacement	4	323	$500/500
Other (please specify)	6	86	$62/35
_____			
_____			

PY 1989
mo/yr - mo/yr

Company Name _____

No. Responding: 65

US DEPARTMENT OF ENERGY
WEATHERIZATION ASSISTANCE EVALUATION

THE SCOPE OF UTILITY LOW INCOME WEATHERIZATION PROGRAMS

1. Please provide the following data on any **full scale low income weatherization** (see instructions) offered in PY 1989. If your company did not run such programs, please go to Question 3.

A. Total funds spent on weatherization program: $ 72,824,507 (n=37)

B. Total units completed in whole or in part with utility resources: 180,457 (n=37)

Unit Types (n=24)	No. of Units
1. single family, owner occupied	115,946
2. single family, rental	7,712
3. multi-family, rental	50,179
4. mobile homes	541

C. Was the program mandated by the body that regulates the utility?

Yes	No
15	21

D. If any of the units listed in item B above involved combining your program with publicly-funded program resources, please indicate the following:

1. Number of units among those in 1.B. with combined utility and public program resources: 9,954 (n=18)

2. The publicly funded program(s):

	Please Check
a. U.S. Department of Energy Weatherization	10
b. U.S. Department of Health and Human Services Low-Income Home Energy Assistance Program's Weatherization (LIHEAP)	10
c. State program (please give name) _____	12
d. Other (please specify) _____	6

E. If this utility program used local agencies which are also Department of Energy Weatherization subcontractors as its subcontractors, please check here. 18

1989

F. Please check any of the measures below offered by the utility weatherization program as part of a full scale weatherization program.

1. Insulation, heat loss
   a. attic insulation 33
   b. wall insulation 20
   c. basement insulation 19
   d. wrap water heater/ducts 31
   e. other (please specify) 12

2. Air or water leakage
   a. weatherstrip/caulk 31
   b. window replacement 18
   c. storm windows/doors 22
   d. home repairs 17
   e. other (please specify) 11

3. Heating system
   a. repair/tune up 15
   b. replacement 15
   c. other 1

4. Hot water system
   a. repair/tune up 9
   b. replacement 8
   c. other 2

5. Major appliance replacement 0

6. Lighting measures 5

7. Miscelllaneous
   a. water saving measures 13
   b. cooling measures 3
   c. other (please specify) 4

2. In addition to the activities above, did the company in PY 1989 donate energy conservation resources directly to public sector low-income weatherization programs? If yes, please indicate:

Total funding $_____ No. of units assisted _____

Type of Resource (please check all applicable)

cash _____ equipment _____
materials _____ training _____
personnel _____ Other (please specify) _____
vehicles _____

Program receiving resources (please check all applicable)

Department of Energy Weatherization _____
State Program (please name) _____
Other (please specify) _____

1989

3. If your company provided other forms of energy conservation assistance to low income households at no charge, please indicate below:

Measure	Check If Yes	No. of Low Income Recipient Households (Only)	Average Cost Per Household Max/Min
blower door test	7	7,634	$538/50
heating system performance test	10	8,549	$35/9
cooling system performance test	2	0	
heating/cooling system safety test	6	6,749	$100/35
indoor air quality instrumented test	2	0	
light bulbs, lighting measures	5	21,021	$293/12
attic insulation	11	3	$1,317/250
wall insulation	9	1	$1,317/1,317
heating system:			
repair/tune up	12	6,031	$183/65
replacement	12	8,902	$1,975/876
water heater:			
repair/tune up	9	2,848	$380/30
replacement			
window replacement	6	0	
storm windows/door	10	0	
home repairs	6	0	
caulk or weather strip	21	34,160	$15/4
low cost/no cost kit	14	13,971	$173/4
water system wrap up	17	5,771	$504/9
duct wrap up	11	320	$2/2
client education/information			
if yes: by mail	18	88,306	$40/0.03
at home training	24	5,811	$230/30
center based training	6	1,322	$230/93
cooling measures	4	4,321	$550/550
major appliance replacement	6	817	$3,000/257
Other (please specify)	7	437	$433/12

ORNL/CON-326

NATIONAL IMPACTS OF THE WEATHERIZATION ASSISTANCE PROGRAM IN SINGLE-FAMILY AND SMALL MULTIFAMILY DWELLINGS

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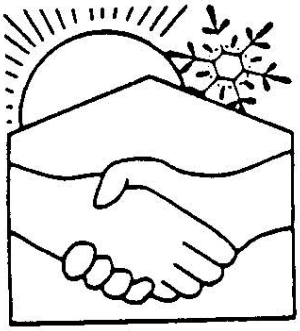


NATIONAL WEATHERIZATION EVALUATION

DWELLING-SPECIFIC FORM

DWELLING AND OCCUPANT CHARACTERISTICS, WEATHERIZATION MEASURES AND COSTS FOR DWELLINGS WEATHERIZED IN THE 1989 PROGRAM YEAR

Agency contact, address, and telephone number (please complete or correct, as necessary):

Name, address, and identification number of dwelling (please complete or correct, as necessary):

A. DWELLING CHARACTERISTICS AND EQUIPMENT

A1. When was the weatherization completed on this dwelling?

Month_____ (CIRCLE YEAR) 1989 1990*

*If this house was not weatherized between April 1, 1989 and March 31, 1990, it should not be in the sample and no further information is needed. Please return this form along with the others.

A2. Is this dwelling a. . . ?** (MARK ONE)

[ ] Mobile/manufactured home
[ ] Single-family detached
[ ] Single-family attached (townhouse or rowhouse)
[ ] Small multifamily (2-4 units)
[ ] Large multifamily (5 or more units)***

**Our definitions of single-family and small (2-4 unit) multifamily dwelling units are the same as those used by DOE's Residential Energy Consumption Survey (RECS). The RECS definitions are given on the accompanying agency information form.

***If this dwelling is part of a large multifamily building, it should not be in the sample and no further information is needed. Please return this form along with the others.

A3. At the time of weatherization, what was the conditioned (heated or cooled) square footage of this dwelling? (include the basement only if it is conditioned)

_____ conditioned square feet

A4. At the time of weatherization, did members of this household own this home or did they rent? (MARK ONE)

[ ] Own (buying)
[ ] Rent
[ ] Occupied without payment

A5. At the time of weatherization, what was the **one main heating fuel** used for heating this home? (MARK ONLY ONE FUEL IN COLUMN A5)

A6. What **supplemental** fuels were used to heat the home -- including those used to provide heat just occasionally? Include fuels that ran portable heaters if they were used. MARK ALL THAT APPLY (If none, mark "No supplemental fuels used" in Column "A6" below.)

	A5 Main Fuel (MARK ONLY ONE)	A6 Supplemental Fuels (MARK ALL THAT APPLY)
Gas from underground pipes serving the neighborhood	[ ]	[ ]
Bottled gas (LPG or Propane)	[ ]	[ ]
Fuel oil	[ ]	[ ]
Kerosene or coal oil	[ ]	[ ]
Electricity	[ ]	[ ]
Coal or coke	[ ]	[ ]
Wood	[ ]	[ ]
Solar collectors	[ ]	[ ]
Other (specify)_____ _____	[ ]	[ ]
No supplemental fuels used		[ ]
Don't know	[ ]	[ ]

A7. If this household's main fuel is gas or electricity, please provide the name of the gas (if any) and electric utility companies that provide service to this dwelling and the household's utility account numbers.

_____ Electric Utility

_____ Account Number

_____ Gas Utility

_____ Account Number

A8. Which heating system types were used in this home? (MARK ALL THAT APPLY)

[ ] Central systems (e.g., forced air furnace, central gravity furnace, steam boiler, hot water boiler, heat pump)
[ ] Fossil fueled in-space heaters (e.g., wall furnaces, floor funaces, wood, coal, kerosene or gas stoves)
[ ] Electric in-space heaters (e.g., wall, floor, baseboard, imbedded cable, portable [cord connected])
[ ] Both central and in-space
[ ] Other (specify) _____
[ ] Don't know

A9. About when was this dwelling originally built? (MARK ONE)

[ ] Before 1900
[ ] 1900-1909
[ ] 1910-1919
[ ] 1920-1929
[ ] 1930-1939
[ ] 1940-1949
[ ] 1950-1959
[ ] 1960-1969
[ ] 1970-1979
[ ] 1980-1984
[ ] 1985 or later

A10. Does this dwelling have central air conditioning equipment ? (MARK ONE)

[ ] Yes
[ ] No
[ ] Don't know

A11. How many wall or window unit air conditioners does it have? (MARK ONE)

[ ] None
[ ] 1
[ ] 2
[ ] 3
[ ] 4 or more
[ ] Don't know

B. OCCUPANT CHARACTERISTICS

B1. Please indicate the total number of persons living in this house at the time of weatherization and the number who were elderly or handicapped.

Total number: _____

Number of elderly: _____

Number of handicapped: _____

B2. What was the household's income on the application form at the time when its eligibility was verified for the services it received in the 1989 program year?

$_____

C. WEATHERIZATION MEASURES INSTALLED

Please check any of the measures listed that were installed in this dwelling. Indicate whether they were installed by in-house crew or contractor. If measures that are not listed were installed, please describe them in the appropriate "Other" category.

	Installed by: In-house crew	Contractor
C1. Insulation		
Attic Insulation (installed for the first time)	[ ]	[ ]
Attic Insulation (added to existing insulation)	[ ]	[ ]
*Wall Insulation (normal technique)	[ ]	[ ]
*Wall Insulation (high-density technique)	[ ]	[ ]
Floor Insulation	[ ]	[ ]
Rim or Band Joist Insulation	[ ]	[ ]
Other Envelope Insulation	[ ]	[ ]

(Specify: _____

_____)

*The "normal technique" for installing wall insulation is characterized by blowing cellulose or fiberglass insulation into exterior wall cavitites to average densities using a two-hole, gravity-blow installation method. The "high-density technique" is characterized by blowing cellulose insulation into exterior wall cavities to high densities using a one-hole, tube-fill installation method. Under the "high-density technique," special attention is focused on sealing air leakage sites while insulating the walls; air bypasses are identified during the installation process and sealed by plugging the air-leakage pathways with cellulose.

C2. Air Leakage Control		
General Caulking and Weatherstripping (door and window)	[ ]	[ ]
Air Sealing, emphasizing bypasses with blower door testing	[ ]	[ ]
Air Sealing, emphasizing bypasses without blower door testing	[ ]	[ ]
Distribution System	[ ]	[ ]
Other Infiltration Reduction	[ ]	[ ]

(Specify: _____

_____)

	Installed by: In-house crew	Contractor
C3. Water Heating System		
Water Heater Tank Insulation	[ ]	[ ]
Entire Water Heating System Replacement	[ ]	[ ]
Pipe Insulation	[ ]	[ ]
Low Flow Shower Heads	[ ]	[ ]
Temperature Reduction	[ ]	[ ]
Other Water Heater Measures	[ ]	[ ]

(Specify: _____

_____)

C4. Structural Repairs (full or partial)		
Attic Ventilation	[ ]	[ ]
Roof	[ ]	[ ]
Doors	[ ]	[ ]
Replacement of Doors	[ ]	[ ]
Windows/Glazing	[ ]	[ ]
Replacement of Windows	[ ]	[ ]
Walls	[ ]	[ ]
Floor	[ ]	[ ]
Other Structural Repairs	[ ]	[ ]

(Specify: _____

_____)

C5. Windows and Doors		
Storm Windows (How many? _____)	[ ]	[ ]
Storm Doors	[ ]	[ ]
Window Films or Shades	[ ]	[ ]
Other Window or Door Treatments	[ ]	[ ]

(Specify: _____

_____)

C6. Mobile Home Measures		
Vapor Barrier	[ ]	[ ]
Underpinning/Skirting	[ ]	[ ]
Cool Seal (on roof)	[ ]	[ ]
Other	[ ]	[ ]

(Specify: _____

_____)

	Installed by: In-house crew	Contractor
C7. Space Heating System		
Clean and Tune-up	[ ]	[ ]
Entire Heating System Replacement	[ ]	[ ]
Set-back Thermostat	[ ]	[ ]
Heating System Component Retrofits	[ ]	[ ]
(Specify: _____)		
Safety Problem Fixed	[ ]	[ ]
(Specify: _____)		
Repairs	[ ]	[ ]
(Specify: _____)		
Other Heating System Modifications	[ ]	[ ]
(Specify: _____ _____)		
C8. Space Cooling System		
Tune-up (e.g., cleaning, controls adjustment, filter replaced)	[ ]	[ ]
Entire Air-conditioning System Replacement	[ ]	[ ]
Fans Installed or Replaced	[ ]	[ ]
Set-back Thermostat	[ ]	[ ]
Other Cooling System Modifications	[ ]	[ ]
(Specify: _____ _____)		
C9. Other Health and Safety Repairs or Improvements		
Smoke Detectors	[ ]	[ ]
Radon Testing	[ ]	[ ]
Carbon Monoxide Testing	[ ]	[ ]
Other	[ ]	[ ]
(Specify: _____ _____)		

D. SERVICE DELIVERY PROCEDURES

Selection of Measures

D1. Please check the type of procedure that was used to select the measures that were installed in this dwelling in the 1989 program year. (CHECK ALL THAT APPLY)

[ ] Envelope measures were selected using a priority or prescribed list of measures
[ ] Envelope measures were selected using a decision approach or scoring (calculation) developed for each house
[ ] Envelope measures were selected based on an analysis of energy savings per $ invested
[ ] Space-heating system measures were selected based on physical characteristics or a standard approach
[ ] Space-heating system measures were selected using a decision approach or scoring (calculations) based on operating performance
[ ] Space-heating system measures were selected based on an analysis of energy savings per $ invested
[ ] Selection of envelope and space-heating system measures was made simultaneously under one approach rather than separately using two distinct procedures.
[ ] Other measure selection procedures. Specify:_____

_____

Use of Diagnostics

D2. Please check the type of diagnostic procedures that were used in this dwelling in the 1989 program year. (CHECK ALL THAT APPLY)

[ ] Blower door testing was used to find leakage areas for sealing
[ ] Blower door testing to measure air leakage rates
[ ] Blower door testing was used to determine when to stop work using cost-effectiveness guidelines (not minimum ventilation guidelines)
[ ] Distribution system diagnostics were used to find leakage areas for sealing
[ ] Distribution system diagnostics were used to determine system balancing
[ ] Infrared scanning was used
[ ] Indoor air quality testing was used
[ ] Heating system efficiency testing was used
[ ] A heating system safety inspection was conducted
[ ] Other diagnostic procedures. Specify: _____

_____

Quality Control

D3. Please indicate the type of quality control inspection this house received in the 1989 program year. (CHECK ALL THAT APPLY)

[ ] A visual quality control inspection after weatherization for envelope measures
[ ] A quality control inspection after weatherization for envelope measures that used blower door testing as a diagnostic tool
[ ] A quality control inspection after weatherization for envelope measures that used infrared scanning as a diagnostic tool
[ ] A visual quality control inspection after weatherization for heating system measures
[ ] A quality control inspection after weatherization for heating system measures that used diagnostic tools such as combustion efficiency testing
[ ] Other quality control procedures. Specify: _____

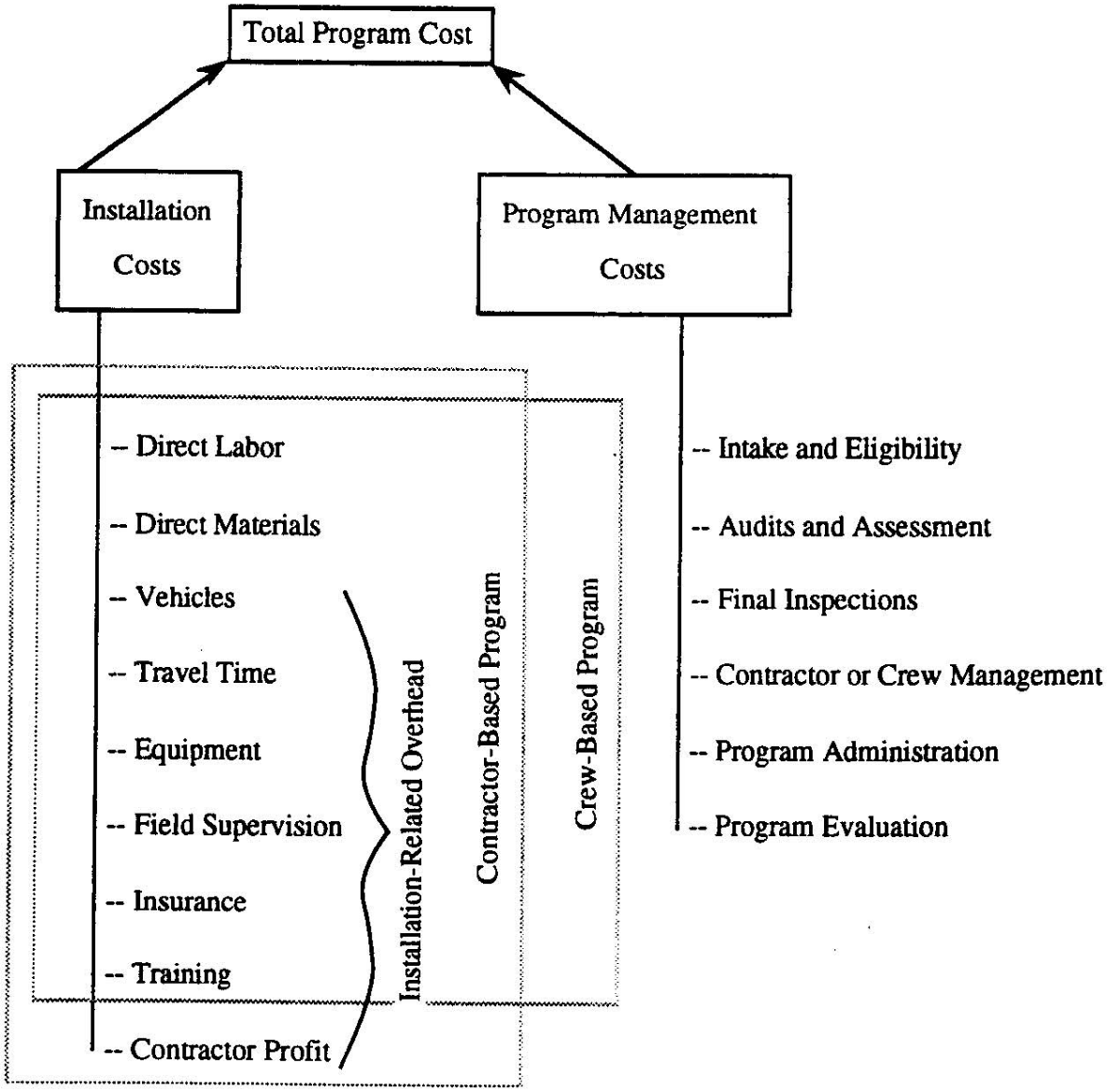
_____

E. COSTS: MATERIALS, LABOR, INSTALLATION OVERHEAD AND PROGRAM MANAGEMENT

Definitions and Instructions

If a job is crew-based, supply the materials costs (Question E1) and calculate the direct labor costs (Question E2). If a job is contractor-based, supply the materials costs (Question E1) and the total installed costs (Question E3). If both crews and contractors worked on a house, complete all three questions (Questions E1, E2, and E3). If you need further instructions, please see the instructions in the agency information form.

Figure 1. Program Cost Categories



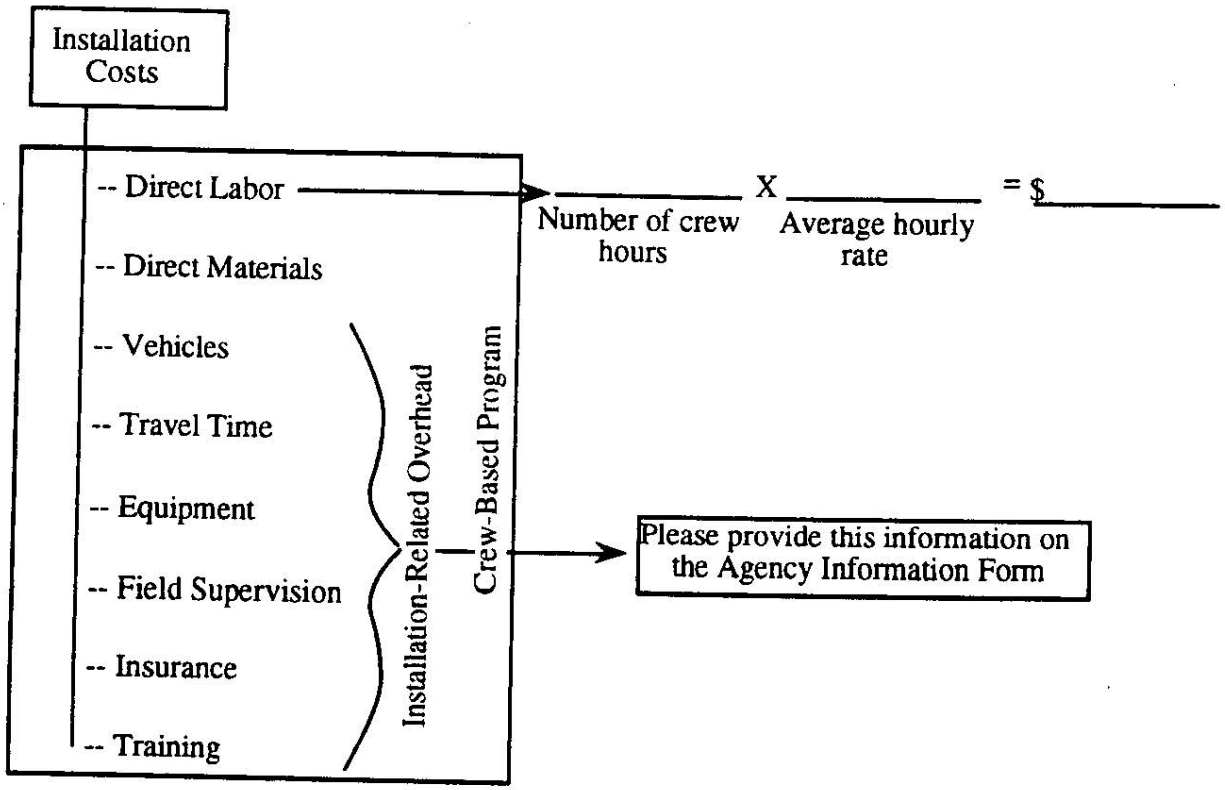
E1: BREAKDOWN OF MATERIALS COSTS

In the chart below please fill in the crew-based and/or contractor-based materials cost of the measures that were installed in this dwelling in the 1989 program year. Do not include labor, administrative or program support costs here. Do include costs covered by all sources of funding (i.e., PVE, LIHEAP, or utilities). If you cannot provide the costs by measure, just enter the total materials cost in the box at the bottom.

	Crew-Based Materials Costs	Contractor-Based Materials Costs
Insulation		
attic	$ _____	$ _____
wall	$ _____	$ _____
other	$ _____	$ _____
Air Leakage Control	$ _____	$ _____
Water Heating System Measures	$ _____	$ _____
Structural Repairs	$ _____	$ _____
Windows and Doors	$ _____	$ _____
Space Heating System		
retrofit	$ _____	$ _____
replacement	$ _____	$ _____
Space Cooling System		
retrofit	$ _____	$ _____
replacement	$ _____	$ _____
Other	$ _____	$ _____
	$	$
	Crew-Based Total Materials Costs	Contractor-Based Total Materials Costs

E2: CREW-BASED INSTALLATION COSTS

Directions: Please fill in the number of crew hours for this house from information in your files. Provide your best estimate of the average hourly rate for your crew and multiply this by the number of hours to produce an estimate of the direct labor costs.



E3: CONTRACTOR-BASED INSTALLATION COSTS

Directions: Please fill in the total installation costs* billed by contractors for this house. This should include all the cost categories listed above plus the contractor's profit.

Total Installed Cost $_____

*Include the materials costs (reported on p.9) in this total, as well as labor costs and installation-related overhead.

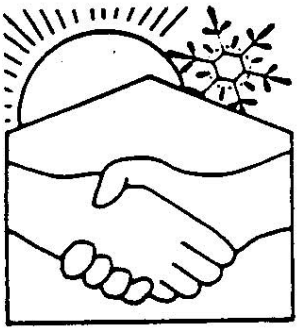
F. FUNDING SOURCES

F1. What percentage of the funds spent on this house were funds from DOE's WAP?

_____%

F2. If funds from non-DOE sources were used, were they all used according to DOE guidelines?

[ ] Yes
[ ] No



NATIONAL WEATHERIZATION EVALUATION

AGENCY INFORMATION FORM

Agency id #, contact, address, and telephone number:

When you finish filling out this form, the dwelling-specific forms, and the waiting list forms, please estimate the amount of staff time it took to complete them.

_____ hours

AGENCY INFORMATION FORM

A. Please provide the name(s) and telephone numbers of staff member(s) completing these forms, just in case we have any questions about the answers.

Name:_____

Phone #:_____

B. COST DEFINITIONS AND INSTRUCTIONS

There are two types of forms included in this package: this form (the Agency Information Form) and a Dwelling-Specific Form for each dwelling in the random sample.

Figure 1 on page 2 provides background information for completing questions E1 to E3 of the Dwelling-Specific Form and for completing the information on installation-related overhead and program management costs on pages 3 and 4 of this form.

The total cost of a program can be divided into **installation costs** and **program management costs** (Fig.1). Total installation costs include the costs of materials, direct labor and overhead expenses that are directly related to the installation process, such as the costs of vehicles, travel, equipment, insurance, field supervision, and training. When contractors deliver services, these installation overhead expenses are included, along with a profit, in the charges made for a job. When agency crews do the work, some of the installation overhead expenses may not be tracked directly on a per-house basis. As a result, there are separate questions for crew vs. contractor installation costs on both of the forms.

If a job is crew-based, supply the materials costs (Question E1 of the Dwelling-Specific Form) and calculate the direct labor costs (Question E2 of the Dwelling-Specific Form). If a job is contractor-based, supply the materials costs (Question E1) and the total installed costs (Question E3). If both crews and contractors worked on a house, complete all three questions (Questions E1, E2, and E3 of the Dwelling-Specific Form).

Both crew-based and contractor-based programs should estimate an average program management cost per house weatherized (Question C1 on this Agency Information Form). The program management cost should be calculated by subtracting the total installation costs (labor + materials + installation-related overhead) for all houses weatherized in PY 1989 from the total agency budget (in PY 1989). The total program management cost should then be divided by the number of houses weatherized (in PY 1989) to produce an average per-house program management cost (Question C1). This estimate only needs to be recorded on the Agency Information Form because it will be the same for all houses.

If your agency has any crew-based jobs, the average per-house cost of installation-related overhead expenses should be estimated (Question C3 on this Agency Information Form). To do this estimate, your agency's costs for vehicles, equipment, liability insurance, training, travel time, field supervision and any other installation-related expenses in the 1989 program year (PY) should be summed and then divided by the number of homes weatherized in the 1989 program year. You only need to record your estimate of the

average per-house cost of installation-related overhead expenses once on the Agency Information Form because it will be the same for all houses.

We realize that different agencies track costs in different ways. Please just use your best judgement in estimating the average installation-related overhead and the average program management expenses. The dwelling-specific records of materials costs, crew-based labor hours, and contractor's total installed costs that are in your files should be coded onto a Dwelling-Specific Form for each house in the sample.

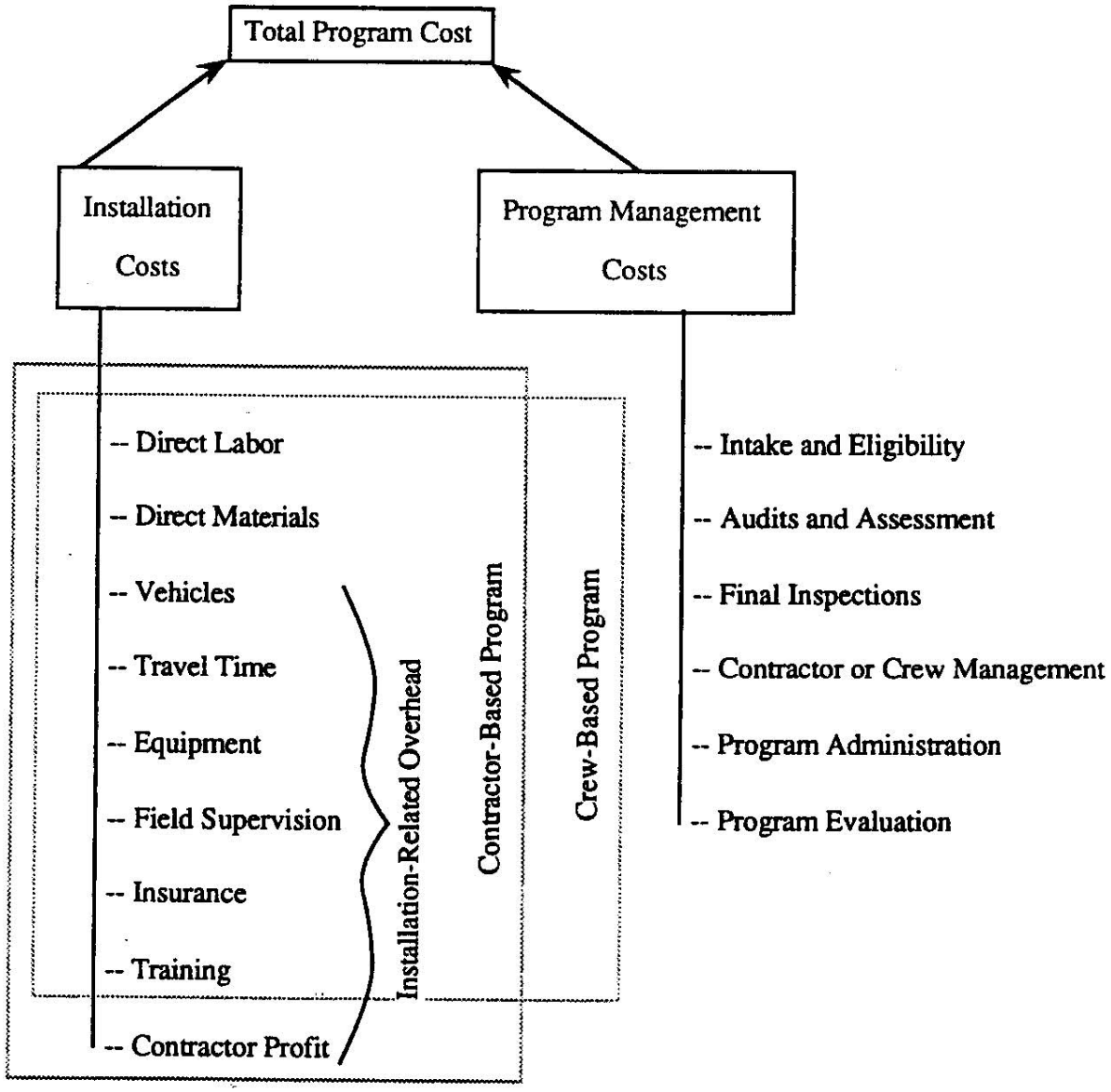


Figure 1. Cost Categories

C. AVERAGE AGENCY PROGRAM MANAGEMENT COSTS AND INSTALLATION-RELATED OVERHEAD

C1. AVERAGE PROGRAM MANAGEMENT COSTS

Total Program Costs for PY 1989 $_____

— Total Installation Costs* for All Houses Weatherized in PY 1989 $_____

*Add all direct materials costs, labor costs, and installation-related overhead together to obtain this cost figure.

Total Program Management Costs → $_____

-- Intake and Eligibility

-- Audits and Assessment

-- Final Inspections

-- Contractor or Crew Management

-- Program Administration

-- Program Evaluation

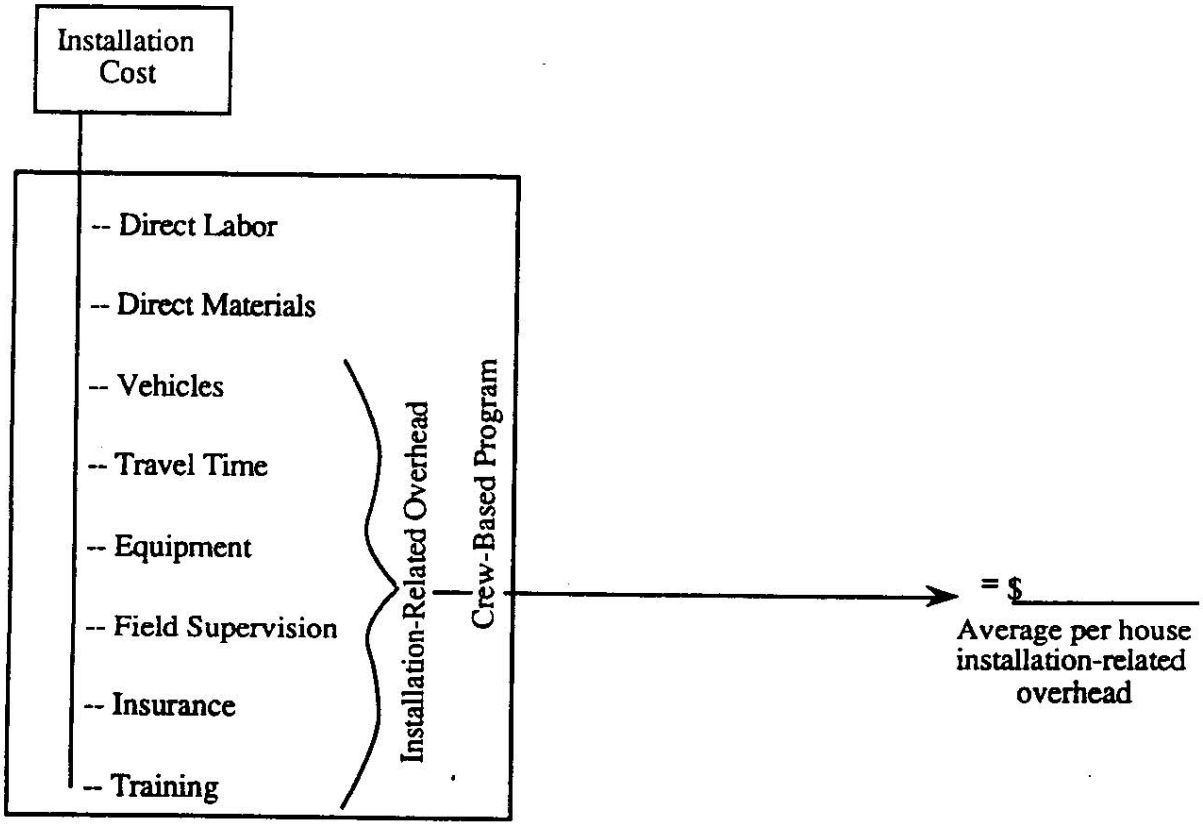
Average per house** program management cost $_____

**Divide the total program management costs for PY 1989 by the number of houses weatherized in PY 1989.

C2. Some program management costs (such as client intake and eligibility checks, or office space and expenses) may be absorbed by other programs or agencies (e.g., LIHEAP, Councils on Aging). What percentage of your program management costs would you estimate are absorbed by other programs or agencies?

_____%

C3. CREW-BASED INSTALLATION-RELATED OVERHEAD



D. HOUSING TYPE DEFINITIONS

Definitions of single-family and small multifamily housing units for Question A2 on page 1 of the Dwelling-Specific Form:

[A] single-family housing unit [is] a structure that provides living space for one household or family. The structure may be detached, attached on one side (semidetached), or attached on two sides. Attached houses are considered single-family houses as long as the house itself is not divided into more than one housing unit and has an independent outside entrance. A single-family house is contained within walls that go from the basement (or ground floor, if there is no basement) to the roof.

[A] house or building with two to four housing units is a structure that is divided into living quarters for two, three, or four families or households. This category also includes houses originally intended for occupancy by one family (or for some other use) that have since been converted to separate dwellings for two to four families. Typical arrangements in these types of living quarters are separate apartments downstairs and upstairs, or one apartment on each of three or four floors.

ORNL/CON-327

IMPACTS OF THE WEATHERIZATION ASSISTANCE PROGRAM IN FUEL-OIL HEATED HOUSES

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Energy Division

October 1994

Prepared for the
Office of Technical and Financial Assistance
Weatherization Assistance Program Division
U. S. Department of Energy

Prepared by the
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MARTIN MARIETTA ENERGY SYSTEMS, INC
for the
U. S. DEPARTMENT OF ENERGY
under Contract DE-AC05-84OR21400

Version: February 6, 1991

Auditor: _____
Date: _____

FUEL-OIL STUDY PRE-WEATHERIZATION DATA COLLECTION FORM

IDENTIFICATION

House I.D.:_____Subgrantee name:_____

Occupant name:_____Phone number: _____

Occupant Address:_____

SPACE-HEATING SYSTEM NOZZLE SIZE:_____(value and units, likely GPH)

HOUSE FLOOR AREA

excluding basement:_____square feet

basement only:_____square feet

HOUSE VOLUME

excluding basement:_____cubic feet

basement only:_____cubic feet

ROOMS

How many of each of the following rooms does this house have?

	Number
Bedrooms[1]	_____
Full bathrooms[2]	_____
Half bathrooms[3]	_____
All other rooms[4]	_____

How many rooms are currently being heated? _____

[1]For one-bedroom efficiency or studio apartment, record "0 bedrooms" and correct number of bathrooms.

[2]Full bathroom is defined as having a sink with running water and flush toilet and bathtub or shower.

[3]Half bathroom is defined as having a toilet or bathtub or shower.

[4]Do not count laundry rooms, foyers, or unfinished storage space. Only count porches if they are enclosed and used year-round.

Version: April 12, 1991

Auditor: _____
Date: _____

FUEL-OIL STUDY HOUSE CHARACTERISTICS SURVEY

IDENTIFICATION

House ID: _____ Subgrantee name: _____

Occupant name: _____ Phone number: _____

Occupant address: _____

GENERAL

Type: _____ SFD — single-family detached MFS — small (2-4 units) multifamily MH — manufactured or mobile home
SFA — single-family attached MFL — large (>4 units) multifamily

A single-family housing unit is a structure that provides living space for one household or family. The structure may be detached, attached on one side, or attached on two sides. Attached houses are considered single-family houses as long as the house itself is not divided into more than one housing unit and has an independent outside entrance. A single-family house is contained within walls that go from the basement (or ground floor, if there is no basement) to the roof. A mobile home with one or more rooms added is a single— family home. Row houses and side-by-side duplexes (twins) are typically single-family houses.

A small multifamily house or building is a structure that is divided into living quarters for two, three, or four families or households. This category also includes houses originally intended for occupancy by one family (or for some other use) that have since been converted to separate dwellings for two to four families. Typical arrangements in these types of living quarters are separate apartments downstairs and upstairs, or one apartment on each of three or four floors. Over-and-under duplexes are typically in this category.

A mobile or manufactured home is a structure that has all the facilities of a dwelling unit but is built on a movable chassis. It may be placed on a permanent or temporary foundation and may contain one room or more. If rooms are added to the structure, it is considered a single-family home.

Are the following systems shared with other housing units: space-heating system _____ (Y,N)
space-cooling system _____ (Y,N)
water-heating system _____ (Y,N)

If SFA, number of attached housing units: _____ (NA, 1, 2, ...) (typically 2 or less)

EXTERNAL DOORS

Door type	Number without storm door	Number with storm door
Hollow core wood door		
Solid core wood door		
Insulated metal door		

House ID: _____

WINDOWS

Window glazing type	Frame type	Storm window	Area (ft^2)

Window glazing type	
SP	single pane
DP	double pane
TP	triple pane
GB	glass block
TE	temporary (cardboard, plastic, etc.)

Frame type	
W	wood
M	metal
V	vinyl
X	other
N	none

Storm window	
W	wood
M	metal
X	other
N	none

FLOOR AREAS AND VOLUMES

Floor	Total area (ft^2)	Intentionally heated area (ft^2)	Intentionally air-conditioned area (ft^2)	Volume (ft^3)
Basement				
First floor				
Second floor				
All other floors				
Total				

An intentionally heated (air conditioned) space is one with equipment and/or distribution outlets designed to maintain a desired temperature in the space. An unintentionally heated (air conditioned) space is one that is heated (cooled) primarily from equipment jacket and/or distribution losses (there is little control over the resulting temperature). A space is not heated (air conditioned) if there is no source of heating (cooling) to alter the natural temperature of the space. For example, a basement heated primarily from equipment jacket and/or distribution system losses is not considered to be an intentionally heated space. A window air conditioner cools only the room the unit is installed in, not adjacent rooms. If a space was designed to be intentionally heated (cooled) but is maintained by the occupant in an unheated (uncoolcd) condition (by closing registers and doors, for example), the space should still be considered a heated (cooled) space with one exception: an unfinished basement or other unfinished room with a distribution system that is always shut off should be considered unintentionally heated (cooled).

Floor heights used to calculate volume are floor to floor except for the top floor, which is floor to ceiling.

Number of intentionally heated stories: _____ (1, 1.5, 2, 2.5, 3, 3.5, 4 or more)

House ID: _____

ATTICS

FINISHED ATTIC AREAS			
	Area (ft^2)	Existing insulation	
		Type	Depth (inches)
Collar beam			
Kneewall			
Roof rafter			

UNFINISHED ATTIC AREAS			
		Existing insulation	
Attic type	Floor area (ft^2)	Type	Depth (inches)

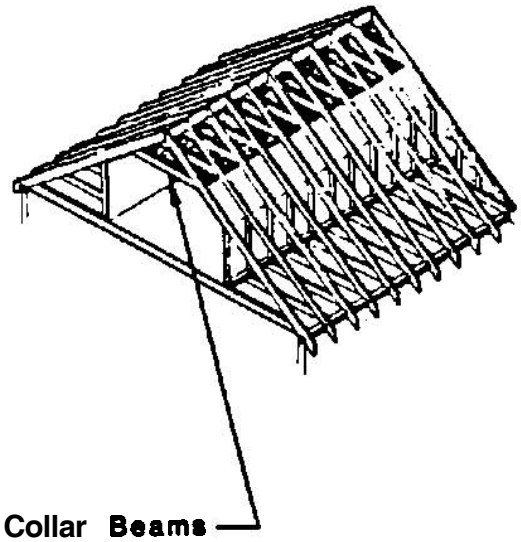
Finished attic areas are defined in the figures on the following page.

Areas pertain to attic areas adjacent to intentionally heated or air-conditioned spaces. For example, the area above an unconditioned garage should not be included.

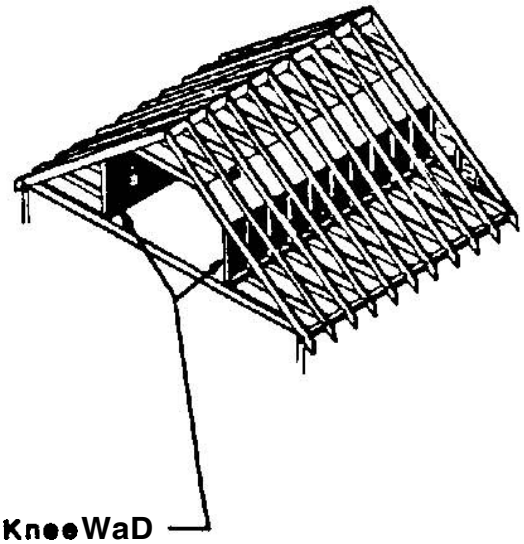
Existing insulation type	
BC	blown cellulose
BF	blown fiberglass
FB	fiberglass batt
RB	rigid board or foam
BRW	blown rock wool
RWB	rock wool batt
V	vermiculite
X	other
N	none

Attic type	
F	floored
U	unfloored
C	cathedral
L	flat roof

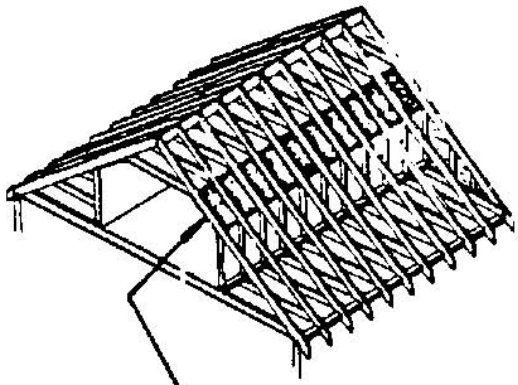
Are attic vents present: _____ (Y,N)



Collar Beams



KneeWaD



Roof Rafters

House ID: _____

EXTERIOR WALLS

Wall exposure	Exterior type	Wall type	Gross wall area (ft^2)	Insulated sheathing (Y/N)	Existing insulation	
					Type	Depth (inches)

Shared walls found in duplexes and row houses are not exterior walls.

The type of load bearing structure is the wall type. The type of facing on the wall is the exterior type.

Wall exposure	
O	outside
N	non-conditioned attic space
B	buffered space (garage, etc.)

Exterior type	
WO	wood or masonite
AL	aluminum, steel or vinyl
ST	stucco
BR	brick or stone
AS	asphalt shingle
WS	wood shingle
RA	rolled asphalt
N	other
N	none

Wall type	
PF	platform frame
BF	balloon frame
BL	block
ST	stone or masonry
X	other

Insulation type	
BC	blown cellulose
BF	blown fiberglass
FB	fiberglass batt
RB	rigid board or foam
BRW	blown rock wool
RWB	rock wool batt
X	other
N	none

House ID: _____

FOUNDATION SPACES

Type	Space status	Basement or crawl space ceiling area (ft^2)	Basement or crawl space ceiling insulation thickness (inches)	Perimeter (band joist)		Wall height		Existing wall insulation	
				Length (ft)	Percent exposed	Total (ft)	Percent above ground	Type	Thickness (inches)

Ceiling area — For slab-on-grade, the area of the intentionally conditioned slab floor.
Perimeter length — Do not include perimeter bordering another foundation space.
Percent exposed — For basements and crawlspaces, the percent of band joist length that is exposed to the outside and not insulated.
Total wall height — Height of basement or crawlspace wall; an estimated average if the height is not uniform.

Foundation type	
B	basement
C	crawlspace
US	uninsulated slab
IS	insulated slab

Foundation space status	
NH	not heated
IH	intentionally heated
UH	unintentionallyheated

Existing wall insulation type	
BC	blown cellulose
BF	blown fiberglass
FB	fiberglassbatt
RB	rigid board or foam
BRW	blown rock wool
RWB	rock wool batt
X	other
N	none

DOMESTIC WATER-HEATING SYSTEM

Fuel:_____(NG-natural gas, P-propane, O-oil, K-kerosene, E-electricity, W-wood, S-solar, X-other, N-None)
Type:_____(SA-stand alone system, T-tankless [integrated with space-heating system], X-other, N-None)
Is an external blanket insulation used?_____(Y,N,NA)
Location: _____ (NH - non-heated space, IH - intentionally heated space, UH - unintentionally heated space)

House ID: _____

APPLIANCES

Appliance	Fuel	Quantity	Location
Cooking range			
Stove top			
Detached oven			
Microwave oven	E		
Refrigerator	E		
Dishwasher	E		
Deep freezer	E		
Clothes washer	E		
Clothes dryer			
Whole house fan	E		
Attic ventilation fan	E		
Well pump	E		
Water bed heater	E		
Other: _____			

Fuel	
NG	natural gas
P	propane
O	oil
K	kerosene
E	electricity
W	wood
C	coal
X	other

Location	
NH	non-heated space
IH	intentionally heated space
UH	unintentionally heated space

AIR CONDITIONERS

Unit type	Nameplate information						Age (years)
	Input (watts)	Voltage (volts)	Current (amps)	Efficiency		Output (Btu/h)	
				EER	SEER		

Unit type	
CAC	central air conditioner
CHP	central heat pump
WAC	window air conditioner
WHP	window heat pump
EC	evaporative cooler
X	other

House ID: _____

SPACE-HEATING SYSTEMS

PRIMARY OIL-FIRED SYSTEM	
System type (see next page)	
System age	years
Original fuel if converted system (see next page or NA)	
Location (see next page)	
Actual installed nozzle size (value and units)	
Vent damper present (Y,N)	
Flame retention head burner present (Y,N)	
Smart thermostat present (Y,N)	
For boilers, outdoor temperature reset present (Y,N,NA)	

AUXILIARY SYSTEMS	
Type (see next page)	Fuel

The primary oil-fired system is the system metered under the study.

DISTRIBUTION SYSTEM

Location	Is any part of the distribution system present in this location? (Y,N,NA)	If present, is the distribution system insulated? (Y,N)	If present, is the structural integrity sound?
Intentionally heated area			
Unintentionally heated area			
Un-heated area			

Does the distribution system include a return system? ____ (Y,N,NA)

Fuel	
NG	natural gas
P	propane
O	oil
K	kerosene
E	electricity
W	wood
C	coal
X	other

Location	
NH	non-heated space
IH	intentionally heated space
UH	unintentionally heated space

SPACE-HEATING SYSTEM TYPES	
Central systems	
1	forced air furnace
2	gravity furnace
3	steam boiler
4	hot water boiler with radiators/convertors
5	hot water boiler for slab heating
6	heat pump
Other	
21	wood or coal stove
22	fireplace
23	stove top or oven
24	other

In-space heaters	
Fossil fueled:	
7	room heater
8	forced air wall furnace
9	gravity wall furnace
10	forced air floor furnace
11	gravity floor furnace
12	vaporizing pot heater (oil and kerosene)
13	portable kerosene
Electric:	
14	wall
15	floor
16	baseboard
17	ceiling radiant (imbedded cable)
18	wall or floor radiant (imbedded cable)
19	portable (cord-connected)
20	window heat pump

Version: April 26, 1991 Technician: _____

Date: _____

BLOWER-DOOR **TEST** DATA SHEET: **INFILTEC** BLOWER DOOR

House ID: _____ Subgrantee name: _____

Occupant name: _____ Phone number: _____

Occupant address: _____

Procedures to prepare house for test: Basement door _____ (closed or open)

_____

Unusual sources of leakage: _____

Test equipment identification number: _____

Indoor temperature (°F)		Outdoor temperature (°F)	Average wind speed (MPH)	Maximum wind gust (MPH)	Location of wind measurement	Local shielding class
Start	Finish					

Pressure station				
Goal		Actual	Flow rate (cfm)	Orifice
(Pa)	(inches of water)			
10	0.04			
15	0.06			
20	0.08			
25	0.10			
30	0.12			
35	0.14			
40	0.16			
50	0.20			
60	0.24			

Local shielding classes	
1	No obstructions or local shielding
2	Light local shielding; few obstructions, a few trees, or small shed
3	Moderate local shielding; some obstructions within two house heights, thick hedge, solid fence, or one neighboring house
4	Heavy shielding; obstructions around most of perimeter, building or trees within 30 ft in most directions; typical suburban shielding
5	Very heavy shielding; large obstructions surrounding perimeter within two house heights; typical downtown shielding

Notes:

_____

_____

Version: April 11, 1991

Technician: _____
Date: _____

FUEL-OIL STUDY STEADY-STATE EFFICIENCY DATA SHEET

House I.D.: _____ Subgrantee name: _____

Occupant name: _____ Phone number: _____

Occupant Address: _____

Type of test: Pre-weatherization _____ Post-weatherization _____

Test equipment identification number	
Percent oxygen reading	%
Net stack temperature, or	°F
Room temperature	°F
Flue gas temperature	°F
Unadjusted steady-state efficiency	%

For fuel-oil systems:	
Smoke number	
Adjusted steady-state efficiency	%
If the smoke number is: 1, 2, 3, 4, 5, 6, 7, 8, 9 subtract: 0, 0, 0, 1, 2, 3, 4, 6, 7	

Notes:

_____

_____

_____

Version: April 26, 1991 Inspector: _____

Date: _____

FUEL-OIL STUDY SYSTEM SAFETY INSPECTION FORM

IDENTIFICATION

House ID: _____ Subgrantee name: _____

Occupant name: _____ Phone number: _____

Occupant address: _____

GENERAL SPACE-HEATING SYSTEM INSPECTION

Type (FAF-central forced-air furnace, GF-central gravity furnace, SB-steam boiler, HWBR-hot water boiler with radiators or convertors, HWBS-hot water boiier for slab heating)	
Thermostat on/off operating (Y,N)	
Electrical cutoff switch present (Y,N)	
Wiring secure (Y,N)	
Furnace fan on/off temperature switches present (Y,N,NA)	
If yes: Upper setting ____ °F Lower setting ____ °F	
Boiler operating temperature (°F or NA)	
High limit switch settings (none, °F, psi)	
Combustible materials near flue (Y,N)	
Asbestos insulation present on system (Y,N)	

GENERAL DOMESTIC WATER-HEATING SYSTEM INSPECTION

Type (SA-stand alone, T-tankless)	
Fuel (NG-natural gas, P-propane, O-oil, E-electricity)	
Combustible materials near flue (Y,N,NA)	
Pressure relief valve present (Y,N)	
Temperature setting (°F or NA) (record highest setting for electrically heated systems)	°F

House ID: _____

FUEL LEAKS

	Leak
Space-heating system supply line (Y,N)	
Water-heating system supply line (Y,N,NA)	
Above ground storage tank (Y,N,NA)	

Is a filter and shutoff valve present in the supply line leading from the storage tank? _____ (Y,N)

SPACE-HEATING DISTRIBUTION SYSTEM

Forced-air or gravity furnaces	
Circulating fan operating (Y,N,NA)	
Condition of air filters (N-none, C-clean, D-dirty, P-plugged)	
Exit temperature of supply air	°F

Boilers	
Circulating pump operating (Y,N,NA)	
Zone valves operating (Y,N,NA)	
Leaks exist (Y,N)	

Is asbestos insulation present on the distribution system? _____ (Y,N)

House ID: _____

FLUE AND CHIMNEY INSPECTION

	Space-heating system	Water-heating system
Structurally sound (Y,N,NA)		
Chimney extends > 2 ft above roof (Y,N,NA)		
Clearance at chimney top > 10 ft (Y,N,NA)		
Leaks exist (Y,N,NA)		
Thick debris present (Y,N,NA)		
Flue liner present (Y,N,NA)		
Barometric damper (space-heating systems only):		
Exists (Y,N)		
Functions correctly (Y,N,NA)		

SPACE- AND WATER-HEATING SYSTEM DRAFTS

Outdoor temperature: _____ °F	Space-heating system	Water-heating system
Draft with system off	in. water	in. water
Time to stop backdrafting	seconds	seconds
Draft with system on		
30 seconds	in. water	in. water
1 minute	in. water	in. water
2 minutes	in. water	in. water
3 minutes	in. water	in. water
Pressure difference between space-heating system room and outside (positive number indicates that the basement is depressurized relative to the outside):		
space-heating system on	in. water	
space-heating system off	in. water	

House ID: _____

CARBON MONOXIDE TESTING

Ambient	ppm
Space-heating system flue gas	ppm
Water-heating system flue gas	ppm
Five feet from space-heating system	ppm
Kitchen	ppm
Living room	ppm
Register (ppm or NA)	ppm
Were the following operating during the test:	
Gas stove top (Y,N)	
Gas oven (Y,N)	
Fossil-fuel space-heater (Y,N)	

HEAT EXCHANGER

Cracks observed visually (Y,N,NA)	
Percent oxygen reading before blower turns on	%
Percent oxygen reading after blower turns on	%
Flue gas odor noticed in house (Y,N,NA)	

COMMENTS

_____

_____

_____

version 18W
5/10/91

Interviewer_____

Date of Interview._____

Time Started_____

FUEL-OIL STUDY OCCUPANT QUESTIONNAIRE
WEATHERIZED HOME

A. Identification

INTERVIEWER INSTRUCTIONS:

Complete Questions A1, A2, and A4 using data from the information sheet before starting the interview.

A1. Household Identifier _____

A2. Name of WAP Applicant _____

SCREENER:

ASK TO SPEAK TO THE APPLICANT NAMED IN QUESTION A2. IF AVAILABLE, READ THE FOLLOWING AND GO TO QUESTION A3.

> Your home was weatherized as a participant in the Weatherization Assistance Program. As a follow up to that we would like to conduct an interview to learn more about how that weatherization may have affected your energy use and ask your opinions regarding the value of weatherization.

IF THE APPLICANT NAMED DM QUESTION A2 IS NOT AVAILABLE, READ THE FOLLOWING AND THEN ASK QUESTION 1:

> Your home was weatherized as a participant in the Weatherization Assistance Program. As a follow up to that we would like to conduct an interview to learn more about how that weatherization may have affected your energy use and ask your opinions regarding the value of weatherization.

1. I'd like to speak to a person over eighteen years of age who is knowledgeable about paying the energy bills. Is that person available? (IN ORDER TO QUALIFY, THE RESPONDENT DOES NOT HAVE TO PAY THE CHECK. AS LONG AS THE RESPONDENT IS KNOWLEDGEABLE ABOUT THE ENERGY USE AND/OR BILLS, HE OR SHE QUALIFIES.)

1. YES, THE PERSON YOU ARE SPEAKING TO IS THE RESPONDENT	CONTINUE WITH QUESTION A3.
2. YES, RESPONDENT IS ANOTHER PERSON. . .	ONCE A RESPONDENT IS PRESENT, RETURN TO THE INTRODUCTION AND CONFIRM THAT THE RESPONDENT IS OVER 18 AND IS KNOWLEDGEABLE ABOUT PAYING THE ENERGY BILLS. IF THE RESPONDENT QUALIFIES, CONTINUE WITH QUESTION A3.
3. NO, RESPONDENT IS NOT AVAILABLE	(NAMES:_____) IDENTIFY NAMES OF SEVERAL PEOPLE WHO MIGHT BE SUITABLE RESPONDENTS. INFORM THE CURRENT RESPONDENT THAT WE WILL CONDUCT THE INTERVIEW OVER THE TELEPHONE AT A LATER DATE. LEAVE A COPY OF THE EXHIBITS AT THE HOUSE. DO NOT PROCEED WITH THE INTERVIEW.

INTERVIEWER INSTRUCTIONS:

IF RESPONDENT NEEDS INFO: The survey is a part of the Weatherization Assistance Program. The survey is required of every participant in the Fuel Oil Study.

IF RESPONDENT IS HESITANT: Your answers to these questions will provide valuable information to the Department of Energy. The interview will take approximately 30 minutes.

A3. Name of respondent_____

Relation to WAP applicant_____

[ ] RESPONDENT IS SAME AS WAP APPLICANT

A4. Dates of WAP weatherization work_____

A5. I want to confirm that the weatherization work done by the Weatherization Assistance Program took place on (READ DATES FROM QUESTION A4). (RECORD DATES BELOW IF RESPONDENT GIVES DIFFERENT DATES.)

DATES _____

[ ] RESPONDENT CONFIRMS THAT WEATHERIZATION TOOK PLACE ON THE SAME DATES AS QUESTION A4.

[ ] DON'T REMEMBER

INTERVIEWER INSTRUCTIONS:

If respondent has trouble remembering the dates in Questions A6, A7, and A8, probe for:

- Season
- Major life event
- Major news story or political event happening at that time

Then, ask for year (and month) again.

A6. In what year was this home built? Just your estimate.*

[ ] Before 1900	[] 1940-1949	[ ] 1985
[] 1900-1909	[ ] 1950-1959	[ ] 1986
[] 1910-1919	[] 1960-1969	[ ] 1987
[] 1920-1929	[ ] 1970-1979	[ ] 1988
[ ] 1930-1939	[] 1980-1984	[ ] 1989
		[ ] 1990

A7. In what year did your family move into this home?*

[ ] Before 1900	[ ] 1940-1949	[ ] 1985
[ ] 1900-1909	[] 1950-1959	[ ] 1986
[] 1910-1919	[] 1960-1969	[ ] 1987
[] 1920-1929	[j 1970-1979	[ ] 1988
[] 1930-1939	[] 1980-1984	[ ] 1989
		[ ] 1990

IF "1989" OR LATER ON QUESTION A7, ASK:

A8. In which month did you move in?*

[ ] January	[ ] May	[ ] September
[ ] February	[ ] June	[ ] October
[ ] March	[ ] July	[ ] November
[ ] April	[ ] August	[ ] December

B. Major Heating Fuel

Next, I will ask some questions about the fuels you used to ***heat*** *your home last winter before and after* ***weatherization*** *on* (READ DATES FROM QUESTION A4). *Throughout the survey, when I ask about last winter before weatherization, I mean* ***October****, November, and December of 1990. When I ask about last winter after weatherization, I mean* ***February****, March, and April of 1991.*

INTERVIEWER INSTRUCTIONS:

If two or more heating fuels are used, the **main heating fuel** is the one that provides most of the heat for the home. The main heating fuel may not necessarily be the one used for the central hearing system.

(HAND RESPONDENT EXHIBIT BOOKLET)

B1. Please look at Exhibit B1. What was the **one main heating fuel** used for heating your home last winter **before** weatherization?*

	B1 Main Fuel (Mark only one)	B2 (Mark all other fuels that apply)
Gas from underground pipes serving the neighborhood	[ ]	[ ]
Bottled gas (LPG or Propane)	[ ]	[ ]
Fuel oil	[ ]	[ ]
Kerosene or coal oil	[ ]	[ ]
Electricity	[ ]	[ ]
Coal or coke	[ ]	[ ]
Wood	[ ]	[ ]
Solar collectors	[ ]	[ ]
Other (specify)_____	[ ]	[ ]
NO FUELS USED	[ ]	[ ]
DON'T KNOW	[ ]	[ ]

B2. Please look at Exhibit B1 again. You mentioned that your **main heating fuel** used last winter **before** weatherization was (FUEL FROM QUESTION B1). What **other** fuels were used to heat your home last winter before weatherization - including those used to provide heat just occasionally? Don't forget to include fuels that ran portable heaters if you used them. (MARK ALL THAT APPLY IN COLUMN B2. IF NONE, MARK "NO FUELS USED")*

IF ADDITIONAL FUELS ARE IDENTIFIED FROM QUESTION B2, ASK:

B3. Going back to your **main heating fuel** used last winter **before** weatherization-- (FUEL FROM QUESTION B1) -- did this fuel provide all or almost all of the heat for your home, about three-fourths, or closer to half of the heat for your home?*

[ ] All or almost all (95% or more)
[ ] About three-fourths (67-94%)
[ ] Closer to half (66% or less)
[ ] DON'T KNOW/REMEMBER

Now, I will ask similar questions about thefuels you used last winter after weatherization.

B4. Please look at Exhibit B1 again. What was the one main heating **fuel** used for heating your home last winter after **weatherization?***

	B4 Main Fuel (Mark only one)	B5 (Mark all other fuels that apply)
Gas from underground pipes serving the neighborhood	f]	[ ]
Bottled gas (LPG or Propane)	[ ]	[ ]
Fuel oil	[ ]	[ ]
Kerosene or coal oil	[ ]	[ ]
Electricity	[ ]	[ ]
Coal or coke	[ ]	[ ]
Wood	[ ]	t]
Solar collectors	[ ]	[ ]
Other (specify)_____	[ ]	[3
NO FUELS USED	[ ]	[ ]
DON'T KNOW	[ ]	[ ]

B5. Please look at Exhibit B1 again. You mentioned that your main heating fuel used last winter after weatherization, was (FUEL FROM QUESTION B4). What other fuels were used to heat your home last winter after weatherization — including those used to provide heat just occasionally? Don't forget to include fuels that ran portable heaters if you used them. (MARK ALL THAT APPLY IN COLUMN B5. IF NONE, MARK "NO FUELS USED")*

IF ADDITIONAL FUELS ARE IDENTIFIED FROM QUESTION B5, ASK:

B6. Going back to your mam heating fuel used last winter after weatherization -- (FUEL FROM QUESTION B4) - did this fuel provide all or almost all of the heat for your home, about three-fourths, or closer to half of the heat for your home?*

[ ] All or almost all (95% or more)
[ ] About three-fourths (67-94%)
[ ] Closer to half (66% or less)
[ ] DON'T KNOW/REMEMBER

B7a. Please look at Exhibit B7. Last winter **before** the weatherization work was done, did you use any of the following to **help** heat your home? (CHECK AS MANY AS WERE USED.)

(B7a) BEFORE	(B7b) AFTER
[ ] Wood/coal stove	[ ]
[ ] Fireplace	[ ]
[ ] Cooking stove/range/oven	[ ]
[ ] Non-portable room heater burning gas, oil, or kerosene	[ ]
[ ] Portable kerosene heater	[ ]
[ ] Non-portable electric heater	[ ]
[ ] Electric portable heater (cord-connected)	[ ]
[ ] Other (specify):_____	[ ]
[ ] NONE	[ ]

B7b. Please look at Exhibit B7 again. Last winter **after** the weatherization work was done, did you use any of the following to **help** heat your home? (CHECK AS MANY AS WERE USED IN COLUMN B7b.)

INTERVIEWER INSTRUCTIONS:

Confirm that responses to B7a do not contradict responses to B1 and B2. Confirm that responses to B7b do not contradict responses to B4 and B5. Probe the respondent if the responses contradict.

ASK QUESTION B8 ONLY FOR EACH ITEM IN QUESTION B7 USED BOTH BEFORE AND AFTER WEATHERIZATION:

B8. Please rum to Exhibit B8. Please tell me how often you used the following to help heat your home last winter **after** the weatherization work was done, as compared to last winter before the weatherization work was done. Did you use it less, about the same, or more after weatherization as compared to before weatherization? (CIRCLE ONE NUMBER IN EACH LINE ASKED.)

	Used Less After	Used About The Same	Used More After
1. Wood/coal stove	1	2	3
2 . Fireplace	1	2	3
3. Cooking stove/range/oven	1	2	3
4. Non-portable room heater burning gas, oil, or kerosene	1	2	3
5. Portable kerosene heater	1	2	3
6. Non-portable electric heater	1	2	3
7. Electric portable heater (cord-connected)	1	2	3
8. Other (_____)	1	2	3

C. Demographics

Now I have some questions about the people who live here and about your housing costs.

C1. Please tell me how many people living in your home last winter **before weatherization** were . . . (READ EACH ITEM).

Under the age of 5 _____

Between 5 and 17 years old _____

Between 18 and 64 years old _____

65 years old or older _____

TALLY -- so that **is** (READ NUMBER) **in** total? _____
ENTER CORRECT TOTAL HERE

C2. You have told me that there were (READ TOTAL NUMBER FROM QUESTION C1) people living in your home last winter before weatherization. How many people were living in your home last winter after weatherization?

_____
NUMBER OF RESIDENTS

[ ] SAME NUMBER AFTER WEATHERIZATION AS BEFORE WEATHERIZATION

C3. Were any of the people living in your home last winter **before** weatherization handicapped? By handicapped, I mean a permanent condition, I do not mean a temporary condition, such as a short-term illness. (EYEGLASSES ARE NOT CONSIDERED A HANDICAP). (IF YES, ASK HOW MANY.)

_____
NUMBER HANDICAPPED

C4. Do you or members of your household own your home, or rent?*

[ ] Own (buying)
[ ] Rent
[ ] Occupied without payment of rent (SKIP TO SECTION D)

FROM QUESTION C4, IF HOUSEHOLD OWNS OR PAYS RENT, ASK:

C5. Please tell me which category best describes the monthly rent or mortgage payment the household pays for your home. Is it . . .? Stop me when I reach the category. (READ CATEGORIES.)

[ ] less than $200 per month
[ ] $201 - 300 per month
[ ] $301 - 400 per month
[ ] $401 - 500 per month
[ ] $501 - 600 per month
[ ] $601 - 700 per month
[ ] $701 - 800 per month
[ ] $801 - 900 per month
[ ] more than $900 per month
[ ] OWNED, MORTGAGE PAID OFF (SKIP TO SECTION D)
[ ] DON'T KNOW

C6. Does this payment include: (READ ITEMS AND PROBE FOR "YES" OR "NO".)

	Yes	No	DON'T KNOW
1. fuel oil	[]	[]	[ ]
2. electricity	[ ]	[ ]	[ ]
3. natural gas	[ ]	[ ]	[ ]
4. property tax	[ ]	[ ]	[ ]
5. insurance (house or renter's)	[ ]	[ ]	[ ]
6. water	[ ]	[ ]	[ ]
7. garbage	[ ]	[ ]	[ ]
8. other (specify):_____.	[ ]	[ ]	[ ]

D. Conditioned Living Space

My next question is about the number of different types of rooms in your home. Remember that when I ask about last winter before weatherization, I mean October, November, and December of 1990. When I ask about last winter after weatherization, I mean February, March, and April of 1991. Weatherization work was done to your home on (READ DATES FROM QUESTION A4).

INTERVIEWER INSTRUCTIONS:

For one-bedroom efficiency or studio apartment, record "0 bedrooms" and number of bathrooms and other rooms.

Full Bathroom — sink with running water and flush toilet and bathtub or shower.

Half Bathroom — toilet or bathtub or shower

D1. How many of each of the following rooms does this home have? (ASK EACH ITEM AND RECORD NUMBER FOR EACH.)*

	D1 Total Number	D2A Number heated last winter before weatherization	D2B Number heated last winter after weatherization
Bedrooms?			
Full bathrooms?			
Half bathrooms?			
All other rooms: (Do not count laundry rooms, foyers or unfinished storage space. Only count porches if they are enclosed and used year-round.)			

D2. (FOR EACH TYPE OF ROOM THE RESPONDENT HAS IN THE HOME, ASK D2A, THEN D2B. A HEATED ROOM IS ONE THAT IS WARM ENOUGH TO BE USED.)

D2a. Of the (READ NUMBER OF ROOMS AND TYPE OF ROOM), how many were heated last winter before weatherization (RECORD ABOVE ON COLUMN D2A.)

D2b. And how many (READ TYPE OF ROOM) were heated last winter after weatherization? (RECORD ABOVE ON COLUMN D2B.)

E. Thermostat Management

I would now like to ask you some questions about the temperature at which you kept your home.

INTERVIEWER INSTRUCTIONS:

Remember, we are interested in the respondent's perceptions. Ask the respondent for their opinion; avoid checking the thermostat for the actual settings.

If respondent keeps different sections of the home at different temperatures, we want to know the temperature in the part of the house where the people are. If, for example, the heat is turned off upstairs during the day because the family is downstairs, we want the downstairs temperature.

We would like to know the actual temperature of the home. If the respondent doesn't know the temperature, but does know the thermostat setting, record the thermostat setting. Otherwise, probe for best estimate.

E1a. Last winter before weatherization, did you keep your home at the same temperature at all times of the day, or did you change the temperature?

[ ] Kept home at same temperature (ASK QUESTION E1B)
[ ] Changed the temperature (GO TO QUESTION E1C)

IF KEPT HOME AT SAME TEMPERATURE ON QUESTION E1A, ASK:

E1b. Before weatherization, at what temperature did you usually keep your home?

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

(GO TO QUESTION E2A)

IF CHANGED THE TEMPERATURE ON QUESTION E1A, ASK:

E1c. Before weatherization, at what temperature did you usually keep your home during the day when someone was at **home**?*

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

E1d. Before weatherization, at what temperature did you usually keep your home during the day when no one was at **home**?*

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

E1e. Before weatherization, at what temperature did you usually keep your home during sleeping **hours**?*

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

(ASK EVERYONE:)

E2a. Last winter after weatherization, did you keep your home at the same temperature at all times of the day, or did you change the temperature?

[ ] Kept home at same temperature (ASK QUESTION E2B)
[ ] Changed the temperature (GO TO QUESTION E2C)

IF KEPT HOME AT SAME TEMPERATURE ON QUESTION E2A, ASK:

E2b. After weatherization, at what temperature did you usually keep your home?

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

(GO TO SECTION F)

IF CHANGED THE TEMPERATURE ON QUESTION E2A, ASK:

E2c. After weatherization, at what temperature did you usually keep your home during the day when someone was at home?*

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

E2d. After weatherization, at what temperature did you usually keep your home during the day when no one was at home?*

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

E2e. After weatherization, at what temperature did you usually keep your home during sleeping hours?*

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

F. Events Affecting Energy Use

The next questions are about events which may have affected your energy use last winter. (REMIND RESPONDENT IF NECESSARY): *Remember that when I ask about last winter before weatherization, I mean October, November, and December of 1990. When I ask about last winter after weatherization, I mean February, March, and April of 1991. Weatherization work was done to your home on* (READ DATES FROM QUESTION A4).

F1a. Last winter **before** your home was weatherized, was there ever a time when you wanted to use your fuel-oil heating system, but could not, for one or more of the following reasons?

	Yes	No
Your heating system was **broken?**	[ ]	[ ]
You **ran out** of fuel oil?	[ ]	[ ]
The utility company **discontinued** your electric service?	[ ]	[ ]

IF "YES" TO ANY PART OF QUESTION F1A, ASK:

F1b. Thinking about these times that you went without heat, last winter **before** weatherization, how many separate times were there?

Total times: _____

F1c. Altogether, how many hours or days were you without heat?

Total hours without heat: _____

OR

Total days without heat: _____

F2a. Last winter **after** your home was **weatherized** was there ever a time when you wanted to use your fuel-oil heating system, but could not, for one or more of the following reasons?

	Yes	No
Your heating system was broken?	[ ]	[ ]
You **ran out** of fuel oil?	[ ]	[ ]
The utility company **discontinued** your electric service?	[ ]	[ ]

IF "YES" TO ANY PART OF QUESTION F2A, ASK:

F2b. Thinking about these times that you went without heat, last winter after **weatherization,** how many separate times were there?

Total times: _____

F2c. Altogether, how many hours or days were you without heat?

Total hours without heat: _____

OR

Total days without heat: _____

F3. Except for the weatherization of your home on (READ DATES FROM QUESTION A4), was any home repair or major house renovation that would affect energy use done on your home by yourself or other organization between November 1990 and April 1991?

[ ] Yes
[ ] No (GO TO QUESTION F6)
[ ] DON'T KNOW (GO TO QUESTION F6)

IF YES ON QUESTION F3, ASK:

F4. Please describe the home repair or renovation. (RECORD VERBATIM BELOW.)

MONTH

(1) _____ _____

(2) _____ _____

(3) _____ _____

(4) _____ _____

F5. In which month was the work done? (RECORD UNDER COLUMN FOR MONTH ABOVE.)

Now I'm going to ask you to describe the number of people in your home during the 1990 Thanksgiving holiday period and the Christmas holiday period compared to the rest of the winter. By number of people in your home I am referring to ***overnight*** *visiting not visiting for meals or parties.*

F6. Please look at Exhibit F6. First, how did the number of people in your home during the 1990 Thanksgiving holiday and weekend compare to other parts of the winter? (PROBE IF NEEDED: By number of people in your home I am referring to **overnight** visiting not visiting for meals or parties.)

[ ] Fewer people than other parts of the winter
[ ] About the same number of people as other parts of the winter
[ ] More people than other parts of the winter
[ ] DON'T KNOW/DON'T REMEMBER

F7. Please look at Exhibit F6 again. And how did the number of people in your home during the 1990 Christmas holiday through New Year's compare to the other parts of the winter? (PROBE IF NEEDED: By number of people in your home I am referring to overnight visiting not visiting for meals or parties.)

[ ] Fewer people than other parts of the winter
[ ] About the same number of people as other pans of the winter
[ ] More people than other parts of the winter
[ ] DON'T KNOW/DON'T REMEMBER

G. Impacts on Health, Safety, Comfort, Affordability

My next questions ask for your opinion about how weatherization affected the health, safety, comfort, and value of your home.

G1a. Please look at Scale G1. Using a scale of 1 to 7, where 1 is too cold, 4 is comfortable, and 7 is too hot, how would you rate the temperature in your home last winter before weatherization?

BEFORE

1	2	3	4	5	6	7	8
too cold			comfortable			too hot	DON'T REMEMBER

IF 1-3 OR 5-7 ON QUESTION G1A, ASK:

G1b. Why couldn't you keep your home the temperature you preferred last winter before weatherization? (DO NOT READ ANSWER CATEGORIES.) (CHECK ALL THAT APPLY.)*

[ ] Heating system problem
[ ] Landlord controls the temperature
[ ] Difference of opinion in household
[ ] Fuel shortage
[ ] High cost of fuel
[ ] Construction problem, such as broken windows, or holes in walls
[ ] Other (please specify)_____

_____

[ ] NOT SURE

G1c. Using the same scale (REPEAT SCALE IF NECESSARY) how would you rate the temperature in your home last winter after weatherization?

AFTER

1	2	3	4	5	6	7	8
too cold			comfortable			too hot	DON'T REMEMBER

IF 1-3 OR 5-7 ON QUESTION G1C, ASK:

G1d. Why couldn't you keep your home the temperature you preferred last winter after weatherization? (DO NOT READ ANSWER CATEGORIES.) (CHECK ALL THAT APPLY.)*

[ ] Heating system problem
[ ] Landlord controls the temperature
[ ] Difference of opinion in household
[ ] Fuel shortage
[ ] High cost of fuel
[ ] Construction problem such as broken windows, or holes in walls
[ ] Other (please specify)_____

_____

[ ] NOT SURE

G2. Please look at Scale G2. Using a scale of 1 to 7, where 1 is very drafty, 4 is somewhat drafty, and 7 is not at all drafty, how would you rate the draftiness of your home last winter **before** weatherization?

BEFORE

1	2	3	4	5	6	7	8
very drafty			somewhat drafty			not at all drafty	DON'T REMEMBER

Using the same scale (REPEAT SCALE IF NECESSARY), how would you rate the draftiness in your home last winter after weatherization?

AFTER

1	2	3	4	5	6	7	8
very drafty			somewhat drafty			not at all drafty	DON'T REMEMBER

G3. Please look at Scale G3. Using a scale of 1 to 7, where 1 is very poor, 4 is acceptable, and 7 is very healthy, how would you rate the health of household members last winter **before** weatherization? By health I mean illnesses such as colds, flus, allergies, frequent headaches, frequent nausea, or arthritis.

BEFORE

1	2	3	4	5	6	7	8
very poor			acceptable			very healthy	DON'T REMEMBER

Using the same scale (REPEAT SCALE IS NECESSARY), how would you rate the health of household members last winter **after weatherization?**

AFTER

1	2	3	4	5	6	7	8
very poor			acceptable			very healthy	DON'T REMEMBER

G4. Please look at Scale G4. Using a scale of 1 to 7, where 1 is very unsafe, 4 is acceptable, and 7 is very safe, how would you rate the safety of your home last winter **before** weatherization? By safety, I mean absence of hazards. Some examples of hazards in the home are faulty electrical, heating, or plumbing systems; combustible materials or other fire hazards; unstable porches or broken doors; or the absence of safety precautions such as bolt locks or smoke detectors.

BEFORE

1	2	3	4	5	6	7	8
very unsafe			acceptable			very safe	DON'T REMEMBER

Using the same scale (REPEAT SCALE IF NECESSARY), how would you rate the safety of your home last winter **after** weatherization?

AFTER

1	2	3	4	5	6	7	8
very unsafe			acceptable			very safe	DON'T REMEMBER

G5. Please look at Scale G5. Using a scale of 1 to 7, where 1 is very expensive, 4 is acceptable, and 7 is very inexpensive, how would you rate the cost of your heating bills last winter before weatherization?

BEFORE

1	2	3	4	5	6	7	8
very expensive			acceptable			very inexpensive	DON'T REMEMBER

Using the same scale (REPEAT SCALE IF NECESSARY), how would you rate the cost of your heating bills last winter after weatherization?

AFTER

1	2	3	4	5	6	7	8
very expensive			acceptable			very inexpensive	DON'T REMEMBER

G6. Please look at Scale G6. Using a scale of 1 to 7, where 1 is very much lower, 4 is about the same, and 7 is very much higher, how would you rate the property value of your home after weatherization as compared to before weatherization? By property value, I mean the dollar value of the home if sold.

1	2	3	4	5	6	7	8
very much lower			about the same			very much higher	DON'T REMEMBER

END

On behalf on the U.S. Department of Energy, I would like to thank you for your time and patience today. The information that you have shared with us will be helpful in our study.

*These items are modified versions of questions taken from the 1990 Residential Energy Consumption Survey (RECS) conducted by the Energy Information Administration.

INTERVIEWER INSTRUCTIONS:

Check to make sure each question has been answered and that verbatim responses are clear and legible.

TIME ENDED:_____

version 18C
5/10/91

Interviewer_____

Date of Interview._____

Time Started_____

FUEL-OIL STUDY OCCUPANT QUESTIONNAIRE
CONTROL HOME

A. Identification

INTERVIEWER INSTRUCTIONS:

Complete Questions A1 and A2 using data from the information sheet before starting the interview.

A1. Household Identifier _____

A2. Name of WAP Applicant _____

SCREENER:

ASK TO SPEAK TO THE APPLICANT NAMED IN QUESTION A2. IF AVAILABLE, READ THE FOLLOWING AND GO TO QUESTION A3.

> Your home will be weatherized soon as a participant in the Weatherization Assistance Program. We would like to conduct an interview to learn more about your energy use.

IF THE APPLICANT NAMED IN QUESTION A2 IS NOT AVAILABLE, READ THE FOLLOWING AND THEN ASK QUESTION 1:

> Your home will be weatherized soon as a participant in the Weatherization Assistance Program. We would like to conduct an interview to learn more about your energy use.

1. I'd like to speak to a person over eighteen years of age who is knowledgeable about paying the energy bills. Is that person available? (IN ORDER TO QUALIFY, THE RESPONDENT DOES NOT HAVE TO PAY THE CHECK. AS LONG AS THE RESPONDENT IS KNOWLEDGEABLE ABOUT THE ENERGY USE AND/OR BILLS, HE OR SHE QUALIFIES.)

1.	YES, THE PERSON YOU ARE SPEAKING TO IS THE RESPONDENT	CONTINUE WITH QUESTION A3.
2.	YES, RESPONDENT IS ANOTHER PERSON. .	ONCE A RESPONDENT IS PRESENT, RETURN TO THE INTRODUCTION AND CONFIRM THAT THE RESPONDENT IS OVER 18 AND IS KNOWLEDGEABLE ABOUT PAYING THE ENERGY BELLS. IF THE RESPONDENT QUALIFIES, CONTINUE WITH QUESTION A3.
3.	NO, RESPONDENT IS NOT AVAILABLE	(NAMES:_____) IDENTIFY NAMES OF SEVERAL PEOPLE WHO MIGHT BE SUITABLE RESPONDENTS. INFORM THE CURRENT RESPONDENT THAT WE WILL CONDUCT THE INTERVIEW OVER THE TELEPHONE AT A LATER DATE. LEAVE A COPY OF THE EXHIBITS AT THE HOUSE. DO NOT PROCEED WITH THE INTERVIEW.

INTERVIEWER INSTRUCTIONS:

IF RESPONDENT NEEDS INFO: The survey is a part of the Weatherization Assistance Program. The survey is required of every participant in the Fuel Oil Study.

IF RESPONDENT IS HESITANT: Your answers to these questions will provide valuable information to the Department of Energy. The interview will take approximately 30 minutes.

A3. Name of respondent._____

Relation to WAP contact_____

[ ] RESPONDENT IS SAME AS WAP CONTACT

A3a. Has any weatherization work been done to your home by the Weatherization Assistance program before April 1991?

[ ] No (GO TO QUESTION A4)
[ ] Yes (PROBE AND INSPECT HOME, IF WEATHERIZED BY WAP, SWITCH TO WEATHERIZED HOME QUESTIONNAIRE.)

INTERVIEWER INSTRUCTIONS:

If respondent has trouble remembering the dates in Questions A4, A5, and A6, probe for:

- Season
- Major life event
- Major news story or political event happening at that time

Then, ask for year (and month) again.

A4. In what year was this home built? Just your estimate.*

[ ] Before 1900	[] 1940-1949	[ ] 1985
[ ] 1900-1909	[ ] 1950-1959	[ ] 1986
[ ] 1910-1919	[] 1960-1969	[ ] 1987
[ ] 1920-1929	[ ] 1970-1979	[ ] 1988
[ ] 1930-1939	[ ] 1980-1984	[ ] 1989
		[ ] 1990

A5. In what year did your family move into this home?*

[ ] Before 1900	[ ] 1940-1949	[ ] 1985
[ ] 1900-1909	[] 1950-1959	[ ] 1986
[] 1910-1919	[ ] 1960-1969	[ ] 1987
[ ] 1920-1929	[ ] 1970-1979	[ ] 1988
[ ] 1930-1939	[ ] 1980-1984	[ ] 1989
		[ ] 1990

IF "1989" OR LATER ON QUESTION A5, ASK:

A6. In which month did you move in?*

[ ] January	[ ] May	[ ] September
[ ] February	[ ] June	[ ] October
[ ] March	[ ] July	[ ] November
[ ] April	[ ] August	[ ] December

B. Major Heating Fuel

Next, I will ask some questions about the fuels you used to heat your home last winter before January 1991 and after January 1991. Throughout the survey, when I ask about last winter before January 1991, I mean October, November, and December of 1990. When I ask about last winter after January 1991, I mean February, March, and April of 1991. We are asking about these rime frames because other houses being studied were weather ized in January 1991,

INTERVIEWER INSTRUCTIONS:

If two or more heating fuels are used, the main heating fuel is the one that provides most of the heat for the home. The main heating fuel may not necessarily be the one used for the central heating system.

(HAND RESPONDENT EXHIBIT BOOKLET)

B1. Please look at Exhibit B1. What was the one main heating fuel used for heating your home last winter before January 1991?*

	B1 Main Fuel (Mark only one)	B2 (Mark all other fuels that apply)
Gas from underground pipes serving the neighborhood	[]	[]
Bottled gas (LPG or Propane)	[ ]	[ ]
Fuel oil	[ ]	[ ]
Kerosene or coal oil	[ ]	[ ]
Electricity	[ ]	[ ]
Coal or coke	[ ]	[ ]
Wood	[ ]	[ ]
Solar collectors	[ ]	[ ]
Other (specify)_____	[ ]	[ ]
NO FUELS USED	[ ]	[ ]
DON'T KNOW	[ ]	[ ]

B2. Please look at Exhibit Bl again. You mentioned that your main heating fuel used last winter before January 1991 was (FUEL FROM QUESTION Bl). What other fuels were used to heat your home last winter before January 1991 -- including those used to provide heat just occasionally? Don't forget to include fuels that ran portable heaters if you used them. (MARK ALL THAT APPLY IN COLUMN B2. IF NONE, MARK "NO FUELS USED")*

IF ADDITIONAL FUELS ARE IDENTIFIED FROM QUESTION B2, ASK:

B3. Going back to your mam heating fuel used last winter before January 1991 -- (FUEL FROM QUESTION B1) -- did this fuel provide all or almost all of the heat for your home, about three-fourths, or closer to half of the heat for your home?*

[ ] All or almost all (95% or more)
[ ] About three-fourths (67-94%)
[ ] Closer to half (66% or less)
[ ] DON'T KNOW/REMEMBER

Now, I will ask similar questions about the fuels you used last winter after January 1991.

B4. Please look at Exhibit B1 again. What was the **one main heating fuel** used for heating your home last winter **after** January 1991?*

	B4 Main Fuel (Mark only one)	B5 (Mark all other fuels that apply)
Gas from underground pipes serving the neighborhood	[ ]	[ ]
Bottled gas (LPG or Propane)	[ ]	[ ]
Fuel oil	[ ]	[ ]
Kerosene or coal oil	[ ]	[ ]
Electricity	[ ]	[ ]
Coal or coke	[ ]	[ ]
Wood	[ ]	[ ]
Solar collectors	[ ]	[ ]
Other (specify)_____	[ ]	[ ]
NO FUELS USED	[ ]	[ ]
DON'T KNOW	[ ]	[ ]

B5. Please look at Exhibit B1 again. You mentioned that your **main heating** fuel used last winter **after** January 1991, was (FUEL FROM QUESTION B4). What **other** fuels were used to heat your home last winter after January 1991 -- including those used to provide heat just occasionally? Don't forget to include fuels that ran portable heaters if you used them. (MARK ALL THAT APPLY IN COLUMN B5. IF NONE, MARK "NO FUELS USED")*

IF ADDITIONAL FUELS ARE IDENTIFIED FROM QUESTION B5. ASK:

B6. Going back to your **main heating fuel** used last winter **after** January 1991 -- (FUEL FROM QUESTION B4) -- did this fuel provide all or almost all of the heat for your home, about three-fourths, or closer to half of the heat for your home?*

[ ] All or almost all (95% or more)
[ ] About three-fourths (67-94%)
[ ] Closer to half (66% **or** less)
[ ] DON'T KNOW/REMEMBER

B7a. Please look at Exhibit B7. Last winter before January 1991, did you use any of the following to help heat your home? (CHECK AS MANY AS WERE USED.)

(B7a) BEFORE	(B7b) AFTER
[ ] Wood/coal stove	[ ]
[ ] Fireplace	[ ]
[ ] Cooking stove/range/oven	[ ]
[ ] Non-portable room heater burning gas, oil, or kerosene	[ ]
[ ] Portable kerosene heater	[ ]
[ ] Non-portable electric heater	[ ]
[ ] Electric portable heater (cord-connected)	[ ]
[ ] Other (specify):_____	[ ]
[ ] NONE	[ ]

B7b. Please look at Exhibit B7 again. Last winter after January 1991, did you use any of the following to help heat your home? (CHECK AS MANY AS WERE USED IN COLUMN B7b.)

INTERVIEWER INSTRUCTIONS:

Confirm that responses to B7a do not contradict responses to B1 and B2. Confirm that responses to B7b do not contradict responses to B4 and B5. Probe the respondent if the responses contradict.

ASK QUESTION B8 ONLY FOR EACH ITEM IN QUESTION B7 USED BOTH BEFORE AND AFTER JANUARY 1991:

B8. Please rum to Exhibit B8. Please tell me how often you used the following to help heat your home last winter after January 1991 as compared to last winter before January 1991. Did you use it less, about the same, or more after January 1991 as compared to before January 1991? (CIRCLE ONE NUMBER IN EACH LINE ASKED.)

	Used Less After	Used About The Same	Used More After
1. Wood/coal stove	1	2	3
2. Fireplace	1	2	3
3. Cooking stove/range/oven	1	2	3
4. Non-portable room heater burning gas, oil, or kerosene	1	2	3
5. Portable kerosene heater	1	2	3
6. Non-portable electric heater	1	2	3
7. Electric portable heater (cord-connected)	1	2	3
8. Other (_____)	1	2	3

C. Demographics

Now I have some questions about the people who live here and about your housing costs.

C1. Please tell me how many people living in your home last winter **before** January 1991 were . . . (READ EACH ITEM).

Under the age of 5 _____

Between 5 and 17 years old_____

Between 18 and 64 years old_____

65 years old or older_____

TALLY -- so that is (READ NUMBER) in total? _____
ENTER CORRECT TOTAL HERE

C2. You have told me that there were (READ TOTAL NUMBER FROM QUESTION C1) people living in your home last winter before January 1991. How many people were living in your home last winter after January 1991?

_____
NUMBER OF RESIDENTS

[ ] SAME NUMBER AFTER JANUARY 1991 AS BEFORE JANUARY 1991

C3. Were any of the people living in your home last winter before January 1991 handicapped? By handicapped, I mean a permanent condition. I do not mean a temporary condition, such as a short-term illness. (EYEGLASSES ARE NOT CONSIDERED A HANDICAP). (IF YES, ASK HOW MANY.)

_____
NUMBER HANDICAPPED

C4. Do you or members of your household own your home, or rent?*

[ ] Own (buying)
[ ] Rent
[ ] Occupied without payment of rent (SKIP TO SECTION D)

FROM QUESTION C4. IF HOUSEHOLD OWNS OR PAYS RENT. ASK:

C5. Please tell me which category best describes the monthly rent or mortgage payment the household pays for your home. Is it . . .? Stop me when I reach the category. (READ CATEGORIES.)

[ ] less than $200 per month
[ ] $201 - 300 per month
[ ] $301 - 400 per month
[ ] $401 - 500 per month
[ ] $501 - 600 per month
[ ] $601 - 700 per month
[ ] $701 - 800 per month
[ ] $801 - 900 per month
[ ] more than $900 per month
[ ] OWNED, MORTGAGE PAID OFF (SKIP TO SECTION D)
[ ] DON'T KNOW

C6. Does this payment include: (READ ITEMS AND PROBE FOR "YES" OR "NO".)

	Yes	No	DON'T KNOW
X. fuel oil	[]	[]	[]
2. electricity	[ ]	[ ]	[ ]
3. natural gas	[ ]	[J	[ ]
4. property tax	[ ]	[ ]	f]
5. insurance (house or renter's)	[ ]	[ ]	[ ]
6. water	[ ]	[J	[ ]
7. garbage	[]	[]	[]
8. other (specify):_____	[ ]	[ ]	[ ]

D. Conditioned Living Space

My next question is about the number of different types of rooms in your home. Remember that when I ask about last winter before January 1991, I mean October, November, and December of 1990. When I ask about last winter after January 1991, I mean February, March, and April of 1991.

INTERVIEWER INSTRUCTIONS:

For one-bedroom efficiency or studio apartment, record "0 bedrooms" and number of bathrooms and other rooms.

Full Bathroom -- sink with running water and flush toilet and bathtub or shower.

Half Bathroom — toilet or bathtub or shower

D1. How many of each of the following rooms does this home have? (ASK EACH ITEM AND RECORD NUMBER FOR EACH.)*

	D1 Total Number	D2A Number heated last winter before January 1991	D2B Number heated last winter after January 1991
Bedrooms?			
Full bathrooms?			
Half bathrooms?			
All other rooms: (Do not count laundry rooms, foyers or unfinished storage space. Only count porches if they are enclosed and used year-round.)			

D2. (FOR EACH TYPE OF ROOM THE RESPONDENT HAS IN THE HOME, ASK D2A, THEN D2B. A HEATED ROOM IS ONE THAT IS WARM ENOUGH TO BE USED.)

D2a. Of the (READ NUMBER OF ROOMS AND TYPE OF ROOM), how many were heated last winter before January 1991 (RECORD ABOVE ON COLUMN D2A.)

D2b. And how many (READ TYPE OF ROOM) were heated last winter after January 1991? (RECORD ABOVE ON COLUMN D2B.)

E. Thermostat Management

I would now like to ask you some questions about the temperature at which you kept your home

INTERVIEWER INSTRUCTIONS:

Remember, we are interested in the respondent's perceptions. Ask the respondent for their opinion; avoid checking the thermostat for the actual settings.

If respondent keeps different sections of the home at different temperatures, we want to know the temperature in the part of the house where the people are. If, for example, the heat is turned off upstairs during the day because the family is downstairs, we want the downstairs temperature.

We would like to know the actual temperature of the home. If the respondent doesn't know the temperature, but does know the thermostat setting, record the thermostat setting. Otherwise, probe for best estimate.

E1a. Last winter before January 1991, did you keep your home at the same temperature at all tiroes of the day, or did you change the temperature?

[ ] Kept home at same temperature (ASK QUESTION E1B)
[ ] Changed the temperature (GO TO QUESTION E1C)

IF KEPT HOME AT SAME TEMPERATURE ON QUESTION E1A. ASK:

E1b. Before January 1991, at what temperature did you usually Keep your home?

Degrees Fahrenheit_____
[ ] HEAT TURNED OFF

(GO TO QUESTION E2A)

IF CHANGED THE TEMPERATURE ON QUESTION E1A. ASK:

E1c. Before January 1991, at what temperature did you usually keep your home during the day when someone was at **home?***

Degrees Fahrenheit _____
[ ] HEAT TURNED OFF

E1d. Before January 1991, at what temperature did you usually keep your home during the day when no one was at **home?***

Degrees Fahrenheit _____
[ ] HEAT TURNED OFF

E1e. Before January 1991, at what temperature did you **usually** keep your home during sleeping **hours?***

Degrees Fahrenheit _____
[ ] HEAT TURNED OFF

(ASK EVERYONE:)

E2a. Last winter **after** January 1991, did you keep your home at the same temperature at all times of the day, or did you change the temperature?

[ ] Kept home at same temperature (ASK QUESTION E2B)
[ ] Changed the temperature (GO TO QUESTION E2C)

IF KEPT HOME AT SAME TEMPERATURE ON QUESTION E2A, ASK:

E2b. **After** January 1991, at what temperature did you usually keep your home?

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

(GO TO SECTION F)

IF CHANGED THE TEMPERATURE ON QUESTION E2A, ASK:

E2c. **After** January 1991, at what temperature did you **usually** keep your home during the day **when someone was at home?***

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

E2d. **After** January 1991, at what temperature did you **usually** keep your home during the day **when no one was at home?***

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

E2e. **After** January 1991, at what temperature did you **usually** keep your home **during sleeping hours?***

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

F. Events Affecting Energy Use

The next questions are about events which may have affected your energy use last winter. (REMIND RESPONDENT IF NECESSARY): *Remember that when I ask about last winter before January 1991, I mean October, November, and December of 1990. When I ask about last winter after January 1991, I mean February, March, and April of 1991.*

F1a. Last winter before January 1991, was there ever a time when you wanted to use your fuel-oil heating system, but could not, for one or more of the following reasons?

	Yes	No
Your heating system was broken?	[ ]	[ ]
You ran out of fuel oil?	[ ]	[ ]
The utility company discontinued your electric service?	[ ]	[ ]

IF "YES" TO ANY PART OF QUESTION F1A, ASK:

F1b. Thinking about these times that your went without heat, last winter before January 1991, how many separate times were there?

Total times: ____

F1c. Altogether, how many hours or days were you without heat?

Total hours without heat: _____

OR

Total days without heat: _____

F2a. Last winter after January 1991, was there ever a time when you wanted to use your fuel-oil heating system, but could not, for one or more of the following reasons?

	Yes	No
Your heating system was **broken?**	[ ]	[ ]
You **ran out** of fuel oil?	[ ]	[ ]
The utility company **discontinued** your electric service?	[ ]	[ ]

IF "YES" TO ANY PART OF QUESTION F2A, ASK:

F2b. Thinking about these times that your went without heat, last winter **after** January 1991, how many separate times were there?

Total times: _____

F2c. Altogether, how many hours or days were you without heat?

Total hours without heat: _____

OR

Total days without heat: _____

F3. Was any home repair or major house renovation that would affect energy use done on your home by yourself or other organization between November 1990 and April 1991?

[ ] Yes
[ ] No (GO TO QUESTION F6)
[ ] DON'T KNOW (GO TO QUESTION F6)

IF YES ON QUESTION F3. ASK:

F4. Please describe the home repair or renovation, (RECORD VERBATIM BELOW.)

MONTH

(1) _____ _____

_____ _____

(2) _____ _____

_____ _____

(3) _____ _____

_____ _____

(4) _____ _____

_____ _____

F5. In which month was the work done? (RECORD UNDER COLUMN FOR MONTH ABOVE.)

Now I'm going to ask you to describe the number of people in your home during the 1990 Thanksgiving holiday period and the Christmas holiday period compared to the rest of the winter. By number of people in your home I am referring to ***overnight*** *visiting* ***not*** *visiting for meals or parties.*

F6. Please look at Exhibit F6. First, how did the number of people in your home during the 1990 Thanksgiving holiday and weekend compare to other pans of the winter? (PROBE IF NEEDED: By number of people in your home I am referring to **overnight** visiting **not** visiting for meals or parties.)

[ ] Fewer people than other parts of the winter
[ ] About the same number of people as other parts of the winter
[ ] More people than other parts of the winter
[ ] DON'T KNOW/DON'T REMEMBER

F7. Please look at Exhibit F6 again, And how did the number of people in your home during the 1990 Christmas holiday through New Year's compare to the other pans of the winter? (PROBE IF NEEDED: By number of people in your home I am referring to **overnight** visiting **not** visiting for meals or parties.)

[ ] Fewer people than other parts of the winter
[ ] About the same number of people as other parts of the winter
[ ] More people than other parts of the winter
[ ] DON'T KNOW/DON'T REMEMBER

G. Impacts on Health, Safety, Comfort, Affordability

My next questions ask for your opinion about the health, safety, comfort, and value of your home,

G1a. Please look at Scale G1. Using a scale of 1 to 7, where 1 is too cold, 4 is comfortable, and 7 is too hot, how would you rate the temperature in your home last winter before January 1991?

BEFORE

1	2	3	4	5	6	7	8
too cold			comfortable			too hot	DON'T REMEMBER

IF 1-3 OR 5-7 ON QUESTION G1A, ASK: _____

G1b. Why couldn't you keep your home the temperature you preferred last winter before January 1991? (DO NOT READ ANSWER CATEGORIES.) (CHECK ALL THAT APPLY.)*

[ ] Heating system problem
[ ] Landlord controls the temperature
[ ] Difference of opinion in household
[ ] Fuel shortage
[ ] High cost of fuel
[ ] Construction problem, such as broken windows, or holes in walls
[ ] Other (please specify)_____

_____

[ ] NOT SURE

G1c. Using the same scale (REPEAT SCALE IF NECESSARY) how would you rate the temperature in your home last winter after January 1991?

AFTER

1	2	3	4	5	6	7	8
too cold			comfortable			too hot	DON'T REMEMBER

IF 1-3 OR 5-7 ON QUESTION G1C. ASK: _____

G1d. Why couldn't you keep your home the temperature you preferred last winter after January 1991? (DO NOT READ ANSWER CATEGORIES.) (CHECK ALL THAT APPLY.)*

[ ] Heating system problem
[ ] Landlord controls the temperature
[ ] Difference of opinion in household
[ ] Fuel shortage
[ ] High cost of fuel
[ ] Construction problem such as broken windows, or holes in walls
[ ] Other (please specify)_____

_____

[ ] NOT SURE

G2. Please look at Scale G2. Using a scale of 1 to 7, where 1 is very drafty, 4 is somewhat drafty, and 7 is not at all drafty, how would you rate the draftiness of your home last winter **before** January 1991?

BEFORE

1	2	3	4	5	6	7	8
very drafty			somewhat drafty			not at all drafty	DON'T REMEMBER

Using the same scale (REPEAT SCALE IF NECESSARY), how would you rate the draftiness in your home last winter **after** January 1991?

AFTER

1	2	3	4	5	6	7	8
very drafty			somewhat drafty			not at all drafty	DON'T REMEMBER

G3. Please look at Scale G3. Using a scale of 1 to 7, where 1 is very poor, 4 is acceptable, and 7 is very healthy, how would you rate the health of household members last winter **before** January 1991? By health I mean illnesses such as colds, flus, allergies, frequent headaches, frequent nausea, or arthritis.

BEFORE

1	2	3	4	5	6	7	8
very poor			acceptable			very healthy	DON'T REMEMBER

Using the same scale (REPEAT SCALE IS NECESSARY), how would you rate the health of household members last winter **after** January 1991?

AFTER

1	2	3	4	5	6	7	8
very poor			acceptable			very healthy	DON'T REMEMBER

G4. Please look at Scale G4. Using a scale of 1 to 7, where 1 is very unsafe, 4 is acceptable, and 7 is very safe, how would you rate the safety of your home last winter **before** January 1991? By safety, I mean absence of hazards. Some examples of hazards in the home are faulty electrical, heating, or plumbing systems; combustible materials or other fire hazards; unstable porches or broken doors; or the absence of safety precautions such as bolt locks or smoke detectors.

BEFORE

1	2	3	4	5	6	7	8
very unsafe			acceptable			very safe	DON'T REMEMBER

Using the same scale (REPEAT SCALE IF NECESSARY), how would you rate the safety of your home last winter after January 1991?

AFTER

1	2	3	4	5	6	7	8
very unsafe			acceptable			very safe	DON'T REMEMBER

G5. Please look at Scale G5. Using a scale of 1 to 7, where 1 is very expensive, 4 is acceptable, and 7 is very inexpensive, how would you rate the cost of your heating bills last winter before January 1991?

BEFORE

1	2	3	4	5	6	7	8
very expensive			acceptable			very inexpensive	DON'T REMEMBER

Using the same scale (REPEAT SCALE IF NECESSARY), how would you rate the cost of your heating bills last winter after January 1991?

AFTER

1	2	3	4	5	6	7	8
very expensive			acceptable			very inexpensive	DON'T REMEMBER

G6. Please look at Scale G6. Using a scale of 1 to 7, where 1 is very much lower, 4 is about the same, and 7 is very much higher, how would you rate the property value of your home after January 1991 as compared to before January 1991? By property value, I mean the dollar value of the home if sold.

1	2	3	4	5	6	7	8
very much lower			about the same			very much higher	DON'T REMEMBER

END

On behalf on the U.S. Department of Energy, I would like to thank you for your time and patience today. The information that you have shared with us will be helpful in our study.

*These items are modified versions of questions taken from the 1990 Residential Energy Consumption Survey (RECS) conducted by the Energy Information Administration.

INTERVIEWER INSTRUCTIONS:

Check to make sure each question has been answered and that verbatim responses are clear and legible.

TIME ENDED:_____

Version 3
2/21/91

Form completed by: _____
Date: _____

FUEL-OIL STUDY WEATHERIZATION INFORMATION SURVEY

A. IDENTIFICATION

A1. House Identifier: (TO be completed by ORNL)_____

A2. Subgrantee Name: _____

A3. Occupant Name: _____

A4. Occupant Phone Number: _____

A5. Occupant Address: _____

_____

B. GENERAL INFORMATION

B1. What was the household's income on the application form at the time when its eligibility was verified for the services it received in the 1990 program year?

$_____

B2. Weatherization work was performed primarily in this house in January 1991. What were the exact start and stop dates for this work (month, day, and year)? (Dates for weatherization work performed at other times will be identified in Section G.)

Weatherization work started on _____.

Weatherization work was completed on _____.

B3. What electric utility company serviced this household and what was the household's utility account number?

Electric utility: _____.

Account number: _____.

C. WEATHERIZATION MEASURES INSTALLED

Please check any of the measures listed that were installed in this dwelling during the time period identified in Question B2. (Measures installed at other times will be identified in Section G.) Indicate whether they were installed by in-house crew or contractor. If measures that are not listed were installed, please describe them in the appropriate "Other" category.

	Installed by: In-house crew	Contractor
C1. Insulation		
Attic Insulation (installed for the first time)	[ ]	[ ]
Attic Insulation (added to existing insulation)	[ ]	[ ]
*Wall Insulation (normal technique)	[ ]	[ ]
*Wall Insulation (high-density technique)	[ ]	[ ]
Floor Insulation	[ ]	[ ]
Rim or Band Joist Insulation	[ ]	[ ]
Other Envelope Insulation	[ ]	[ ]
(Specify:_____		
_____)		

The "normal technique" for installing wall insulation is characterized by blowing cellulose or fiberglass insulation into exterior wall cavitites to average densities using a two-hole, gravity-blow installation method. The "high-density technique" is characterized by blowing cellulose insulation into exterior wall cavities to high densities using a one-hole, tube-fill installation method. Under the "high-density technique," special attention is focused on sealing air leakage sites while insulating the walls; air bypasses are identified during the installation process and sealed by plugging the air-leakage pathways with cellulose.

C2. Air Leakage Control		
General Caulking and Weatherstripping (door and window)	[ ]	[ ]
Air sealing, emphasizing by-passes with blower door testing)	[ ]	[ ]
Air sealing, emphasizing by-passes without blower door testing)	[ ]	[ ]
Distribution System	[ ]	[ ]
Other Infiltration Reduction	[ ]	[ ]
(Specify:_____		
_____)		

	Installed by: In-house crew	Contractor
C3. Water Heating System		
Water Heater Tank Insulation	[ ]	[ ]
Entire Water Heating System Replacement	[ ]	[ ]
Pipe Insulation	[ ]	[ ]
Low How Shower Heads	[ ]	[ ]
Temperature Reduction	[ ]	[ ]
Other Water Heater Measures	[ ]	[ ]
(Specify:_____		
_____)		
C4. Structural Repairs (full or partial)		
Attic Ventilation	[ ]	[ ]
Roof	[ ]	[ ]
Doors	[]	[ ]
Replacement of doors	[ ]	[ ]
Windows/Glazing	[ ]	[ ]
Replacement of windows	[ ]	[ ]
Walls	[ ]	[ ]
Floor	[ ]	[ ]
Other Structural Repairs	[ ]	[ ]
(Specify:_____		
_____)		
C5. Windows and Doors		
Storm Windows (How many?_____)	[ ]	[ ]
Storm Doors	[ ]	[ ]
Window Films or Shades	[ ]	[ ]
Other Window or Door Treatments	[ ]	[ ]
(Specify:_____		
_____)		

	Installed by: In-house crew	Contractor
C6. Space Heating System		
Clean and Tune-up	[ ]	[ ]
Entire Heating System Replacement	[ ]	[ ]
Set-back Thermostat	[ ]	[ ]
Heating System Component Retrofits	[ ]	[ ]
(Specify:_____)		
Safety Problem Fixed	[ ]	[ ]
(Specify:_____)		
Repairs	[ ]	[ ]
(Specify:_____)		
Other Heating System Modifications	[ ]	[ ]
(Specify:_____ _____)		
C7. Space Cooling System		
Tune-up	[ ]	[ ]
(e.g., cleaning, controls adjustment, filter replaced)		
Entire Air-conditioning System Replacement	[ ]	[ ]
Fans Installed or Replaced	[ ]	[ ]
Set-back Thermostat	[ ]	[ ]
Other Cooling System Modifications	[ ]	[ ]
(Specify:_____ _____)		
C8. Other Health and Safety Repairs or Improvements		
Smoke Detectors	[ ]	[ ]
Radon Testing	[ ]	[ ]
Carbon Monoxide Testing	[ ]	[ ]
Other	[]	[]
(Specify:_____ _____)		

D. SERVICE DELIVERY PROCEDURES

Selection of Measures

D1. Please check the type of procedure that was used to select the measures that were installed in this dwelling during the time period identified in Question B2. (CHECK ALL THAT APPLY)

[ ] Envelope measures were selected using a priority list (i.e., a checklist or prescribed list of measures)
[ ] Envelope measures were selected using a decision approach or scoring (calculation) developed for each house
[ ] Envelope measures were selected based on an analysis of energy savings per dollar invested
[ ] Space-heating system measures were selected based on physical characteristics or a standard approach
[ ] Space-heating system measures were selected using a decision approach or scoring (calculations) based on operating performance
[ ] Space-heating system measures were selected based on an analysis of energy savings per dollar invested
[ ] Selection of envelope and space-heating system measures was made simultaneously under one approach rather than separately using two distinct procedures.
[ ] Other measure selection procedures. (Specify:_____

_____)

Use of Diagnostics

D2. Please check the type of diagnostic procedures that were used in this dwelling to perform the work during the time period identified in Question B2. (CHECK ALL THAT APPLY)

[ ] Blower door testing was used to find leakage areas for sealing
[ ] Blower door testing was used to measure air leakage rates
[ ] Blower door testing was used to determine when to stop work using cost-effectiveness guidelines (not minimum ventilation guidelines)
[ ] Distribution system diagnostics were used to find leakage areas for sealing
[ ] Distribution system diagnostics were used to determine system balancing
[ ] Infrared scanning was used
[ ] Indoor air quality testing was used
[ ] Heating system efficiency testing was used
[ ] A heating system safety inspection was conducted
[ ] Other diagnostic procedures. (Specify;_____

_____)

Quality Control

D3. Please indicate the type of quality control inspection this house received following the work performed during the time period identified in Question B2. (CHECK ALL THAT APPLY)

[ ] A visual quality control inspection after weatherization for envelope measures
[ ] A quality control inspection after weatherization for envelope measures that used blower door testing as a diagnostic tool
[ ] A quality control inspection after weatherization for envelope measures that used infrared scanning as a diagnostic tool
[ ] A visual quality control inspection after weatherization for heating system measures
[ ] A quality control inspection after weatherization for heating system measures that used diagnostic tools such as combustion efficiency testing
[ ] Other quality control procedures. (Specify:_____

_____)

Client Education

D4. Please check the types of client education that were provided to this house during the time period identified in Question B2. (CHECK ALL THAT APPLY)

[ ] Literature was mailed or left with client
[ ] In-person client education was provided
[ ] Other (Specify:_____

_____)

E. COSTS: MATERIALS, LABOR, INSTALLATION OVERHEAD AND PROGRAM MANAGEMENT

Definitions and Instructions

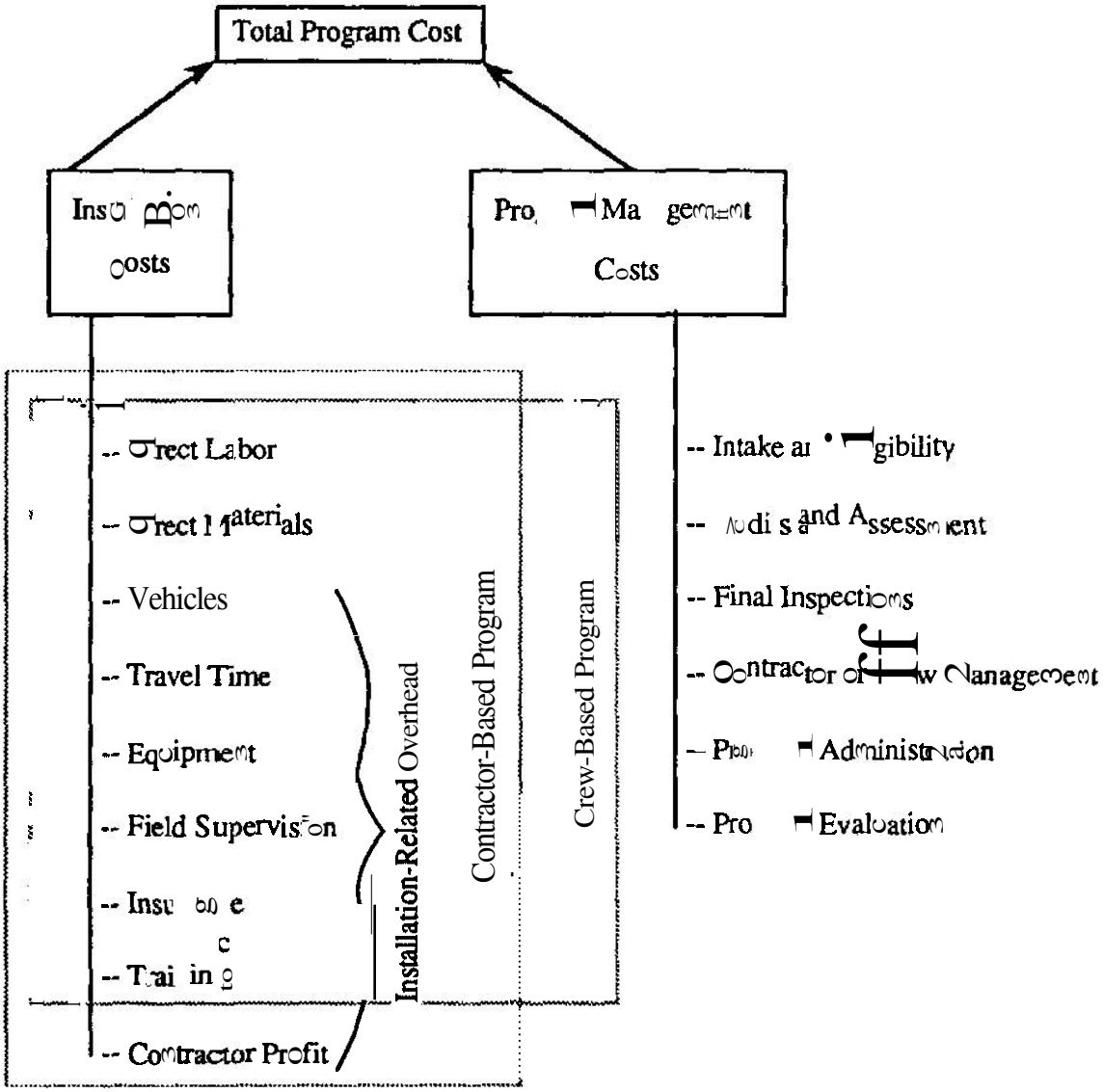
This page and Figure 1 on the following page provide background information for completing questions El to E4 on pages 10 to 12. The total cost of a program can be divided into installation costs and program management costs (Fig.1). Total installation costs include the costs of materials, direct labor and overhead expenses that are directly related to the installation process, such as the costs of vehicles, travel, equipment, insurance, field supervision, and training. When contractors deliver services, these installation overhead expenses are included, along with a profit, in the charges made for a job. When agency crews do the work, some of the installation overhead expenses may not be tracked directly on a per-house basis. As a result, there are separate questions for crew vs. contractor installation costs.

If a job is crew-based, supply the materials costs (Question El), calculate the direct labor costs (Question E2), and estimate the average per-house cost of installation-related overhead expenses (Question E2). To arrive at the overhead expense estimate, for example, your agency's costs for vehicles, equipment, liability insurance, training, travel time, field supervision and any other installation-related expenses in the 1990 program year (PY) should be summed and then divided by the number of homes weatherized in the 1990 program year. If a job is contractor-based, supply the materials costs (Question El) and the total installed costs (Question E3). If both crews and contractors worked on a house, complete all three questions (Questions El, E2, and E3). In completing Questions El, E2, and E3, costs should be for measures installed in this dwelling during the time period identified in Question B2. (Costs for weatherization work performed at other times will be identified in Section G.)

In addition, both crew-based and contractor-based programs should estimate an average program management cost per house weatherized. The program management cost should be calculated by subtracting the total installation costs (labor + materials + installation-related overhead) for all houses weatherized in PY 1990 from the total agency budget (in PY 1990). The total program management cost should then be divided by the number of houses weatherized (in PY 1990) to produce an average per-house program management cost (Question E4).

We realize that different agencies track costs in different ways. Please just use your best judgement in estimating the average installation-related overhead and the average program management expenses.

Figure 1. Program Cost Categories



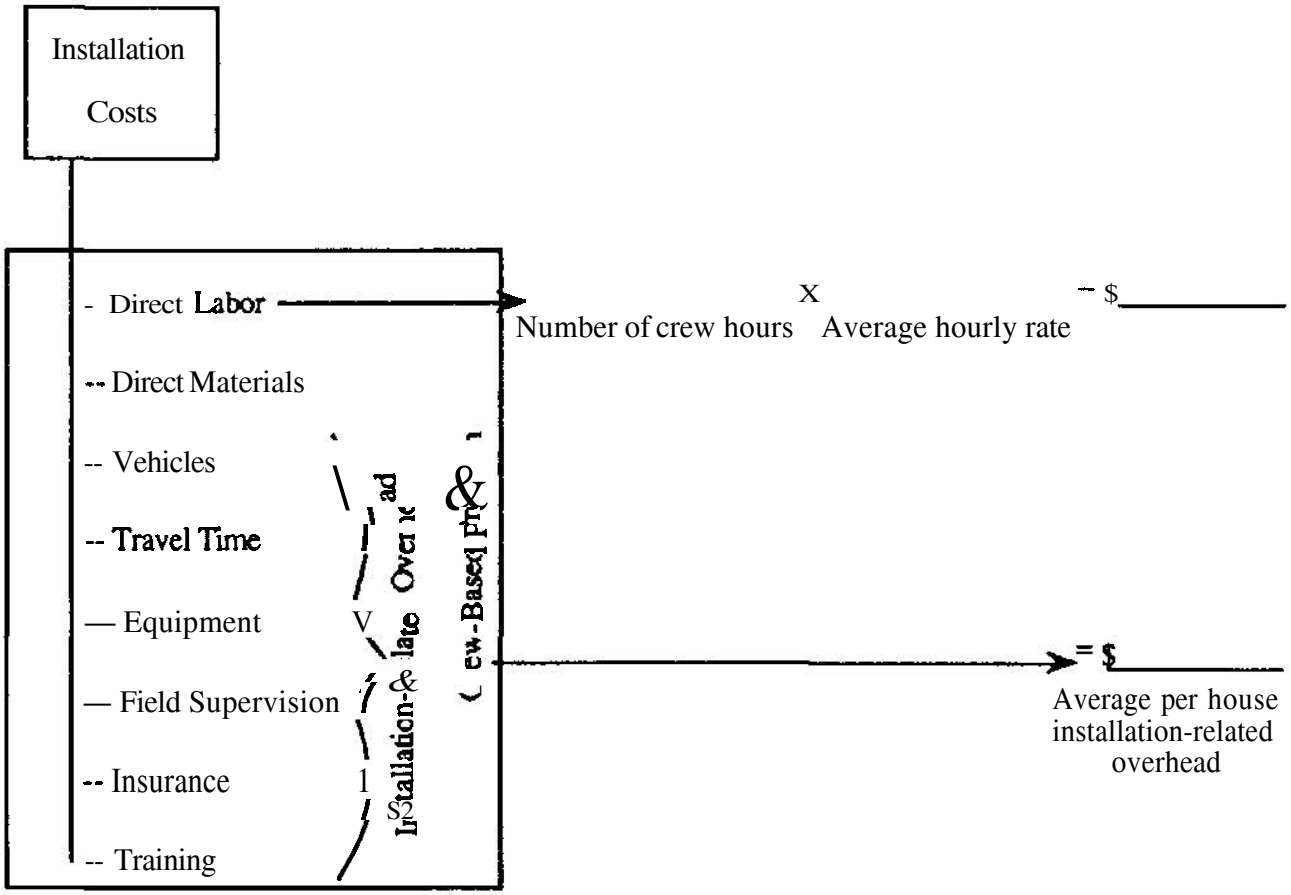
QUESTION E1: BREAKDOWN OF MATERIALS COSTS

In the chart below please fill in the crew-based and/or contractor-based materials cost of the measures that were installed in this dwelling during the time period identified in Question B2. Do not include labor, administrative or program support costs here. Do include costs covered by all sources of funding (i.e., PVE, LIHEAP, or utilities). If you cannot provide the costs by measure, just enter the TOTAL materials costs in the box at the bottom.

	Crew-Based Materials Costs	Contractor-Based Materials Costs
Insulation		
attic	$	$
wall	$	$
other	$	$
Air Leakage Control	$	$
Water Heating System Measures	$	$
Structural Repairs	$	$
Windows and Doors	$	$
Space Heating System		
retrofit	$	$
replacement	$	$
Space Cooling System		
retrofit	$	$
replacement	$	$
Other	$	$
	$	$
	Crew-Based Total Materials Costs	Contractor-Based Total Materials Costs

QUESTION E2: CREW-BASED INSTALLATION COSTS

Directions: Please fill in the number of crew hours for this house from information in your files for work performed during the time period identified in Question B2. Please fill in your best estimate of the average hourly rate for your crew and multiply this by the number of hours to produce an estimate of the direct labor costs. Estimate the average installation-related overhead by following the directions in the box at the beginning of Section E (page 8).



QUESTION E3: CONTRACTOR-BASED INSTALLATION COSTS

Directions: Please fill in the total installation costs billed by contractors for this house for work performed during the time period identified in Question B2. This should include all the cost categories listed above (include the materials costs reported on page 10 in this total, as well as labor costs and installation-related overhead) plus the contractor's profit.

Total Installed Cost $_____

QUESTION E4: AVERAGE PROGRAM MANAGEMENT COSTS

Total Program Costs for PY 1990 $_____

— Total Installation Costs* for All Houses Weatherized in PY 1990 $_____

*Add all direct materials costs, labor costs, and installation-related overhead together to obtain this cost figure.

Total Program Management Costs → $_____

-- Intake and Eligibility

-- Audits and Assessment

-- Final Inspections

—Contractor or Crew Management

- Program Administration

- Program Evaluation

Average per house** program management cost $_____

**Divide the total program management costs for PY 1990 by the number of houses weatherized in PY 1990.

F. FUNDING SOURCES

F1. What percentage of the funds spent on this house as identified in Section E were funds from DOE's WAP?

_____%

F2. If funds from non-DOE sources were used, were they all used according to DOE guidelines?

[ ] Yes
[ ] No

F3. Some program management costs (such as client intake and eligibility checks, or office space and expenses) may be absorbed by other programs or agencies (e.g., LIHEAP, Councils on Aging). What percentage of your program management costs would you estimate are absorbed by other programs or agencies?

_____%

G. OTHER WEATHERIZATION MEASURES INSTALLED AND THEIR COSTS

G1. Space-heating system measures may have been installed in this dwelling at a different time period than that identified in Question B2 (at the time houses were selected for the study, for example). If so, check any of the measures that were installed. Indicate whether they were installed by in-house crew or contractor.

	Installed by: In-house crew	Contractor
Clean and Tune-up	[ ]	[ ]
Entire Heating System Replacement	[ ]	[ ]
Set-back Thermostat	[ ]	[ ]
Repairs	[ ]	[ ]
(Specify:_____)		
Heating System Component Retrofits	[ ]	[ ]
(Specify:_____)		
Safety Problem Fixed	[ ]	[ ]
(Specify:_____)		
Other Heating System Modifications	[ ]	[ ]
(Specify:_____)		

G2. What were the costs of the measures identified in Question G1 (refer to Section E for directions)?

Material costs:

	crew-based	contractor-based
retrofit	$_____	$_____
replacement	$_____	$_____
Total	$_____	$_____

Crew-based installation costs;

_____ (Number of crew hours) X _____ (Average hourly rate) = $_____ (Direct labor costs)

Contractor-based installation costs:

Total installation cost: $_____

G3. What percent of the funds identified in Question G2 were funds from DOE's WAP?

_____%

G4. In Question G2 if funds from non-DOE sources were used, were they all used according to DOE guidelines?

[ ] Yes
[ ] No

G5. What were the exact installation dates (month, day, and year) for the measures identified in Question G1?

Installation started on_____

Installation completed on _____

G6. Were any measures other than those identified in Questions C1 - C8 and G1 installed in this dwelling? If so, please describe the measures installed, their costs, the percentage of funds from DOE's WAP, whether the funds were used according to DOE guidelines, and when the installations were performed.

_____

_____

_____

_____

_____

Version: March 20, 1991 Form Completed by: _____
Date: _____

FUEL-OIL STUDY CONTROL HOUSE INFORMATION SURVEY

IDENTIFICATION

House identifier: _____

Subgrantee name: _____

Occupant name: _____

Occupant phone number: _____

Occupant address: _____

_____

GENERAL INFORMATION

What was the household's income on the application form at the time when its eligibility was verified for the weatherization services it will receive in May or June 1991?

$_____

What electric utility company serviced this household and what was the household's utility account number?

Electric utility: _____

Account number: _____

WEATHERIZATION MEASURES

The control houses will not be weatherized by your agency until May or June 1991. Nevertheless, your agency may have already installed some measures in this dwelling for various reasons (for safety reasons at the time houses were selected for the study, for example). If any measures were installed, please describe them and identify when the installations were performed.

_____

_____

_____

_____

ORNL/CON-329

Energy Division

Description of the Weatherization Assistance Program in Larger Multifamily Buildings for Program Year 1989

J. M. MacDonald

April 1993

Prepared for the

Weatherization Assistance Programs Division

U.S. Department of Energy

Prepared by the
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APPENDIX A

National Evaluation of the DOE Weatherization Assistance Program
State Grantee Survey
High-Density Multifamily Units

PURPOSE

The National Evaluation of the Weatherization Assistance Program (WAP) is initiating a study of multifamily buildings with five or more units, called the High-Density Multifamily Study. The purpose of this study is to learn about the extent of WAP weatherization services to high-density multifamily buildings and how such services might be improved. High-density multifamily will be referred to with the acronym HDMF in this survey.

Current data available from the National Evaluation indicate that HDMF units account for 10% of the units weatherized across the country in Program Year (PY) 1989. The data also indicate weatherization activity for HDMF units occurred in 44 States in PY 1989. However, HDMF units comprise about 15% of the total eligible population, so these multifamily units appear to be underserved in PY 1989, and they have been served even less in the past.

The purpose of this survey is to elicit comments on the nature of weatherization services offered for HDMF buildings in your state. Several experts have indicated there are significant problems with offering weatherization services to HDMF buildings, so we are also interested in information on the nature of obstacles impacting potential services to HDMF buildings and any innovative approaches you may be using to overcome these obstacles.

Over the next 6 months, the U.S. Department of Energy (DOE) will be collecting information on HDMF buildings from a sample of local WAP agencies and utilities in several States. We will inform you when such information requests are made, and we may ask for your assistance. The enclosed *Evaluation Plan* provides an overview of the HDMF Study and the other four studies that comprise the National WAP Evaluation.

INSTRUCTIONS

There are 11 questions in this survey. Each question except questions 1 and 11 asks for a yes/no answer at the beginning. Please circle the YES or NO answer appropriate to each question. Written responses are also requested in many cases. Keep in mind for the written responses that extreme detail is not needed at this time. Thank you for your time and effort.

QUESTIONS

1. **Please estimate how many high-density multifamily (HDMF) dwelling units (not buildings) were weatherized in your state in Program Year (PY) 1989, using funds that are regulated by DOE/WAP rules:**

   HDMF is 5+ units per building — total HDMF units _____

   ESTIMATE THE NUMBER IF YOU TRACK MULTIFAMILY DIFFERENTLY.

   IF NO HDMF UNITS WERE WEATHERIZED IN PY 1989, PLEASE EXPLAIN WHY.

   _____

   _____

2. **Do you have any stated policy placing either a high or low priority on providing weatherization services to HDMF buildings or apartments in your State relative to other building types?**

   YES NO

   IF YOU ANSWERED YES, PLEASE DESCRIBE THE HIGH OR LOW PRIORITY BELOW, OR ATTACH A COPY OF ANY WRITTEN STATEMENT OF THE PRIORITY. ALSO DESCRIBE WHY THE HIGH OR LOW PRIORITY IS NEEDED.

   _____

   _____

   _____

   WAS THIS POLICY IN EFFECT IN PY 1989?

   YES NO

   ARE ANY POLICIES REGARDING PRIORITIES FOR HDMF BUILDINGS UNDER CONSIDERATION AT THIS TIME?

   YES NO

   IF YES, PLEASE DESCRIBE.

   _____

   _____

3. **Has your State conducted any evaluation of benefits, costs, or cost effectiveness of WAP services to HDMF buildings in your State during the last 10 years?**

YES NO

IF YOU ANSWERED YES, PLEASE ATTACH A COPY OF THE EVALUATION REPORT OR DESCRIBE BELOW HOW WE MAY OBTAIN A COPY.

_____

_____

_____

4. **Do you currently have a recommended measures list, a priority list of measures, or a special energy audit measure selection method specifically for HDMF buildings or apartments?**

YES NO

IF YOU ANSWERED YES AND USE A RECOMMENDED MEASURES LIST OR PRIORITY LIST, PLEASE ATTACH A COPY OF THE LIST OR WRITE IN THE LIST BELOW.

_____

_____

_____

IF YOU ANSWERED NO, EXPLAIN HOW MEASURES FOR HDMF BUILDINGS ARE SELECTED.

_____

_____

_____

4. (cont'd) **Do you currently have a recommended measures list, a priority list of measures, or a special energy audit measure selection method specifically for HDMF buildings or apartments?**

   IF YOU ANSWERED YES AND USE A SPECIAL ENERGY AUDIT MEASURE SELECTION METHOD, PLEASE ATTACH A WRITTEN DESCRIPTION OF THIS METHOD OR WRITE THE DESCRIPTION BELOW. PLEASE INDICATE WHAT BUILDING COMPONENTS (e.g., boilers, windows, attics) ARE COVERED BY THIS METHOD.

5. **Are you aware of any strategic partnerships between WAP providers and other organizations used currently in your State that help bring special expertise to services provided to HDMF buildings?**

   YES NO

   IF YOU ANSWERED YES, PLEASE DESCRIBE THE NATURE OF THESE PARTNERSHIPS BELOW.

6. **Do agencies in your State currently have difficulties in qualifying entire HDMF buildings or in implementing the 66% rule for WAP participation?**

YES NO

IF YOU ANSWERED YES, DESCRIBE THE ROOT CAUSES OF THESE DIFFICULTIES.

_____

_____

_____

IF YOU ANSWERED YES, DO YOU HAVE SPECIFIC PROCEDURES OR METHODS IMPLEMENTED OR PLANNED TO REDUCE THESE DIFFICULTIES?

YES NO

IF SPECIFIC PROCEDURES OR METHODS FOR REDUCING THESE DIFFICULTIES ARE IMPLEMENTED OR PLANNED, PLEASE ATTACH A WRITTEN COPY OF THE PROCEDURES OR MATERIAL DESCRIBING THE METHODS, OR SUMMARIZE THIS INFORMATION BELOW.

_____

_____

_____

_____

_____

7. **Does your State currently require contributions from HDMF building landlords as part of weatherizing such buildings with WAP funds?**

YES NO

IF YOU ANSWERED YES, PLEASE ATTACH A WRITTEN DESCRIPTION OF THESE POLICIES, OR WRITE THE DESCRIPTION BELOW.

_____

_____

_____

_____

_____

WERE LANDLORD CONTRIBUTIONS REQUIRED IN PY 1989?

YES NO

CAN YOU PROVIDE THE EXTENT OF LANDLORD CONTRIBUTIONS TO WEATHERIZATION OF HDMF BUILDINGS FOR YOUR ENTIRE STATE IN PROGRAM YEAR 1989?

YES NO

TOTAL LANDLORD $ INVESTED $ _____
LANDLORD $ AS % OF WAP FUNDS _____ %
Other _____

8. **Has your State considered or implemented any changes in policies since PY 1989 intended to improve the WAP services you could offer to HDMF buildings?**

YES NO

IF YOU ANSWERED YES, PLEASE ATTACH A WRITTEN DESCRIPTION OF THESE CHANGES IN POLICIES, OR WRITE THE DESCRIPTION BELOW. INDICATE WHETHER THE CHANGE IS IMPLEMENTED OR ONLY CONSIDERED.

_____

_____

_____

_____

9. **Do you have training programs in your State that specifically address weatherization services in HDMF buildings or apartments for subgrantees and State staff?**

YES NO

If yes, do the HDMF portions of these training programs cover:

Energy audits	Yes	No
Building recruitment procedures	Yes	No
Landlord agreements	Yes	No
Client education (renters)	Yes	No
Building operator education	Yes	No
Identification of major infiltration	Yes	No
Major infiltration measures	Yes	No
Attic insulation	Yes	No
Ventilation	Yes	No
Domestic water heating system retrofits	Yes	No
Heating system retrofits	Yes	No
Distribution system balancing or repair	Yes	No
Wall insulation	Yes	No
Lighting retrofits (as with landlord funds)	Yes	No
Floor insulation	Yes	No
Sill box (or similar) insulation	Yes	No
Window/door retrofits	Yes	No
Duct sealing or duct/pipe insulation	Yes	No
Cooling system retrofits	Yes	No
Other	Yes	No

IF YOU ANSWERED YES FOR "OTHER" ABOVE, PLEASE DESCRIBE THE COVERAGE OF THE OTHER TRAINING BELOW.

_____

_____

_____

10. Do you have any suggestions for changes in policies of the U.S. Department of Energy that would improve the WAP services you could offer to HDMF buildings?

YES NO

IF YOU ANSWERED YES, PLEASE ATTACH A WRITTEN DESCRIPTION OF THESE SUGGESTED CHANGES IN POLICIES, OR WRITE THE DESCRIPTION BELOW.

_____

_____

_____

_____

_____

11. Provide any other comments on HDMF program methods, procedures, obstacles, or potential aids or improvements to WAP efforts on these multifamily buildings.

_____

_____

_____

APPENDIX B

National Evaluation of the DOE Weatherization Assistance Program

Building Specific Data Survey Form High-Density Multifamily Units for Program Year 1989

Please provide the name(s) and telephone number(s) of the staff member(s) completing these forms, in case we have questions about the answers.

Name: _____

Phone #: _____

AGENCY ID

_____

INSTRUCTIONS

1. Please provide the information for this form **BY BUILDING.** One completed form is needed for each building you describe. If you weatherized several apartment dwelling units in one building, you can describe all dwellling units for that building with one form. You may use more than one form per building if needed, but DO NOT include dwelling units from multiple buildings on the same form.

2. Please copy this form as needed to provide extra copies, if necessary. The number of forms sent to you was estimated and may not be exact. A list of the dwelling units for which data is requested is included with the letter you received. Identification numbers are included on this list. PLEASE ENTER THE DWELLING IDENTIFICATION NUMBERS FROM THE LIST FOR ALL DWELLING UNITS DESCRIBED IN THIS FORM.

DWELLING IDs

_____

3. The phrase "dwelling units reported here" is used in this form to refer to all the dwelling units in one building being described on the following pages.

4. Please provide answers to questions which request numeric values, even if you have to estimate. You can write in the margins if your answer is a wild guess, you are only 50% sure, or whatever.

NOTE: These forms need to be completed ONLY ONCE for an entire building.

A. BUILDING CHARACTERISTICS AND EQUIPMENT

A1. When was the weatherization completed on the dwelling units described below?

Month_____ (CIRCLE YEAR) 1989 1990*

> *If the partial or complete multifamily building described below was not weatherized between April 1, 1989 and March 31, 1990, it should not be in the sample and no further information is needed. Please return this form along with the others.

A2. Is this building a. . . ? (MARK ONE)

[ ] Large multifamily (5 or more units), not owned by a public housing authority (which allows HUD Section 8 dwellings)
[ ] Large multifamily owned by a public housing authority
[ ] Any other type of dwelling, including row housing**

> **If this dwelling is NOT part of a large multifamily building, it should NOT be in the sample and no further information is needed. Single-family dwellings, including those attached on the sides—sometimes called row housing, should NOT be in the sample and no further information is needed. Please return this form along with the others.

A3. How many dwelling units are covered by the data reported below: _____
Enter number of units

A4. What is the TOTAL number of all apartment dwelling units in the same building as those described below: _____
Enter number of units

A5. Did the weatherization work cover the whole building?
(CIRCLE ANSWER) YES NO

A6. At the time of weatherization, what was the conditioned (heated or cooled) square footage of the areas of the building reported here, where weatherization work was performed? Include common areas if work was performed there (only once for any given building). If an entire building was treated, you must allocate all the conditioned common areas the easiest way for you (including providing a separate set of these forms for the common areas) without double counting.

_____ conditioned square feet

A7. About when was this building originally built? (MARK ONE)

[ ] Before 1900	[ ] 1920-1929	[ ] 1950-1959	[ ] 1980-1984
[ ] 1900-1909	[ ] 1930-1939	[ ] 1960-1969	[ ] 1985 or
[ ] 1910-1919	[ ] 1940-1949	[ ] 1970-1979	later

A8. At the time of weatherization, what was the **one main heating fuel** used for heating this building? (MARK ONLY ONE FUEL IN COLUMN A8)

A9. What **supplemental** fuels were used to heat the parts of the building reported here — including those used to provide heat just occasionally? Include fuels that ran portable heaters if they were used. Mark all that apply (If none, mark "No supplemental fuels used" in Column "A9" below.)

	A8 Main Fuel (Mark only one)	A9 Supplemental Fuels (Mark all that apply)
Gas from underground pipes serving the neighborhood	[ ]	[ ]
Bottled gas (LPG or Propane)	[ ]	[ ]
Fuel oil	[ ]	[ ]
Kerosene or coal oil	[ ]	[ ]
Electricity	[ ]	[ ]
Coal or coke	[ ]	[ ]
Wood	[ ]	[ ]
Solar collectors	[ ]	[ ]
Other (specify)_____	[ ]	[ ]
No supplemental fuels used		[ ]
Don't know	[ ]	[ ]

A10. If this building's main heating fuel is fuel oil, please provide the name of the fuel oil dealers that provide service to this dwelling. Also provide the city where the dealer is located.

_____ _____

Fuel Oil Dealer Name Dealer City

A11. What heating system types were used for this building? (MARK ALL THAT APPLY)

[ ] Apartment central systems (e.g., furnace with ducts, hot water boiler, heat pump with ducts) with one system per apartment dwelling
[ ] Building central systems (e.g., central furnace, steam boiler, hot water boiler) serving multiple apartment dwellings in the building
[ ] Fossil fueled in-space heaters (e.g., wall furnaces, floor funaces, wood, coal, kerosene or gas stoves)
[ ] Electric in-space heaters (e.g., through-the-wall heat pumps, wall, floor, baseboard, imbedded cable, portable [cord connected])
[ ] Other (specify) _____
[ ] Don't know

A12. Does this building have central air conditioning (A/C) equipment? (MARK ALL THAT APPLY)

[ ] Apartment central A/C with one system per apartment dwelling
[ ] Building central A/C with one system serving the whole building
[ ] Other central A/C
[ ] No central air conditioning for apartment dwellings
[ ] Don't know

A13. How many wall or window air conditioner or heat pump units were in the dwelling units reported here? (MARK ONE — PLEASE ESTIMATE IF NOT SURE)

[ ] None
[ ] 1-4
[ ] 5-9
[ ] 10-29
[ ] 30 or more
[ ] Don't know

A14. What domestic hot water system types were used for this building? (MARK ALL THAT APPLY)

[ ] Central system for the whole building
[ ] Central systems serving each floor
[ ] Individual units in the dwelling units
[ ] Other (specify) _____
[ ] Don't know
[ ] Circulating loop
[ ] Circulating loop

B. OCCUPANT CHARACTERISTICS

B1. If the entire building was included in the weatherization work, was the building qualified under the 66% rule?

(CIRCLE ANSWER) YES NO

B2. Please indicate: the total number of people living in the dwelling units reported here, the number who had income eligibility for the WAP verified for the 1989 program year before weatherization, and the total number of people in the building (estimate if you do not know). Also, please indicate the number who were elderly or handicapped.

Total number reported here: _____
Number of income-verified: _____

Total number of people in the building: _____
Number of elderly (age 65 or over): _____

Number of handicapped (permanent condition): _____

B3. For all households reported here, where income eligibility was verified and an application form was received, what is the average of all these incomes?

$/yr_____

B4. At the time of weatherization, how many households reported here for which an application form was received:

Rented their apartment dwelling _____
Occupied without payment _____
Owned (are buying) their dwelling _____
Enter the appropriate number of units for each line

B5. At the time of weatherization, how many households reported here for which an application form was received:

Paid their own fuel bills for heating _____
Paid for heating fuel through their rent _____
Enter the appropriate number of units for each line

C. WEATHERIZATION MEASURES INSTALLED

Please check any of the measures listed that were installed in this dwelling. Include measures for common areas (can be with one or more units or as a special unit by itself), but note that the measure is for a common area. Indicate whether the measures were installed by in-house crew or contractor. If measures that are not listed were installed, please describe them in the appropriate "Other" category.

	Installed by: In-house crew	Contractor
C1. Air Leakage Control		
General Caulking and Weatherstripping (door, window, sill plates, etc.)	[ ]	[ ]
Air Sealing, emphasizing bypasses with blower door testing	[ ]	[ ]
Air Sealing, emphasizing bypasses without blower door testing	[ ]	[ ]
Air Distribution System	[ ]	[ ]
Other Infiltration Reduction (not including windows)	[ ]	[ ]

(Specify: _____)

C2. Insulation		
Attic Insulation (installed for the first time)	[ ]	[ ]
Attic Insulation (added to existing insulation)	[ ]	[ ]
*Wall Insulation (normal technique)	[ ]	[ ]
*Wall Insulation (high-density technique)	[ ]	[ ]
Floor Insulation	[ ]	[ ]
Rim or Band Joist Insulation	[ ]	[ ]
Other Envelope Insulation	[ ]	[ ]

(Specify: _____)

*The "normal technique" for installing wall insulation is characterized by blowing cellulose or fiberglass insulation into exterior wall cavitites to average densities using a two-hole, gravity-blow installation method. The "high-density technique" is characterized by blowing cellulose insulation into exterior wall cavities to high densities using a one-hole, tube-fill installation method. Under the "high-density technique," special attention is focused on sealing air leakage sites while insulating the walls; air bypasses are identified during the installation process and sealed by plugging the air-leakage pathways with cellulose.

C3. Water Heating System

What type of water heating system is in the building?
Individual for this unit [ ] Central for all units [ ] Other_____

	Installed by: In-house crew	Contractor
Water Heater Tank Insulation.	[ ]	[ ]
Entire Water Heating Unit Replacement.	[ ]	[ ]
Central System Controls Improvements	[ ]	[ ]
Pipe Insulation.	[ ]	[ ]
Low Flow Shower Heads or Faucet Aerators	[ ]	[ ]
Temperature Reduction.	[ ]	[ ]
Other Water Heater Measures or Repairs.	[ ]	[ ]

(Specify: _____)

C4. Space Heating System

What type of space heating system is in the building?
Individual for this unit [ ] Central for all units [ ] Other_____

Clean and Tune-up.	[ ]	[ ]
Thermostat or Other Controls Retrofit.	[ ]	[ ]

(Specify: _____)

Entire Heating Unit Replacement/Modification. . .	[ ]	[ ]
Repairs.	[ ]	[ ]

(Specify: _____)

Was replacement/modification or repair expected to increase energy use?

(CIRCLE ANSWER)	YES	NO
Distribution System Retrofit (e.g., steam balancing)	[ ]	[ ]

(Specify: _____)

Heating System Component Retrofits.	[ ]	[ ]

(Specify: _____)

Safety Problem Fixed.	[ ]	[ ]

(Specify: _____)

Other Heating System Modifications.	[ ]	[ ]

(Specify: _____)

	Installed by: In-house crew	Contractor
C5. Space Cooling System		
What type of space cooling system is in the building? Individual for this unit [ ] Central for all units [ ] Other_____		
Tune-up. . . . . (e.g., cleaning, controls adjustment, filter replaced)	[ ]	[ ]
Entire Air-Conditioning System Replacement	[ ]	[ ]
Fans Installed or Replaced.	[ ]	[ ]
Thermostat or Other Controls Retrofit.	[ ]	[ ]
(Specify: _____)		
Distribution System Retrofit (e.g., duct sealing/balancing)	[ ]	[ ]
(Specify: _____)		
Other Cooling System Modifications.	[ ]	[ ]
(Specify: _____)		
C6. Ventilation System		
Controls Retrofit.	[ ]	[ ]
(Specify: _____)		
Fan/Exhauster Repair or Replacement	[ ]	[ ]
(Specify: _____)		
Other Repairs.	[ ]	[ ]
(Specify: _____)		
Other Ventilation System Modifications.	[ ]	[ ]
(Specify: _____)		
C7. Windows and Doors		
Storm Windows (How many? _____)	[ ]	[ ]
Thermal Windows (How many? _____)	[ ]	[ ]
Storm Doors.	[ ]	[ ]
Window Films or Shades.	[ ]	[ ]
Other Window or Door Treatments.	[ ]	[ ]
(Specify: _____)		

C8. Structural Repairs (full or partial)

Attic Ventilation	[ ]	[ ]
Roof	[ ]	[ ]
Ceilings	[ ]	[ ]
Doors	[ ]	[ ]
Replacement of Doors	[ ]	[ ]
Windows/Glazing	[ ]	[ ]
Walls	[ ]	[ ]
Floor	[ ]	[ ]
Other Structural Repairs	[ ]	[ ]

(Specify: _____)

C9. Other Health and Safety Repairs or Improvements

Smoke Detectors	[ ]	[ ]
Interior Fire Doors	[ ]	[ ]
Railings	[ ]	[ ]
Stairs/Ramps	[ ]	[ ]
Locks	[ ]	[ ]
Radon Testing	[ ]	[ ]
Carbon Monoxide Testing	[ ]	[ ]
Backdrafting Testing	[ ]	[ ]
Other	[ ]	[ ]

(Specify: _____)

D. SERVICE DELIVERY PROCEDURES

D1. SELECTION OF MEASURES

Please check the type of procedure that was used to select the measures that were installed in **the dwellings reported here** in the 1989 program year. (Check all that apply)

Envelope Measures

[ ] Envelope measures were selected using a priority or prescribed list of measures

[ ] Envelope measures were selected using a decision approach or scoring (calculation) developed for each house

[ ] Envelope measures were selected based on an analysis of energy savings per $ invested

D1. SELECTION OF MEASURES (continued)

Space Heating—Cooling—Ventilation (HVAC) System Measures

[ ] HVAC system measures were selected based on physical characteristics of pre-retrofit unit or a standard approach (similar to a priority list)

[ ] HVAC system measures were selected using a decision approach or scoring (calculations) based on operating performance

[ ] HVAC system measures were selected based on an analysis of energy savings per $ invested

Domestic Water Heating (DHW) System Measures

[ ] DHW system measures were selected based on physical characteristics of pre-retrofit unit or a standard approach (similar to a priority list)

[ ] DHW system measures were selected using a decision approach or scoring (calculations) based on operating performance

[ ] DHW system measures were selected based on an analysis of energy savings per $ invested

General

[ ] Selection of envelope and HVAC and DWH energy system measures was made simultaneously under one approach rather than separately using distinct procedures.

[ ] Investment level per unit was determined based on analysis of pre-weatherization energy consumption data.

[ ] Outside consultant specialists were used.

[ ] Other measure selection procedures. Specify:

_____

_____

D2. USE OF DIAGNOSTICS

Please check the type of diagnostic procedures that were used. (Check all that apply)

[ ] Blower door testing was used to find leakage areas for sealing

[ ] Blower door testing was used to measure air leakage rates

[ ] Blower door testing was used to determine when to stop work using cost-effectiveness guidelines (not minimum ventilation guidelines)

[ ] Distribution system diagnostics were used to determine system balancing

[ ] Distribution system diagnostics were used to seal leaks

[ ] Infrared scanning was used

[ ] Indoor air quality was tested

[ ] Heating, cooling, or domestic water heating system efficiency testing was used

[ ] Combustion systems safety inspections were conducted

[ ] Other diagnostic procedures. Specify:

_____

_____

D3. QUALITY CONTROL

Please indicate the type of quality control inspection used. (Check all that apply)

[ ] A visual quality control inspection after weatherization for envelope measures

[ ] A quality control inspection after weatherization for envelope measures that used blower door testing as a diagnostic tool

[ ] A quality control inspection after weatherization for envelope measures that used infrared scanning as a diagnostic tool

[ ] A visual quality control inspection after weatherization for heating system measures

[ ] A quality control inspection after weatherization for heating system measures that used diagnostic tools such as combustion efficiency testing

[ ] Other quality control procedures. Specify:

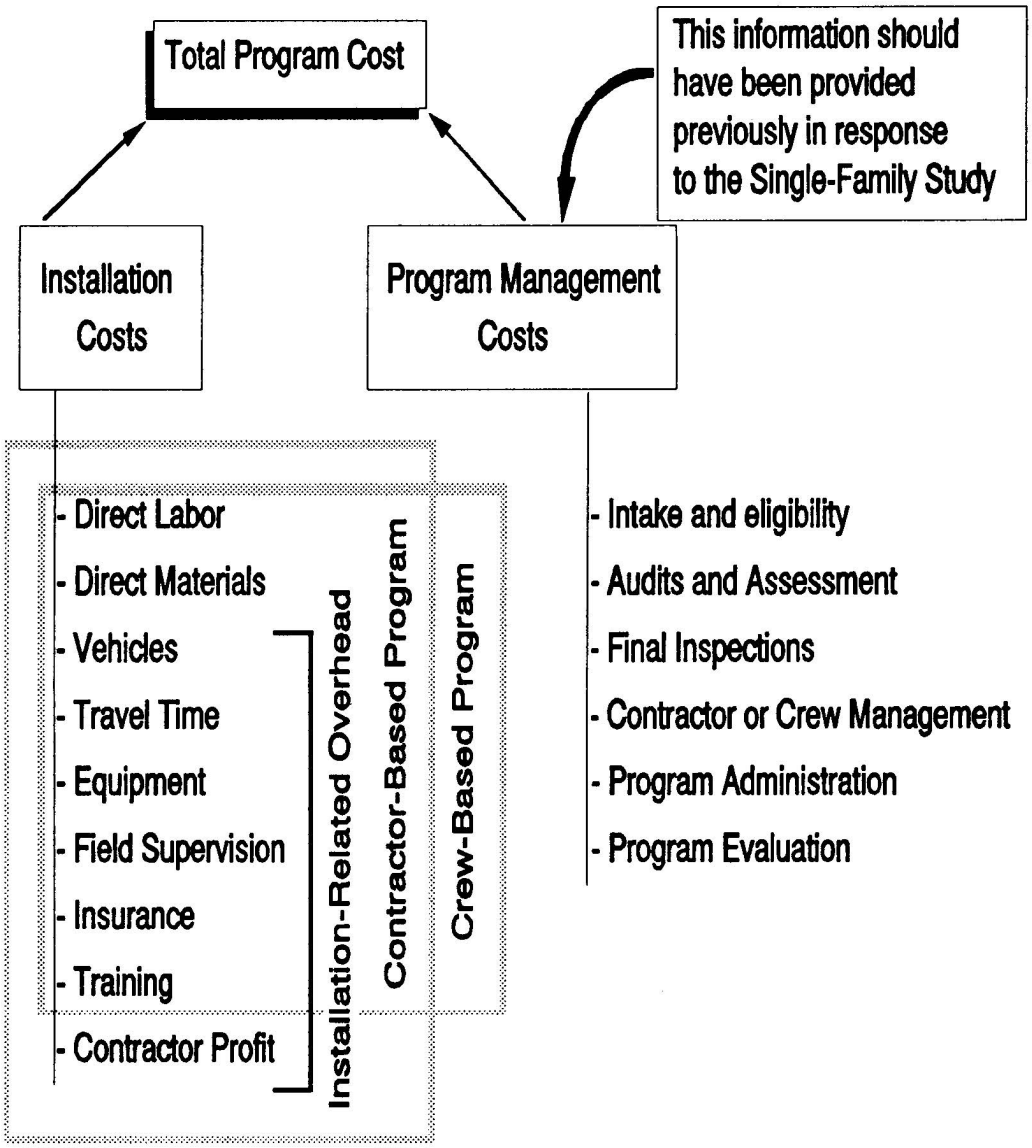
_____

_____

E. COSTS: MATERIALS, LABOR, INSTALLATION OVERHEAD AND PROGRAM MANAGEMENT

Definitions and Instructions

If a job is crew-based, supply the materials costs (Question E1) and calculate the direct labor costs (Question E2). If a job is contractor-based, supply the materials costs (Question E1) and the total installed costs (Question E3). If both crews and contractors worked on a building, complete all three questions (Questions E1, E2, and E3). You should already have examined this information for the forms completed for the Single-Family Study.



E1: BREAKDOWN OF MATERIALS COSTS

In the chart below please fill in the crew-based and/or contractor-based materials cost of the measures that were installed in the dwelling units reported here for the 1989 program year. **Do not include labor, administrative or program support costs here.** Do include costs covered by all sources of funding (i.e., PVE, LIHEAP, landlords, or utilities). Costs covered by landlord contributions that do not contribute directly to energy savings can be included under Structural Repairs, with a note explaining why. If you cannot provide the costs by general type of measure, just enter the **total** materials cost in the box at the bottom.

	Crew-Based Materials Costs	Contractor-Based Materials Costs
Air Leakage Control	$_____	$_____
Insulation		
attic	$_____	$_____
wall	$_____	$_____
other	$_____	$_____
Water Heating System	$_____	$_____
retrofit	$_____	$_____
replacement	$_____	$_____
Space Heating System		
retrofit	$_____	$_____
replacement	$_____	$_____
Space Cooling System		
retrofit	$_____	$_____
replacement	$_____	$_____
Ventilation System		
retrofit	$_____	$_____
replacement	$_____	$_____
Windows and Doors	$_____	$_____
Structural Repairs	$_____	$_____
Other	$_____	$_____
TOTAL Materials Costs	$	$
	Crew-Based	Contractor-Based

E2: CREW-BASED INSTALLATION COSTS (DIRECT LABOR COSTS)

Directions: Please fill in the number of crew hours for **the dwellings reported here** from information in your files. Provide your best estimate of the average hourly rate for your crew and multiply this by the number of hours to produce an estimate of the direct labor costs.

DO NOT include ANY OVERHEAD (as shown in Fig. 1) in the average hourly rate.

Direct Labor ☞ _____ (Number of person hours for crew) x _____ (Average hourly rate) = $_____

E3: CONTRACTOR-BASED INSTALLATION COSTS

Directions: Please fill in the total installation costs* billed by contractors for **the dwellings reported here**. This should include all the overhead cost categories listed in Fig. 1 **plus the contractor's profit.**

Total Installed Cost $_____

*Include the materials costs (reported on p. 13) in this total, as well as labor costs and installation-related overhead.

F. FUNDING SOURCES

F1. What percentage of the funds spent on **the dwellings reported here** were:

Funds from DOE's WAP: _____%
Funds from Landlord: _____%
Funds from Others: _____% Specify whom: _____

F2. If funds from non-DOE sources were used, were they all used according to DOE guidelines?

[ ] Yes
[ ] No

ORNL/CON-331

PATTERNS OF IMPACT IN THE WEATHERIZATION ASSISTANCE PROGRAM:

A CLOSER LOOK

Linda G. Berry
Marilyn A. Brown

June 1994

Prepared by the
Oak Ridge National Laboratory
Oak Ridge, Tennessee 37831
Managed by
Martin Marietta Energy Systems, Inc.
for the
U. S. Department of Energy
under Contract DE-AC05-84OR21400

Auditor: _____
Date: _____

SINGLE-FAMILY STUDY HOUSE CHARACTERISTICS SURVEY

Control: ☐ Y=288
Weatherized: ☐ N=477

Average heating degree days MN=6090.46 MD=6320

Fuel units: (ccf or kWh) CCF=92.2% kWh=7.8%

Heated space MN=1162.81 MD=1056 sq ft

GENERAL

House type: _____

House Type		
SFD	single-family detached	= 67.74%
SFA	single-family attached	= 11.11%
MFS	small (2-4 units) multifamily	= 14.10%
MH	manufactured or mobile home	= 6.84%
MHA	mobile home with addition	= 0.21%

The following systems are shared with other housing units:

Space-heating system	☐	Yes = 0.84%
Space-cooling system	☐	Yes = 0.63%
Water-heating system	☐	Yes = 1.68%

If SFA, number of attached housing units: MN=1.39 MD=1

AIR CONDITIONERS

Unit type	Nameplate Information: Input (watts)	Voltage (volts)	Current (amps)	Rated Efficiency EER	Rated Output (Btu/h)	Age (years)
	MN=1636.1 MD=1308	MN=133.1 MD=115	MN=11.4 MD=12	MN=7.2 MD=7.5	MN=12,936 MD=11,000	MN=9.6 MD=10

Window Air Conditioner removed during heating season ☐ Yes = 4.82%

Air Conditioner Type

CAC central air conditiner	= 14.7%
CHP central heat pump	= 0%
WAC window air conditioner	= 62.8%
WMAC Wallmount air conditioner	= 3.8%
WHP window heat pump	= 0%
EC evaporative cooler	= 18.6%
X other _____	= 0%

THERMOSTATS

Thermostat type
Thermostat voltage code

Thermostat type:
M manual = 88.3%
A analog setback = 4.6%
E electronic setback = 3.45%
X other = 0.23%
N none_____ = 3.45%

Thermostat voltage
L low voltage (24 V) = 88.9%
H 110/120 volt = 1.3%
M milivolt = 7.8%
G gas expansion bul = 1.3%
X other _____ = 0.78%

		Yes
Thermostat dysfunctional	☐	2.10%
Thermostat has no calibration	☐	1.70%
Thermostat loose on wall	☐	2.10%
Thermostat not level	☐	2.90%

Thermostat calls for heat MN=2.31 MD=2 °F

Higher or Lower than actual temperature
High = 56.4%
Low = 43.6%

Anticipator setting MN=0.51 MD=0.5 amps

Solenoid amperage rating MN=1.27 MD=0.42 amps

Solenoid valve actual draw MN=0.66 MD=0.4 amps

FLOOR AREAS AND VOLUMES

Sketch plans: 1st floor 2nd floor

Floor	Total area	Intentionally heated area	Unintentionally heated area	Air-conditioned area	Height	Volume (of heated area)
Basement	MN=767 sqft MD=759 sqft	MN=558 sqft MD=602 sqft	MN=663 sqft MD=672 sqft	MN=180 sqft MD=0 sqft	MN=7.6 ft MD=7.5 ft	MN=5149cft MD=5238cft
First floor	MN=922 sqft MD=885 sqft	MN=894 sqft MD=873 sqft	MN=89 sqft MD=36 sqft	MN=570 sqft MD=532 sqft	MN=8.2 ft MD=8 ft	MN=7294cft MD=7160cft
Second floor	MN=643 sqft MD=599 sqft	MN=614 sqft MD=578 sqft	MN=255 sqft MD=36 sqft	MN=191 sqft MD=45 sqft	MN=8.0 ft MD=8 ft	MN=5015cft MD=4668cft
All other floors	MN=674 sqft MD=470 sqft	MN=255 sqft MD=234 sqft	MN=397 sqft MD=121 sqft	MN=0 sqft MD=0 sqft	MN=8.0 ft MD=8 ft	MN=3452cft MD=2919cft
Total	MN=1514sqft MD=1401sqft	MN=1201sqft MD=1055sqft	MN=447sqft MD=354sqft	MN=566sqft MD=432sqft		MN=10341cft MD=9360cft

(use for heated volume calculations)

Number of intentionally heated stories: MN=1.41 MD=1 (1, 1.5, 2, 2.5, 3, 3.5, 4 or more)

Notes: _____

_____

_____

FOUNDATION SPACES

		Bsmt/crawl Ceiling		Foundation Perimeter			Wall height		Wall insulation	
Space Type	Status	Ceiling area	Insulation thickness	Ttl lgh(ft)	% expsd	% insltd	Total	% above ground	Type	Thickness
		MN=828.4 MD=800	MN=1.2 in MD=0 in	MN=106.7 MD=112	MN=68.6 MD=91	MN=27.2 MD=0	MN=5.8 ft MD=7 ft	MN=40.9% MD=30.5%		MN=1.8 in MD=0 in

Foundation type
B basement = 57.5%
C crawlspace = 29.2%
C-B crawlspace open to basement = 3.6%
US uninsulated slab = 8.9%
IS insulated slab = 0.8%

Wall insulation type
BC blown cellulose = 1.5%
BF blown fiberglass = 0.5%
FB fiberglass batt = 14.6%
RB rigid board or foam = 1.9%
BRW blown rock wool = 0%
RWB rock wool batt = 0%
WFB wood fiber batt = 0%
X other_____ = 0.5%
N none = 81%

Foundation space status
NH not heated = 44.4%
IH intentionally heated = 15.9%
UH unintentionally heated = 39.8%

ATTICS

Insulation type (Heated)
BC blown cellulose=42.1%
BF blown fiberglass=2.6%
FB fiberglass batt=36.8%
RB rigid board or foam=0%
BRW blown rock wool=0%
RWB rock wool batt=1.3%
WFB wood fiber batt=0%
V vermiculite=0%
X other _____=0%
N none=17.1%

Unheated Attic type
F floored=13.3%
U unfloored=73.8%
L flat roof=12.9%

Insulation type (Unheated)
BC blown cellulose=47.8%
BF blown fiberglass=18.9%
FB fiberglass batt=20.8%
RB rigid board or foam=1%
BRW blown rock wool=2.6%
RWB rock wool batt=0.2%
WFB wood fiber batt=0.2%
V vermiculite=0.5%
X other _____=1.2%
N none=6.7%

HEATED ATTIC AREAS (Within the Thermal Envelope)				UNHEATED ATTIC AREAS (outside envelope)			
		Insulation				Insulation	
	Area	Type	Thickness	Attic type	Floor area	Type	Thckns
Collar beam	MN=375sqft		MN=5.6in		MN=735sqft		MN=7.3in
Kneewall to exterior	MD=283sqft		MD=6in		MD=737sqft		MD=7in
Kneewall to storage							
Roof rafter							
Gable End							
Kneewall floor							

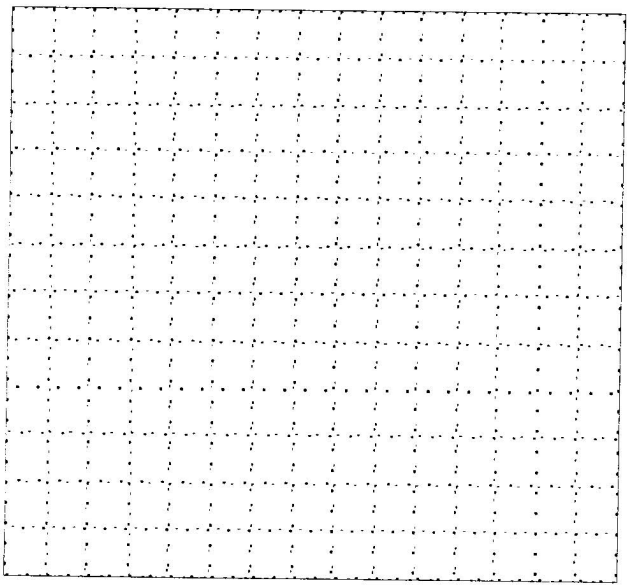
Vent type (see graphic)
G gable = 36.4%
E eave = 10%
L lourvre strip = 9.4%
P perferations = 0.8%
BV button vents = 3.3%
RJ roof jack = 7.4%
M mushroom = 22.1%
R ridge = 2.5%
T turbine = 2.2%
PV power vent = 1.0%
WHF whole house fans = 0%
X other _____ = 3.7%
N none = 1.2%

Attic vents present: ☐

Types:								
High or low:	high	low	high	low	high	low	high	low
Number each:	MN = 2.96; MD = 2.0							
Total net free vnt area	MN = 241.5"; MD = 200.0"							

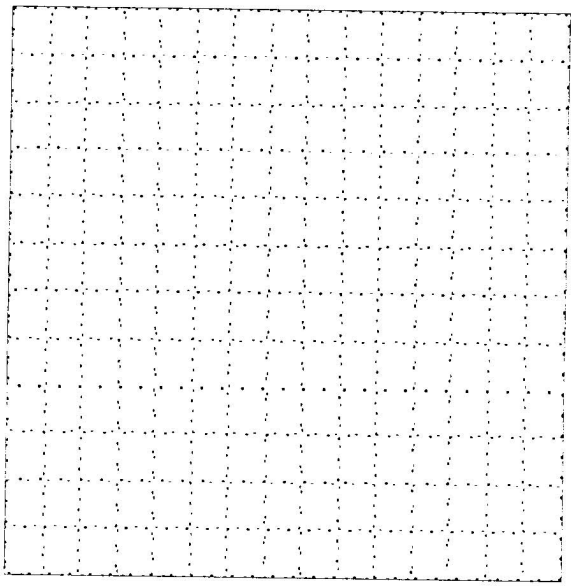
EXTERIOR ELEVATIONS Sketch each view

Front



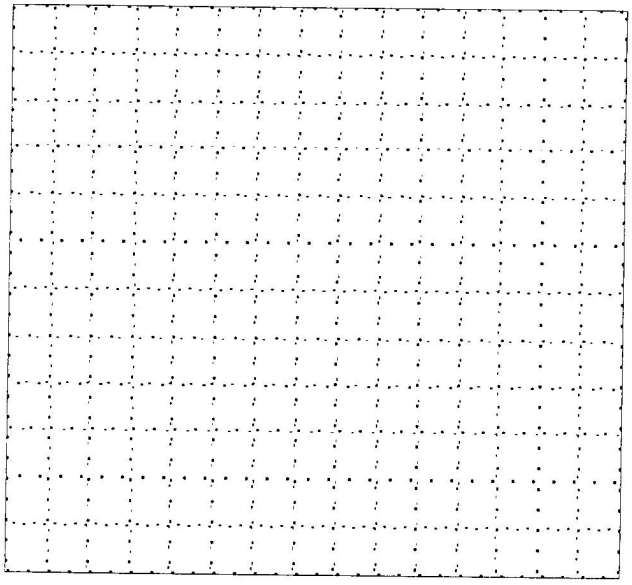
Orientation: N NE E SE S SW W NW
(circle appropriate orientation)

Left side



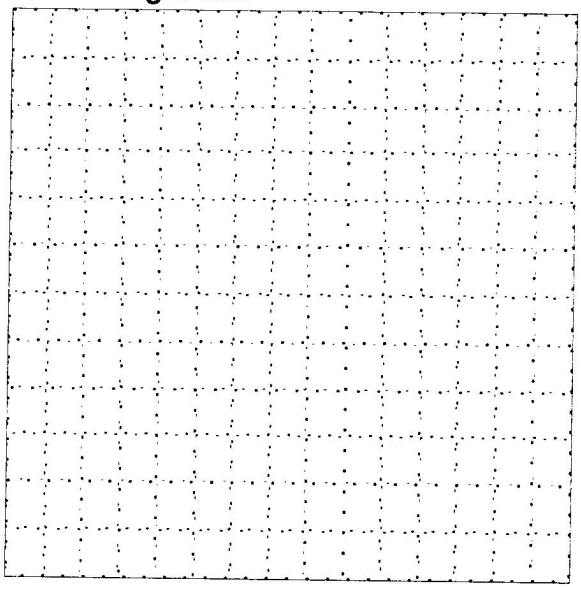
Orientation: N NE E SE S SW W NW
(circle appropriate orientation)

Rear



Orientation: N NE E SE S SW W NW
(circle appropriate orientation)

Right side



Orientation: N NE E SE S SW W NW
(circle appropriate orientation)

Notes:

WALL DATA

Wall exposure	Exterior type	Wall type	Gross wall area		Insulated sheathing	Insulation Type	Insulation Thickness
			MN = 866.1 MD = 795	sq ft	Yes = 6.1%		MN =3.3 in MD = 3.5 in
				sq ft	☐		
				sq ft	☐		in
				sq ft	☐		in
				sq ft	☐		in
				sq ft	☐		in
				sq ft	☐		in
				sq ft	☐		in
				sq ft	☐		in
				sq ft	☐		in
				sq ft	☐		in

Wall exposure
O outside = 82.1%
B buffered space = 13.5%
(unconditioned porch, garage, vacant bldg.etc.)
AC attached conditioned space=4.4%
(e,g. heated adjoining neighbor)

Exterior type
WT same as wall type material = 6.8%
(adobe, block, masonry etc)
WO wood or masonite = 25.2%
WS wood shingle = 8.2%
AL aluminum, steel = 18.9%
V Vinyl = 7.3%
ST stucco = 6.8%
BR brick or stone = 12.4%
AS asphalt shingle = 5.9%
RA rolled asphalt = 0.2%
AT asbestos tile = 3.2%
C cellulostic board = 1.9%
(fake brick etc)
X other _____ = 2.6%
N none = 0.8%

Wall type
PF platform frame = 68.5%
BF balloon frame = 17.7%
BL block or ceramic = 0.9%
A adobe = 0.3%
ST solid stone or masonry=7.0%
HM hollow masonry = 1.8%
(e.g. multi wythe brick)
FP firred out plaster=2.1%
over masonry
L log = 0%
P plank = 0.6%
X other _____ = 0.9%

Insulation type
BC blown cellulose = 28.5%
BF blown fiberglass = 3.3%
FB fiberglass batt = 25.2%
RB rigid board or foam = 0.7%
BRW blown rockwool = 0.1%
RWB rock wool batt = 0%
WFB wood fiber batt = 0%
X other _____ = 1.2%
N none = 0.7%

EXTERIOR CHIMNEY INSPECTION

	Space Heat		Hot water	
	Shared chl chimney ☐		if separate	
Chimney type:		Yes		Yes
Chimney not lined	☐	17.60%	☐	4.20%
Chimney extends < 2 ft above roof	☐	13.60%	☐	4.20%
Clearance at chimney top < 10 ft	☐	5.70%	☐	2.30%
Trees etc near chimney	☐	1.50%	☐	0.21%
Chimney unsound	☐	2.50%	☐	1.30%
Chimney not capped	☐	16.10%	☐	2.30%
# of unused chimneys:	MN = 0.32 MD = 0			

Space Heat
Chimney type
B brick = 55.5%
Bl block = 5.36%
SP single walled pipe=16.4%
IP insulated pipe=20.9%
MF multiple flue=1.9%

Hot Water
Chimney type
B brick = 24.0%
Bl block = 1.04%
SP single walled pipe=38.5%
IP insulated pipe=35.4%
MF multiple flue=1.04%

WINDOWS AND DOORS

Window summary (required) (For intentionally heated area only)

Glazing type	Frame type	Storm window	Sky light	Area
			Yes=1.5%	sq ft
			☐ MN = 123.8 MD = 108	sq ft
			☐	sq ft
			☐	sq ft
			☐	sq ft
			☐	sq ft
			☐	sq ft
			☐	sq ft
			☐	sq ft
			☐	sq ft
			☐	sq ft
			☐	sq ft

Window Glazing Type
SP single pane = 83.9%
DP double pane = 14.6%
TP Triple pane = 0$
GB glass block = 1.0%
TE temporary (cardboard, plastic, etc.) = 0.5%
LE Low-E (may also be single or double pane: e.g.:" LE/DP" = 0%

% window area facing 30° of true south without blockage _____ % MN = 18.2% MD = 20%

Frame Type
W wood=66.6%
S steel=2.5%
A Aluminum=26.6%
V vinyl=3.4%
X other_____=0.5%
N none=0.5%

Storm Window
W wood =11.1%
S steel=0.5%
A Aluminum=51.0%
V vinyl=3.0%
X other_____=1.8%
N none=32.6%

EXTERIOR DOORS

Door #	Door type	Storm door	Vesti-bule	Lites
Door 1		Yes=55.2%	Yes=21.2%	Yes=41.5%
Door 2		☐	☐	☐
Door 3		☐	☐	☐
Door 4		☐	☐	☐
Door 5		☐	☐	☐

Door type
RP Raised panel wood door=28.5%
HC Hollow core wood door=15.3%
SC Solid core wood door=40.9%
I Insulated metal door=10.0%
SG Sliding glass door =4.3% (include dimensions under window summary above)
B Bulkhead door =1.1%

MISCELLANEOUS HEALTH AND SAFETY CHECKS

ELECTRICAL SYSTEM CHECK

Wire types seen in attic and basement:		Yes
Knob and tube	☐	8.40%
Fabric	☐	22.60%
BX	☐	19.50%
Romex	☐	51.20%
Conduit	☐	20.10%
Aluminum	☐	0.42%
Wiremold	☐	1.50%
Extensive use of extension cords	☐	6.70%
Exposed bare wiring	☐	6.10%
Other electrical hazards _____		4.60%

MOISTURE CHECK

		Yes
Standing water in basement	☐	4.80%
Signs of basement water	☐	12.60%
Peeling paint exterior	☐	6.50%
Peeling paint interior	☐	12.00%
Interior mold	☐	6.70%
Rafter & stud ghosting	☐	2.30%
Rotted wood	☐	7.80%
Signs of roof leakage	☐	17.00%
Signs of condensation in attic	☐	2.10%
Missing or failed gutter system	☐	13.00%
Unvented dryer	☐	7.80%
No bathroom vents or wondows	☐	6.10%
Other moisture problems _____		5.50%

HAZARDOUS MATERIALS

		Yes
Septic conditions	☐	2.90%
Combustion byproducts	☐	1.70%
VOC's	☐	4.60%
Asbestos	☐	12.40%
Dust	☐	10.90%
Mold & mildew	☐	7.10%
Smokers	☐	22.40%
Animal waste	☐	6.10%
Vermin	☐	2.90%
Other toxic hazards _____		2.50%

STRUCTURAL PROBLEMS

		Yes
Floors	☐	7.60%
Foundation	☐	3.40%
Stairs	☐	6.10%
Walls	☐	4.10%
Roof	☐	5.50%
Porch	☐	4.60%
Holes in walls	☐	14.70%
Holes in ceilings	☐	15.50%
Broken out glass	☐	6.90%
Sashes need replacement	☐	4.00%
Windows need replacement	☐	8.00%
Other structural problems _____		3.80%

CLUTTER

		Yes
Attic	☐	4.60%
Basement	☐	19.50%
Living space	☐	15.50%
Yard	☐	3.60%
Other related problems _____		2.70%

FIRE HAZARDS

		Yes
Electrical	☐	4.40%
Space heaters	☐	8.40%
VOC's	☐	3.40%
Other combustibles	☐	1.10%
Lack of access	☐	1.90%
Lack of smoke alarms	☐	32.10%
Signs of furnace flame roll-out		2.70%
Signs of water heater flame roll·		81.50%
Other fire hazards _____		4.60%

Notes and explainations _____

_____

_____

SPACE-HEATING SYSTEMS

	Primary System
System type	
Fuel	
Original fuel if converted	
Nameplate rating	MN=109,822; MD=105,000
Input Btu	MN=98,793; MD=100,000
Output Btu	MN=84,553; MD=80,000
System Age	MN=16.5; MD=15
Location	

Fuel
NG natural gas=91.0%
P propane = 0%
O oil = 0.2%
K kerosene = 0%
E electricity = 8.2%
W wood = 0.7%
C coal = 0%
S solar = 0%
X other = 0%

Location
NH non-heated space = 10.6%
IH intentionally heated space = 47%
UH unintentionally heated space = 42.4%
UNH unintentionally not heated space=0%

	Primary System	Yes
Fuel Leaks	☐	5.6C
No vent damper	☐	11.90%
Electrical cutoff switch missing	☐	10.60%
Insecure wiring	☐	3.70%
Combustible materials near flue	☐	2.60%
Asbestos insulation on furnace or boiler		4.80%
Pilot type		

Pilot type:
S standing pilot=70.5%
E electronicly ignited pilot=22.6%
I intermittant ignition device=6.1%
X other=0.5%
N none_____=0.3%

System Types

Central Systems
1 forced air furnace=63%
2 gravity furnace=2.7%
3 one pipe steam boiler=3.1%
4 two pipe steam boiler=0.2%
5 pumped hot water boiler with radiators/convectors=7.1%
6 convective hot water boiler with radiators/convectors=0.4%
7 hot water boiler for slab heating=
8 heat pump=0%

In-space heaters

Fossil Fueled:
9 free standing convective room heater=8.4%
10 forced air wall furnace=1.6%
11 gravity wall furnace=4.4%
12 forced air floor furnace=0.2%
13 gravity floor furnace=1.6%
14 vaporizing pot heater (oil and kerosene)=0%
15 portable kerosene=0%

Electric:
16 wall=0.2%
17 floor=0.4%
18 baseboard=4.2%
19 ceiling radiant (imbedded)=0.9%
20 wall or floor radiant (imbedded)=0%
21 portable (cord-connected) radient=0.9%
22 portable (cord-connected) fan assisted=0%
23 window heat pump=0%

Other
24 wood or coal stove=0.2%
25 fireplace=0%
26 stove top or oven=0%
27 passive solar=0%
28 active solar=0%
29 other _____=0%
30 none=0%

INTERIOR FLUE INSPECTION

		Space Heat	Hot Water
Shared chimney		Yes = 39.9%	
Shared flue		Yes = 25.2%	
Unit not vented to the exterior	Yes	14.30%	15%
Structurally unsound		16.10%	15.20%
Leaks exist		3.50%	2.40%
No flue liner present		10.60%	8.00%
Thick debris present		1.50%	0.90%
Vent pipe has negative or no slope		19.30%	18.20%
No barometric damper, draft hood or system equivalent		2.80%	1.50%
Combustible materials near flue		3.70%	2.40%

DISTRIBUTION SYSTEMS

ALL SYSTEMS:

Location	Intentionally heated area	Unintentionally heated area	Un-heated area
Distribution system location	☐ 33.2%	☐ 28.7%	☐ 38.1%
Insulated	☐ 18.7%	☐	☐

Type of insulation ☐

Friable asbestos insulation on distribution system Yes=7.0%

Insulation type
RF rigid preformed fiberglass=0%
FB fiberglass house batts=15.8%
FD fiberglass ductwrap=13.8%
F foam=2.6%
A asbestos=18.9%
X other _____=3.1%
N none=45.9%

HYDRONIC SYSTEM	☐ Yes=8.5%	Yes
Gravity system	☐	0.20%
Pump-driven	☐	7.60%
Conversion from gravity system	☐	0.43%
Outdoor temperature reset/cutoff	☐	0%
Boiler operating temperature	°F	
High limit control	°F psi	
Zoned system	☐	5.21%
Number of zones:		MN=1.46; MD=1
Zoned with zone valves	☐	0.90%
Zoned with multiple pumps	☐	0.90%
Radiators	☐	3.50%
Baseboards	☐	4.30%
Slab	☐	0%
Ceiling	☐	0%
Leaks in distribution system	☐	0.20%
Blocked/covered radiators/convectors	☐	0.70%

STEAM SYSTEM	Yes=2.6%	Yes
One pipe system	☐	2.40%
Two pipe system	☐	0.40%
Thermostatic radiator valves	☐	0%
Steam leaks	☐	0.20%
Blocked or covered radiators/convectors	☐	0.20%

ELECTRIC RESISTANCE HEAT	Yes=3.9%
Number of Thermostat/Controls	MN=2.04; MD=0
Number of Calibrated Thermostats	MN=1.07; MD=0
Linear ft of Electric Baseboard	MN=11.44; MD=0

HOT AIR SYSTEM Yes=66.8% Yes

Heat exchanger cracks observed ☐ 0.40%

Flue gas odor noticed in house ☐ 0.90%

Furnace fan speed | High | Medium | Low | H = 39.1%; M = 190.5%; L = 7.8%

Furnace temperature controls

High limit	°F	MN = 190.5; MD = 200
Fan on	°F	MN = 128.0; MD = 130
Fan off	°F	MN =98.7; MD = 100

Fan size: Yes cfm hp | MN = 0.3; MD = .33

Fan dirty 11.50% | hp = 100%

Belt loose 3.30%

Bearings noisy 1.30%

Integral humidifier present 9.30%

Humidifier dysfunctional 6.50%

Air filter type

Location of air filter

Condition of air filters

Filter wrong size 2.40%

Filter slot open 3.00%

General condition of ducts

In-line dampers present 18.40%

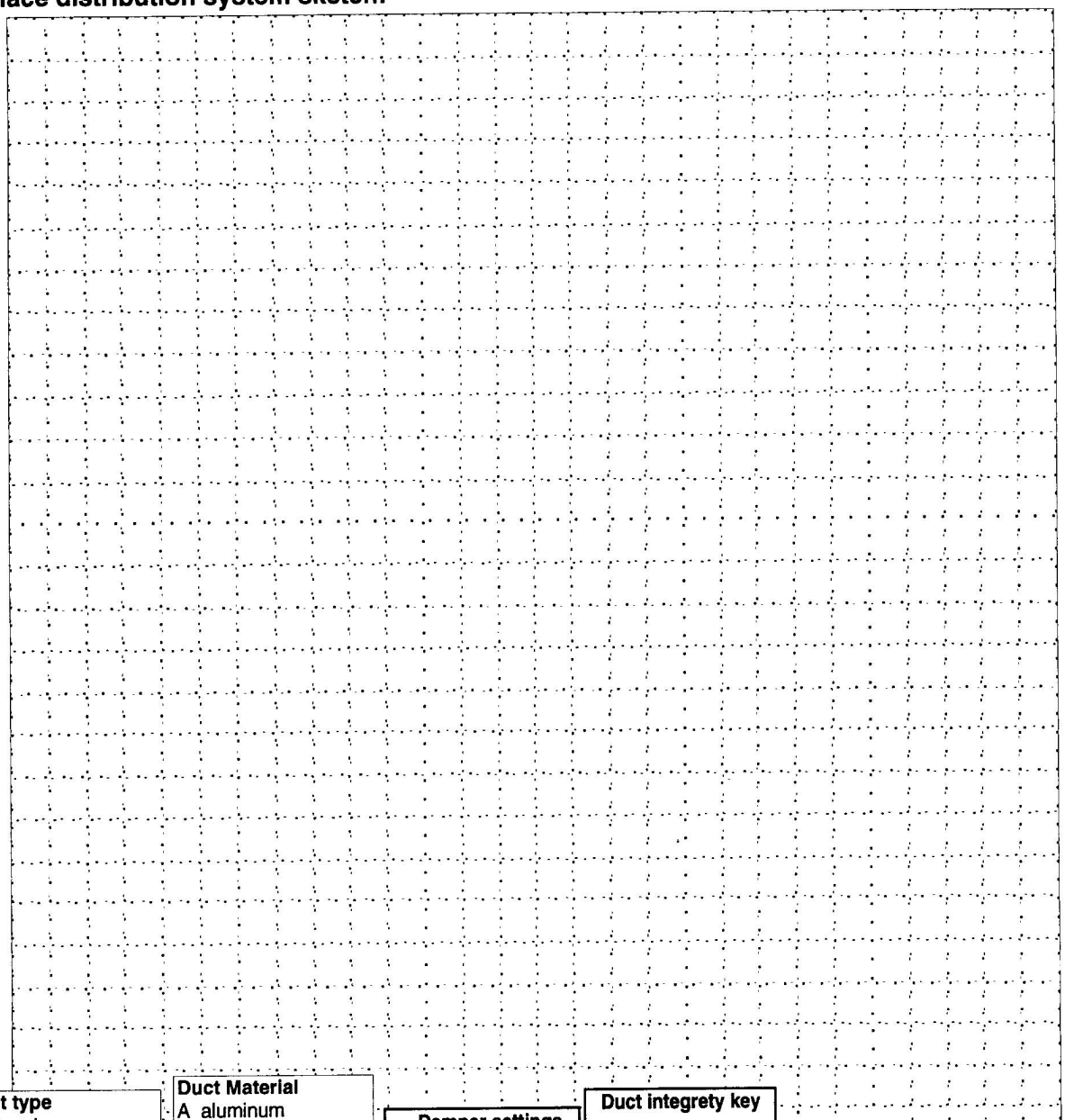
Filter type
F fiberglass(replaceable)=69.7%
W washable=23.5%
E electronic=0.4%

Location of air filters
H Fan housing=72.4%
E external slot=25.7%
R remote (return air register)=2.0%

Condition of ducts
S sealed=15.2%
T tight=45.1%
L leaky=35.3%
V very leaky=3.3%
D disconnected=0.8%
O open=0.4%
R restricted=0%

Condition of air filters
N none=6.9%
C clean,=51.2%
DU dusty, =17.9%
D dirty, =17.9%
P plugged=6.1%

Furnace distribution system sketch:



Duct type
R round
O oval
RE rectangular
F flex
P panned
B building cavity
PP platform plenum

Duct Material
A aluminum
G galvanized
D ductboard
W wood
P plywood
PL plastic
S sheetrock
X other

Damper settings
O open
C closed
P partly closed

Duct integrety key
(D) disconnect
(O) open
(L) leak
(R) restriction
(B) blockage

Location
NH non-heated space
IH intentionally heated space
UH unintentionally heated space
UNH unintentionally not heated space

Notes:

Supply ducts

Duct Type	Duct Mtrl	Location	Space status	Condition	Insulation type	Insulation thickness	Cross section (in sq in)	Total Length	Total Register size (sq in)
						MN=0.48 in MD=0 in	MN=46.7 MD=32	MN=16.9 ft MD=12 ft	MN=78.1 MD=60
						in		ft	
						in		ft	
						in		ft	
						in		ft	
						in		ft	
						in		ft	
						in		ft	
						in		ft	
						in		ft	
						in		ft	
						in		ft	

Total: MN=374.1 MD=304

Duct type
R round=67.0%
O oval=0%
RE rectangular=30.4%
F flex=1.8%
P panned =0.6%
B building cavity=0.19%
PP platform plenum=0.1%

Duct Material
A aluminum=1.1%
G galvanized=95.3%
D ductboard=0%
W wood=0%
P plywood0.3%
PL plastic1.8%
S sheetrock=0.1%
X other=1.3%

Duct location
B basement=75.1%
C crawlspace-10.9%
A attic=6.0%
G garage=0%
L living space=3.5%
W wall cavities=4.1%
F floor cavities=0.5%

Space status
NH non-heated space=25.4%
IH intentionally heated space=24.3%
UH unintentionally heated space=50.3%
UNH unintentionally not heated space=0%

Condition
S sealed
T tight=41.1%
L leaky=46.8%
V very **leaky**=3.6%
D disconnected=0.6%
O open=0.4%
R restricted=0%
B blockage=0%

Duct Insulation Type
DB ductboard=0.1%
FB fiberglass house batts=7.1%
FD fiberglass ductwrap=9.1%
IF interior fiberglass=0%
F foam=0%
A Asbestos=7.6%
X other _____=0.9%
N none=75.2%

Return Duct Summary

Duct Type Mtrl	Location	Space status	Condition	Insulation type	Insulation thickness	Minimum Cross section (sq in)	Total Length	Total Register size (sq in)
					MN = 0.2 in MD = 0 in	MN=115.7 MD=80	MN=16.9 ft MD=12 ft	MN=78.1 MD=60
					in		ft	
					in		ft	
					in		ft	
					in		ft	

Total cross section of return air system at its most restricted point: sq in Total MN=336.9 MD=288

DOMESTIC WATER-HEATING SYSTEM

Type:
Fuel:
Location: Yes
Age MN=8.5; MD=8

Water Heater Type
SA stand alone system=99.2%
T tankless [integrated with space-heating system=0.4%
SST seperate insulated storage tank attached to boiler=0%
I instant tankless=0%
X other _____=0.2%
N none=0.2%

Water heater Location
NH non-heated space=20.2%
IH intentionally heated space=35.9%
UH unintentionally heated space=43.9%
UNH unintentionally not heated space=0%

Fuel
NG natural gas=82%
P propane =0%
O oil =0.2%
K kerosene=0%
E electricity =17.6%
W wood =0%
C coal =0%
S solar =0%
X other_____=0.2%

Fuel Leaks	2.10%	
Water leaks at tank	1.50%	
Water line leaks	1.30%	
Wiring insecure	0%	
Pressure relief valve	1.70%	Yes
No external blanket insulation used		25.80%
Blanket improperly installed or falling off		6.50%
Type of factory insulation:	foam	10.80%
	fiberglass	89.20%

Thickness of factory insulation _____ in. MN=1.3; MD=1
Temperature setting MN=134.6; MD=135 °F Hot=32.2 Warm=59.5 Low=8.4
(record highest setting for electrically heated systems)
Water temperature measured at nearest tap MN=128.6; MD=130
Water pipes insulated Yes=40.3% MN=41.4%; MD=20 % of total expose
Pipe Insulation type _____ length

Pipe Insulation Type
RF rigid preformed fiberglass=17.7%
FB fiberglass house batts=2.8%
FD fiberglass ductwrap=5.9%
F foam=54.3%
A Asbestos=0.4%
X other _____=0.7%
None=18.3%

HOT WATER SYSTEM DRAFT (for Natural gas and propane units only)

Outdoor temperature MN=46; MD=43 °F

Test	Conditions					Measurements			
	Exhaust fans & clothes dryer	Door from water heater zone to House	Furnace Burner	Air Handler		Δ P Water Heater Zone to Outside	Water Heater Draft in.w.c. or Pa	Water Heater CO	Time to Establish Draft at Water Heater
Pre	off	open	off	off	Water	MN=0 MD=0	MN=-.22 MD=-.01		
1	on	open	off	off	off	MN=0 MD=0	MN=-.06 MD=0		
2	on	closed	off	off	off	MN=0 MD=0	MN=-.11 MD=0		
immediately after firing	on	worst case:open or closed	off	off	off	MN=0 MD=0	MN=-.42 MD=0	MN=12.8 MD=6	MN=.6 MD=0
	Water heater flame roll-out exp				on	☐			
30 sec.	on	same	off	off			MN=-.33 MD=-.005	MN=15.4 MD=7	
1 minute	on	same	off	off	on		MN=-.37 MD=0		
2 minutes	on	same	off	off	on		MN=-.49 MD=-.01		
3 minutes	on	same	off	off	on	MN=0 MD=0	MN=-.54 MD=-.01	MN=9.4 MD=4	
Firing rate from label				Btu/hr	on	MN=36,450; MD=36,000			
Cubic feet from meter in 36 seconds:					MN=0.9; MD=0.4				

HEATING SYSTEM TESTS

Pre-Test Conditions: (All combustion systems)

		Yes
Exhaust fans and clothes dryer **off**	☐	42.80%
Gas fired water heaters **off**	☐	45.30%
Furnace burner **off**	☐	47.20%
Air handler **off**	☐	43.40%

Pa Δ P Heating system zone to exterior MN=1.13; MD=0.01

Exhaust fans and clothes dryer **on** ☐ 0%

Door to heating system zone in worst case position (from hot water test)

☐ open or 76.50%

☐ closed 23.50%

Measure:

°F Outdoor temperature MN=43.1; MD=40

Pa Δ P Heating system zone to exterior MN=0.1; MD=0

wc Draft at heating system flue MN=0; MD=0

ppm Ambient CO MN=2.3; MD=1.5

Initial Start up Test

Furnace burner on **on** ☐ 41.30%

☐ Experience furnace flame roll-o 7.10%

30 seconds after firing

% Oxygen at heating system flue MN=11.56;

wc Draft at heating system flue MN=0; MD=0

1 minute after firing MN=11.19;

% Oxygen at heating system flue (Watch for change when fan comes on)

wc Draft at heating system flue MN=0; MD=0

Air Handler Fan-On Tests (Furnace systems only):

As furnace fan come **(may be earlier or later than this in timed sequence)**

% Oxygen at furnace flue MN=11.3; MD=11.4

Pa Δ P Heating system zone to exterior MN=0.3; MD=0

wc Draft at furnace flue MN=0; MD=.007

Furnace spillage record (All comb ustion furnaces and boilers)

MN=0.7 MD=0 min Time for heating system to stop spilling (establish draft)

(if longer than 3 minutes shut down and correct)

Worst case test

Re-establish worst case depressurization (with furnace air handler on)

Reverse door between space heating room and house (if closed, open it; if open, close it)

MN=-0.42 MD=0	Open	Pa	Δ P Heating system zone to exterior
MN=-0.35; MD=0	Closed	Pa	Δ P Heating system zone to exterior

Final worst case condition ☐ Open 87.8% ☐ Closed 11.16%

Water heater spillage check (under worst case conditions)

Furnace air handler **on** ☐ 26.6%

Water heater **refired** ☐ 31.9%

MN=1.5 MD=0	min	Time for water heater to stop spilling (establish draft)

High Limit Shut Down

If furnace or boiler reaches high limit temperature and shuts off before reaching steady state

MN=367.6; MD=360	°F	Maximum stack temperature reached
MN=201.2; MD=195	°F	Maximum plenum or boiler temperature reached

Steady-State Efficiency test

Test equipment identification number

Water heater **off** ☐ 34.20%

Exhaust fans and clothes dryer **off** ☐ 32.10%

Furnace **at steady state:** ☐

MN=0; MD=.003	wc	Draft at furnace flue
MN=10.5; MD=10.5	%	Oxygen at furnace flue (for 02-based systems)
MN=4.6; MD=4.2	%	CO2 at furnace flue (for CO2-based test systems))
MN=394; MD=390	°F	Furnace stack temperature
MN=68.7; MD=68	°F	Room Temp (if not subtracted from furnace temperature)
MN=354; MD=350	°F	Net stack temperature
MN=75.9; MD=76.5	.%	Steady state efficiency

Gas firing rate measurement (All natural gas units)

Record firing rate from label _____ Btu/hr MN=99,508; MD=100,000

Count cubic feet at meter in 36 seconds: _____ MN=1.94; MD=1.03

Carbon Monoxide tests (All combustion furnaces)

MN=18.0; MD=4	ppm	CO at furnace flue
MN=2.6; MD=2	ppm	CO five feet from space heating system
MN=2.4; MD=1	ppm	CO at nearest register
MN=2.3; MD=1	ppm	CO in living space

Yes 8.60% ☐ Gas stove top on ?

6.10% ☐ Gas oven on ?

3.60% ☐ Kerosine space heater on ?

1.90% ☐ Other possible source of CO _____

Register temperature check (All hot air systems)

Temperature at:

MN=140.9; MD=140	°F	Supply plenum as close to heat exchanger as possible
MN=79.3; MD=75	°F	Down stream of filter - closest to furnace plenum as possible
MN=130.2 MD=130	°F	Close supply register
MN=119.8; MD=120	°F	Far supply register
MN=78.2; MD=75	°F	Close return register
MN=75.8; MD=74	°F	Far return register

Filter-Removed Steady State Test (For hot air systems with clogged, removable filters:)

Filter **removed** ☐ 8.00%

Temperature at:

MN=145.6; MD=151	°F	Supply plenum as close to heat exchanger as possible
MN=85.4; MD=78	°F	Down stream of filter - in fan compartment

If there is a significant change in ΔT, do a revised steady state test:

MN=.01; MD=.01	wc	Draft at furnace flue
MN=10.6; MD=10	%	Oxygen at furnace flue (for 02-based systems)
MN=3.8; MD=3.8	%	CO2 at furnace flue (for CO2-based test systems))
MN=387.7; MD=360	°F	Furnace stack temperature
MN=72.1; MD=70.5	°F	Room Temperature (if not subtracted from furnace temperature)
MN=341.6; MD=307.5	°F	Net stack temperature
MN=76.3; MD=77.8	.%	New steady state efficiency

Filter **replaced** ☐ 7.10%

Room depressurization test (for closed-door rooms without return air regsters)

MN=0.36; MD=0	Pa	Δ P house to main bedroom
MN=0.57; MD=0	Pa	Δ P house to exterior
Door closed in other room		Room I.D.
MN=0.37; MD=0	Pa	Δ P house to main bedroom
MN=0.41; MD=0	Pa	Δ P house to exterior
Door closed in other room		Room I.D.
MN=0.26; MD=0.01	Pa	Δ P house to main bedroom
MN=0.05; MD=0	Pa	Δ P house to exterior
Door closed in other room		Room I.D.
MN=-0.16; MD=0.01	Pa	Δ P house to main bedroom
MN=-0.17; MD=0	Pa	Δ P house to exterior
Door closed in other room		Room I.D.
	Pa	Δ P house to main bedroom
	Pa	Δ P house to exterior

All houses:

Do blower door tests and duct protocol

BLOWER-DOOR TEST DATA SHEET:
MINNEAPOLIS BLOWER DOOR -- Type 3 Test equipment i.d. number: _____

Unusual procedures to prepare house for test: _____

Indoor temperature Start	Indoor temperature Finish	Outdoor temp.	Average wind speed	Maximum wind gust	Local shielding class	Number of stories	House Volume (from p. 2)
MN=72.1	MN=70.1	MN=46.3	MN=3.9	MN=7.7		MN=1.4	MN=10233
MD=72	MD=71	MD=40	MD=3	MD=5		MD=1	MD=9108

Basement door: open closed Other conditions:

Goal	House pressure	Fan Pressure	Fan Configuration (circle one) Open	Ring A	Ring B	Flow rate (cfm)
10 Pa	MN=5.9 MD=.3	MN=770 MD=45	Open 39.5%	A 40.3%	B 6.2%	MN=1921 MD=1827
15 Pa	MN=9.9 MD=15	MN=744 MD=55	Open 49.%	A 45.2%	B 5.7%	MN=2090 MD=1979
20 Pa	MN=13.7 MD=20	MN=473 MD=55	Open 39.2%	A 47.2%	B 13.6%	MN=1796 MD=1549
25 Pa	MN=17.1 MD=25	MN=464 MD=68	Open 41.7%	A 46.6%	B 11.7%	MN=1986 MD=1695
30 Pa	MN=20.5 MD=30	MN=506 MD=75	Open 45.8%	A 44.6%	B 9.5%	MN=2111 MD=1843
35 Pa	MN=23.6 MD=35	MN=518 MD=81	Open 47.5%	A 44.4%	B 8.1%	MN=2276 MD=1975
40 Pa	MN=26.8 MD=40	MN=545 MD=90	Open 49.4%	A 43.1%	B 7.5%	MN=2462 MD=2178
45 Pa	MN=30 MD=45	MN=578 MD=99	Open 50.8%	A 44.1%	B 5.1%	MN=2533 MD=2254
50 Pa	MN=36.7 MD=50	MN=366 MD=90	Open 50.%	A 45.6%	B 4.4%	MN=2648 MD=2400
60 Pa	MN=44.8 MD=60	MN=182 MD=95	Open 51.2%	A 45.6%	B 3.2%	MN=2722 MD=2500

Describe house air leakage characteristics _____

List leakage sites in perceived order of magnitude (# 1 being gr 7_____

1_____ 4_____ 8_____

2_____ 5_____ 9_____

3_____ 6_____

Use Lines 1-6 of Duct Protocol sheet to record one-point blower door measurements.

Final version
10/19/92

Interviewer_____

Date of Interview_____

SINGLE-FAMILY STUDY OCCUPANT QUESTIONNAIRE: **WEATHERIZED HOME**

A. Identification

INTERVIEWER INSTRUCTIONS:

Complete Questions A1, A2, and A5 using data from the local weatherization agency before starting the interview.

A1. Dwelling Unit Identifier ___ ___ ___ ___ ___

A2. Name of WAP Applicant_____

A3. Name of local WAP Agency _____

SCREENER:

The purpose of this screening section is to locate a suitable respondent. This screening should be done by telephone before the site visit, if possible.

ASK TO SPEAK TO THE APPLICANT NAMED IN QUESTION A2. IF AVAILABLE, READ THE FOLLOWING:

Your home was weatherized as a participant in the Weatherization Assistance Program. As a follow up to that we would like to conduct an interview to learn more about how that weatherization may have affected your energy use and ask your opinions regarding the value of weatherization. Will you be available on (date and time of the site visit) to answer these questions?

IF THE APPLICANT NAMED IN QUESTION A2 IS NOT AVAILABLE, CONTINUE WITH THE FOLLOWING:

Your home was weatherized as a participant in the Weatherization Assistance Program. As a follow up to that we would like to conduct an interview to learn more about how that weatherization may have affected your energy use and ask your opinions regarding the value of weatherization. I'd like to speak to a person over 18 years of age who is knowledgeable about energy use. Would you be able to answer these questions? Will you be available on (date and time of the site visit) to answer these questions?

(IF YES, RECORD THIS PERSON'S NAME IN QUESTION A4. IF NO, IDENTIFY SUITABLE RESPONDENT AND CONFIRM THEIR AVAILABILITY ON THE DATE AND TIME OF THE SITE VISIT AND RECORD THEIR NAME IN A4.)

INTERVIEWER INSTRUCTIONS:

IF RESPONDENT IS HESITANT: Your answers to these questions will provide valuable information to the Department of Energy. The interview will take approximately 30 minutes.

INTERVIEWER INSTRUCTIONS:

BEGIN THE ON-SITE INTERVIEW HERE.

Ask to speak to the person previously identified in the telephone screening (QUESTION A4). If that person is not available try to identify another suitable respondent. If no suitable respondent can be identified leave the exhibits and explain that the interview will be conducted by telephone at a later date.

A4. Name of respondent_____

Relation to WAP applicant_____
[ ] RESPONDENT IS SAME AS WAP APPLICANT

INTRODUCTION

Your home was weatherized as a participant in the Weatherization Assistance Program. As a follow up to that we would like to conduct an interview to learn more about how that weatherization may have affected your energy use and ask your opinions regarding the value of weatherization. First, I would like to confirm the date of the weatherization work.

A5. Date of WAP weatherization work _____

A6. In what year was this home built? Just your estimate.*

[ ] Before 1900	[ ] 1940-1949	[ ] 1985	[ ] 1990
[ ] 1900-1909	[ ] 1950-1959	[ ] 1986	[ ] 1991
[ ] 1910-1919	[ ] 1960-1969	[ ] 1987	[ ] 1992
[ ] 1920-1929	[ ] 1970-1979	[ ] 1988	
[ ] 1930-1939	[ ] 1980-1984	[ ] 1989	

A7. In what year did your family move into this home?*

[ ] Before 1900	[ ] 1940-1949	[ ] 1985	[ ] 1990
[ ] 1900-1909	[ ] 1950-1959	[ ] 1986	[ ] 1991
[ ] 1910-1919	[ ] 1960-1969	[ ] 1987	[ ] 1992
[ ] 1920-1929	[ ] 1970-1979	[ ] 1988	
[ ] 1930-1939	[ ] 1980-1984	[ ] 1989	

IF "1987" OR LATER ON QUESTION A7, ASK:

A8. During which month did you move in?*

[ ] January	[ ] May	[ ] September
[ ] February	[ ] June	[ ] October
[ ] March	[ ] July	[ ] November
[ ] April	[ ] August	[ ] December

INTERVIEWER INSTRUCTIONS:

If respondent moved into the home after March of 1989, do not ask him/her the before questions in Sections B through G.

B. Major Heating Fuel

Next, I will ask some questions about the fuels you used to heat your home during the winters before and after weatherization on (READ DATES FROM QUESTION A5). *Throughout the survey, when I ask about the winter* ***before*** *weatherization, I mean the winter of 1988-1989. The winters* ***after*** *weatherization include the winters of 1990-1991, and of 1991-1992.*

INTERVIEWER INSTRUCTIONS:

Hand Exhibit Booklet to the respondent and ask him/her to look at Exhibit B. Discuss the time line and ask the respondent to identify any personal events that coincide with the winter before and the two winters after weatherization.

INTERVIEWER INSTRUCTIONS:

If two or more heating fuels are used, the **main heating fuel** is the one that provides most of the heat for the home. The main heating fuel may not necessarily be the one used for the central heating system.

B1. Please look at Exhibit B1. What was the **one main heating fuel** used for heating your home during the winter **before** weatherization?*

	B1 Main Fuel (Mark only one)	B2 (Mark all other fuels that apply)
Gas from underground pipes serving the neighborhood	[ ]	[ ]
Bottled gas (LPG or Propane)	[ ]	[ ]
Fuel oil	[ ]	[ ]
Kerosene or coal oil	[ ]	[ ]
Electricity	[ ]	[ ]
Coal or coke	[ ]	[ ]
Wood	[ ]	[ ]
Solar collectors	[ ]	[ ]
Other (specify)_____	[ ]	[ ]
NO FUELS USED	[ ]	[ ]
DON'T KNOW	[ ]	[ ]

2. Please look at Exhibit B1 again. You mentioned that your **main heating fuel** used during the winter **before** weatherization was (FUEL FROM QUESTION B1). What **other** fuels were used to heat your home during the winter before weatherization -- including those used to provide heat just occasionally? Don't forget to include fuels that ran portable heaters if you used them. (MARK ALL THAT APPLY IN COLUMN B2. IF NONE, MARK "NO FUELS USED")*

IF ADDITIONAL FUELS ARE IDENTIFIED FROM QUESTION B2, ASK:

B3. Going back to your **main heating fuel** used during the winter **before** weatherization--(FUEL FROM QUESTION B1) -- did this fuel provide all or almost all of the heat for your home, about three-fourths, or closer to half of the heat for your home?*

[ ] All or almost all (95% or more)
[ ] About three-fourths (67-94%)
[ ] Closer to half (66% or less)
[ ] DON'T KNOW/REMEMBER

*Now, I will ask similar questions about the fuels you used during the winters **after** weatherization. The winters **after** weatherization include the winters of 1990-1991, and of 1991-1992.*

B4. Please look at Exhibit B1 again. What was the **one main heating fuel** used for heating your home during the winters **after** weatherization?*

	B4 Main Fuel (Mark only one)	B5 (Mark all other fuels that apply)
Gas from underground pipes serving the neighborhood	[ ]	[ ]
Bottled gas (LPG or Propane)	[ ]	[ ]
Fuel oil	[ ]	[ ]
Kerosene or coal oil	[ ]	[ ]
Electricity	[ ]	[ ]
Coal or coke	[ ]	[ ]
Wood	[ ]	[ ]
Solar collectors	[ ]	[ ]
Other (specify)_____	[ ]	[ ]
NO FUELS USED	[ ]	[ ]
DON'T KNOW	[ ]	[ ]

B5. Please look at Exhibit B1 again. You mentioned that your **main heating fuel** used during the winters **after** weatherization, was (FUEL FROM QUESTION B4). What **other** fuels were used to heat your home during the winters after weatherization -- including those used to provide heat just occasionally? Don't forget to include fuels that ran portable heaters if you used them. (MARK ALL THAT APPLY IN COLUMN B5. IF NONE, MARK "NO FUELS USED".)*

IF ADDITIONAL FUELS ARE IDENTIFIED FROM QUESTION B5, ASK:

B6. Going back to your **main heating fuel** used during the winters **after** weatherization --(FUEL FROM QUESTION B4) -- did this fuel provide all or almost all of the heat for your home, about three-fourths, or closer to half of the heat for your home?*

[ ] All or almost all (95% or more)
[ ] About three-fourths (67-94%)
[ ] Closer to half (66% or less)
[ ] DON'T KNOW/REMEMBER

B7a. Please look at Exhibit B7. During the winter **before** the weatherization work was done, did you use any of the following to **help** heat your home? (USE COLUMN B7a TO CHECK AS MANY AS WERE USED.)

(B7a) BEFORE	(B7b) AFTER
[ ] Wood/coal stove	[ ]
[ ] Fireplace	[ ]
[ ] Cooking stove/range/oven	[ ]
[ ] Non-portable room heater burning gas, oil, or kerosene	[ ]
[ ] Portable kerosene heater	[ ]
[ ] Non-portable electric heater	[ ]
[ ] Electric portable heater (cord-connected)	[ ]
[ ] Other (specify):_____	[ ]
[ ] NONE	[ ]

B7b. Please look at Exhibit B7 again. During the winters **after** the weatherization work was done, did you use any of the following to **help** heat your home? (USE COLUMN B7b TO CHECK AS MANY AS WERE USED.)

INTERVIEWER INSTRUCTIONS:

Confirm that responses to B7a do not contradict responses to B1 and B2. Confirm that responses to B7b do not contradict responses to B4 and B5. Probe the respondent if the responses contradict.

ASK QUESTION B8 ONLY FOR EACH ITEM IN QUESTION B7 USED BOTH BEFORE AND AFTER WEATHERIZATION:

B8. Please turn to Exhibit B8. Please tell me how often you used the following to help heat your home during the winters **after** the weatherization work was done, as compared to the winter **before** the weatherization work was done. Did you use it less, about the same, or more **after** weatherization as compared to **before** weatherization? (CIRCLE ONE NUMBER IN EACH LINE ASKED.)

	Used Less After	Used About The Same	Used More After
1. Wood/coal stove	1	2	3
2. Fireplace	1	2	3
3. Cooking stove/range/oven	1	2	3
4. Non-portable room heater burning gas, oil, or kerosene	1	2	3
5. Portable kerosene heater	1	2	3
6. Non-portable electric heater	1	2	3
7. Electric portable heater (cord-connected)	1	2	3
8. Other (_____)	1	2	3

C. Demographics

Now I have some questions about the people who live here and about your housing costs.

C1. Please tell me how many people living in your home during the winter **before** weatherization were . . . (READ EACH ITEM).

Under the age of 5 _____

Between 5 and 17 years old _____

Between 18 and 64 years old _____

65 years old or older _____

TALLY -- so that is (READ NUMBER) in total? _____
ENTER CORRECT TOTAL HERE

C2. You have told me that there were (READ TOTAL NUMBER FROM QUESTION C1) people living in your home during the winter **before** weatherization. How many people were living in your home during each of the winters **after** weatherization?

NUMBER OF RESIDENTS IN THE WINTER OF 1990-91	NUMBER OF RESIDENTS IN THE WINTER OF 1991-92

C3. Were any of the people living in your home during the winter **before** weatherization handicapped? By handicapped, I mean a permanent condition. I do not mean a temporary condition, such as a short-term illness. (EYEGLASSES ARE NOT CONSIDERED A HANDICAP). (IF YES, ASK HOW MANY.)

NUMBER HANDICAPPED

C4. Do you or members of your household own your home, or rent?*

[ ] Own (buying)
[ ] Rent
[ ] Occupied without payment of rent (SKIP TO SECTION D)

FROM QUESTION C4, IF HOUSEHOLD OWNS OR PAYS RENT, ASK:

C5. Please tell me which category best describes the monthly rent or mortgage payment the household pays for your home. Is it . . .? Stop me when I reach the category. (READ CATEGORIES.)

[ ] less than $200 per month
[ ] $201 - 300 per month
[ ] $301 - 400 per month
[ ] $401 - 500 per month
[ ] $501 - 600 per month
[ ] $601 - 700 per month
[ ] $701 - 800 per month
[ ] $801 - 900 per month
[ ] more than $900 per month
[ ] OWNED, MORTGAGE PAID OFF (SKIP TO SECTION D)
[ ] DON'T KNOW

C6. Does this payment include: (READ ITEMS AND PROBE FOR "YES" OR "NO".)

	Yes	No	DON'T KNOW
1. electricity.	[ ]	[ ]	[ ]
2. natural gas.	[ ]	[ ]	[ ]

D. Conditioned Living Space

My next question is about the number of different types of rooms in your home. Remember that when I ask about the winter **before** weatherization, I mean the winter of 1988-1989. When I ask about the winters **after** weatherization, I mean the winters of 1990-1991, and of 1991-1992. Weatherization work was done to your home on (READ DATES FROM QUESTION A5).

INTERVIEWER INSTRUCTIONS:

For one-bedroom efficiency or studio apartment, record "0 bedrooms" and number of bathrooms and other rooms.

Full Bathroom -- sink with running water **and** flush toilet **and** bathtub or shower.

Half Bathroom -- toilet **or** bathtub **or** shower

D1. How many of each of the following rooms does this home have? (ASK EACH ITEM AND RECORD NUMBER FOR EACH.)*

	D1 Total Number	D2A Number heated during the winter **before** weatherization	D2B Number heated during the winters **after** weatherization
Bedrooms?.	_____	_____	_____
Full bathrooms?.	_____	_____	_____
Half bathrooms?.	_____	_____	_____
All other rooms:.	_____	_____	_____

(Do not count laundry rooms, foyers or unfinished storage space.
Only count porches if they are enclosed and used year-round.)

D2. (FOR EACH TYPE OF ROOM THE RESPONDENT HAS IN THE HOME, ASK D2A, THEN D2B. A HEATED ROOM IS ONE THAT IS WARM ENOUGH TO BE USED.)

D2a. Of the (READ NUMBER OF ROOMS AND TYPE OF ROOM), how many were heated during the winter **before** weatherization (RECORD ABOVE ON COLUMN D2A.)

D2b. And how many (READ TYPE OF ROOM) were heated during the winters **after** weatherization? (RECORD ABOVE ON COLUMN D2B.)

E. Thermostat Management

I would now like to ask you some questions about the temperature at which you kept your home.

INTERVIEWER INSTRUCTIONS:

Remember, we are interested in the respondent's perceptions. Ask the respondent for their opinion; avoid checking the thermostat for the actual settings.

If respondent keeps different sections of the home at different temperatures, we want to know the temperature in the part of the house where the people are. If, for example, the heat is turned off upstairs during the day because the family is downstairs, we want the downstairs temperature.

We would like to know the actual temperature of the home. If the respondent doesn't know the temperature, but does know the thermostat setting, record the thermostat setting. Otherwise, probe for best estimate.

E1a. During the winter **before** weatherization, did you keep your home at the same temperature at all times of the day, or did you change the temperature?

[ ] Kept home at same temperature (ASK QUESTION E1B)
[ ] Changed the temperature (GO TO QUESTION E1C)

IF KEPT HOME AT SAME TEMPERATURE ON QUESTION E1A, ASK:

E1b. **Before** weatherization, at what temperature did you **usually** keep your home?

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

(GO TO QUESTION E2A)

IF CHANGED THE TEMPERATURE ON QUESTION E1A, ASK:

E1c. **Before** weatherization, at what temperature did you **usually** keep your home during the day **when someone was at home**?*

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

E1d. **Before** weatherization, at what temperature did you **usually** keep your home during the day **when no one was at home**?*

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

E1e. **Before** weatherization, at what temperature did you **usually** keep your home **during sleeping hours**?*

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

(ASK EVERYONE:)

E2a. During the winters **after** weatherization, did you keep your home at the same temperature at all times of the day, or did you change the temperature?

[ ] Kept home at same temperature (ASK QUESTION E2B)
[ ] Changed the temperature (GO TO QUESTION E2C)

IF KEPT HOME AT SAME TEMPERATURE ON QUESTION E2A, ASK:

E2b. **After** weatherization, at what temperature did you **usually** keep your home?

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

(GO TO SECTION F)

IF CHANGED THE TEMPERATURE ON QUESTION E2A, ASK:

E2c. **After** weatherization, at what temperature did you **usually** keep your home during the day **when someone was at home?***

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

E2d. **After** weatherization, at what temperature did you **usually** keep your home during the day **when no one was at home?***

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

E2e. **After** weatherization, at what temperature did you **usually** keep your home **during sleeping hours?***

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

F. Events Affecting Energy Use

The next questions are about events which may have affected your energy use during the winters, before and after weatherization.

F1a. During the winter **before** your home was weatherized, was there ever a time when you wanted to use your main source of heat, but could not, for one or more of the following reasons?

	Yes	No
Your heating system was **broken**?	[ ]	[ ]
The utility company **discontinued**. . . . . your gas or electric service?	[ ]	[ ]

IF "YES" TO EITHER PART OF QUESTION F1A, ASK:

F1b. Thinking about these times that you went without heat, during the winter **before** weatherization, how many separate times were there?

Total times: _____

F1c. Altogether, how many hours or days were you without heat?
Total hours without heat: _____ OR Total days without heat: _____

F2a. During the winters **after** your home was weatherized was there ever a time when you wanted to use your main source of heat, but could not, for one or more of the following reasons?

	Yes	No
Your heating system was **broken**?	[ ]	[ ]
The utility company **discontinued**.	[ ]	[ ]

your gas or electric service?

IF "YES" TO ANY PART OF QUESTION F2A, ASK:

F2b. Thinking about these times that you went without heat, during the winters **after** weatherization, how many separate times were there?

Total times: _____

F2c. Altogether, how many hours or days were you without heat?

Total hours without heat: _____ OR Total days without heat: _____

F3. Except for the weatherization of your home on (READ DATES FROM QUESTION A5), was there any home repair, major house renovation, or damage to your house that would affect energy use done between January 1987 and September 1992?

[ ] Yes
[ ] No
[ ] DON'T KNOW

IF YES ON QUESTION F3, ASK:

F4. Please describe the home repair, renovation, or damage. (RECORD VERBATIM BELOW.)

		MONTH/YEAR
(1)	_____	_____
	_____	_____
(2)	_____	_____
	_____	_____
(3)	_____	_____
	_____	_____

F5. In which month/year was the work or damage done? (RECORD UNDER COLUMN FOR MONTH/YEAR ABOVE.)

G. Impacts on Health, Safety, Comfort, Affordability

My next questions ask for your opinion about how weatherization affected the health, safety, comfort, and value of your home.

G1a. First I have some questions about the temperature of your home. Please look at Scale G1. Using a scale of 1 to 7, where 1 is too cold, 4 is comfortable, and 7 is too hot, how would you rate the temperature in your home during the winter **before** weatherization?

BEFORE

1	2	3	4	5	6	7	8
too cold			comfortable			too hot	DON'T REMEMBER

IF 1-3 OR 5-7 ON QUESTION G1A, ASK:

G1b. Why couldn't you keep your home the temperature you preferred during the winter **before** weatherization? (DO NOT READ ANSWER CATEGORIES.) (CHECK ALL THAT APPLY.)*

[ ] Heating system problem
[ ] Landlord controls the temperature
[ ] Difference of opinion in household
[ ] Fuel shortage
[ ] High cost of fuel
[ ] Construction problem, such as broken windows, or holes in walls
[ ] Other (please specify)_____

_____

[ ] NOT SURE

G1c. Using the same scale (REPEAT SCALE IF NECESSARY) how would you rate the temperature in your home during the winters **after** weatherization?

AFTER							
1	2	3	4	5	6	7	8
too cold			comfortable			too hot	DON'T REMEMBER

IF 1-3 OR 5-7 ON QUESTION G1C, ASK:

G1d. Why couldn't you keep your home the temperature you preferred during the winters **after** weatherization? (DO NOT READ ANSWER CATEGORIES.) (CHECK ALL THAT APPLY.)*

[ ] Heating system problem
[ ] Landlord controls the temperature
[ ] Difference of opinion in household
[ ] Fuel shortage
[ ] High cost of fuel
[ ] Construction problem such as broken windows, or holes in walls
[ ] Other (please specify)_____
[ ] NOT SURE

G2. Now I have some questions about the draftiness of your house. Please look at Scale G2. Using a scale of 1 to 7, where 1 is very drafty, 4 is somewhat drafty, and 7 is not at all drafty, how would you rate the draftiness of your home during the winter **before** weatherization?

BEFORE							
1	2	3	4	5	6	7	8
very drafty			somewhat drafty			not at all drafty	DON'T REMEMBER

Using the same scale (REPEAT SCALE IF NECESSARY), how would you rate the draftiness in your home during the winters **after** weatherization?

AFTER							
1	2	3	4	5	6	7	8
very drafty			somewhat drafty			not at all drafty	DON'T REMEMBER

G3. Next I have some questions about how changes in the operation of your heating system or the temperature of your home may have affected your health. Please look at Scale G3. Using a scale of 1 to 7, where 1 is many health problems, 4 is some health problems, and 7 is very few health problems, how would you rate the health of household members during the winter **before**

weatherization? By health I mean illnesses (such as colds, flus, allergies, frequent headaches, frequent nausea, or arthritis), which may be affected by temperature or heating system problems.

BEFORE

1	2	3	4	5	6	7	8
many health problems			some health problems			very few health problems	DON'T REMEMBER

Using the same scale (REPEAT SCALE IS NECESSARY), how would you rate the health of household members during the winters **after** weatherization?

AFTER

1	2	3	4	5	6	7	8
many health problems			some health problems			very few health problems	DON'T REMEMBER

G4. Now I have some questions about the safety of your home. Please look at Scale G4. Using a scale of 1 to 7, where 1 is very unsafe, 4 is acceptable, and 7 is very safe, how would you rate the safety of your home during the winter **before** weatherization? By safety, I mean absence of hazards. Some examples of hazards in the home are faulty electrical, heating, or plumbing systems; combustible materials or other fire hazards; unstable porches or broken doors; or the absence of safety precautions such as bolt locks or smoke detectors.

BEFORE

1	2	3	4	5	6	7	8
very unsafe			acceptable			very safe	DON'T REMEMBER

Using the same scale (REPEAT SCALE IF NECESSARY), how would you rate the safety of your home during the winters **after** weatherization?

AFTER

1	2	3	4	5	6	7	8
very unsafe			acceptable			very safe	DON'T REMEMBER

G5. Next I have some questions about your heating bills. Please look at Scale G5. Using a scale of 1 to 7, where 1 is very expensive, 4 is acceptable, and 7 is very inexpensive, how would you rate the cost of your heating bills during the winter **before** weatherization?

BEFORE

1	2	3	4	5	6	7	8
very expensive			acceptable			very inexpensive	DON'T REMEMBER

Using the same scale (REPEAT SCALE IF NECESSARY), how would you rate the cost of your heating bills during the winters **after** weatherization?

AFTER

1	2	3	4	5	6	7	8
very expensive			acceptable			very inexpensive	DON'T REMEMBER

END
On behalf on the U.S. Department of Energy, I would like to thank you for your time and patience today. The information that you have shared with us will be helpful in our study.

*These items are modified versions of questions taken from the 1990 Residential Energy Consumption Survey (RECS) conducted by the Energy Information Administration.

INTERVIEWER INSTRUCTIONS:

Check to make sure each question has been answered and that verbatim responses are clear and legible.

EXHIBIT B1

GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD

BOTTLED GAS (LPG OR PROPANE)

FUEL OIL

KEROSENE OR COAL OIL

ELECTRICITY

COAL OR COKE

WOOD

SOLAR COLLECTORS

OTHER

EXHIBIT B7

WOOD/COAL STOVE

FIREPLACE

COOKING STOVE/RANGE/OVEN

NON-PORTABLE ROOM HEATER BURNING GAS, OIL, OR KEROSENE

PORTABLE KEROSENE HEATER

NON-PORTABLE ELECTRIC HEATER

ELECTRIC PORTABLE HEATER (CORD-CONNECTED)

OTHER

EXHIBIT B8

USED LESS AFTER WEATHERIZATION

USED ABOUT THE SAME AFTER WEATHERIZATION

USED MORE AFTER WEATHERIZATION

SCALE G1
Temperature

1	2	3	4	5	6	7
too cold			comfortable			too hot

SCALE G2
Draftiness

1	2	3	4	5	6	7
very drafty			somewhat drafty			not at all drafty

SCALE G3
Health

1	2	3	4	5	6	7
many health problems			some health problems			very few health problems

SCALE G4
Safety

1	2	3	4	5	6	7
very unsafe			acceptable			very safe

SCALE G5
Heating Costs

1	2	3	4	5	6	7
very expensive			acceptable			very inexpensive

Final version
10/19/92

Interviewer_____

Date of Interview_____

SINGLE-FAMILY STUDY OCCUPANT QUESTIONNAIRE: **CONTROL HOME**

A. Identification

INTERVIEWER INSTRUCTIONS:

Complete Questions A1 and A2 using data from the local weatherization agency before starting the interview.

A1. Dwelling Unit Identifier ___ ___ ___ ___ ___

A2. Name of WAP Applicant _____

A3. Name of local WAP Agency _____

SCREENER:

The purpose of this screening section is to locate a suitable respondent. This screening should be done by telephone before the site visit, if possible.

ASK TO SPEAK TO THE APPLICANT NAMED IN QUESTION A2. IF AVAILABLE, READ THE FOLLOWING:

Your home will be weatherized soon as a participant in the Weatherization Assistance Program. We would like to conduct an interview to learn more about your energy use. Will you be available on (date and time of the site visit) to answer these questions?

IF THE APPLICANT NAMED IN QUESTION A2 IS NOT AVAILABLE, CONTINUE WITH THE FOLLOWING:

Your home will be weatherized soon as a participant in the Weatherization Assistance Program. We would like to conduct an interview to learn more about your energy use. I'd like to speak to a person over 18 years of age who is knowledgeable about energy use in your home. Would you be able to answer these questions? Will you be available on (date and time of the site visit) to answer these questions?

(IF YES, RECORD THIS PERSON'S NAME IN QUESTION A4. IF NO, IDENTIFY SUITABLE RESPONDENT AND CONFIRM THEIR AVAILABILITY ON THE DATE AND TIME OF THE SITE VISIT AND RECORD THEIR NAME IN A4.)

INTERVIEWER INSTRUCTIONS:

IF RESPONDENT IS HESITANT: Your answers to these questions will provide valuable information to the Department of Energy. The interview will take approximately 30 minutes.

INTERVIEWER INSTRUCTIONS:

BEGIN THE ON-SITE INTERVIEW HERE.

Ask to speak to the person previously identified in the telephone screening (QUESTION A4). If that person is not available try to identify another suitable respondent. If no suitable respondent can be identified leave the exhibits and explain that the interview will be conducted by telephone at a later date.

A4. Name of respondent_____

Relation to WAP applicant_____
[ ] RESPONDENT IS SAME AS WAP APPLICANT

A5. In what year was this home built? Just your estimate.*

[ ] Before 1900	[ ] 1940-1949	[ ] 1985	[ ] 1990
[ ] 1900-1909	[ ] 1950-1959	[ ] 1986	[ ] 1991
[ ] 1910-1919	[ ] 1960-1969	[ ] 1987	[ ] 1992
[ ] 1920-1929	[ ] 1970-1979	[ ] 1988	
[ ] 1930-1939	[ ] 1980-1984	[ ] 1989	

A6. In what year did your family move into this home?*

[ ] Before 1900	[ ] 1940-1949	[ ] 1985	[ ] 1990
[ ] 1900-1909	[ ] 1950-1959	[ ] 1986	[ ] 1991
[ ] 1910-1919	[ ] 1960-1969	[ ] 1987	[ ] 1992
[ ] 1920-1929	[ ] 1970-1979	[ ] 1988	
[ ] 1930-1939	[ ] 1980-1984	[ ] 1989	

IF "1987" OR LATER ON QUESTION A6, ASK:

A7. During which month did you move in?*

[ ] January	[ ] May	[ ] September
[ ] February	[ ] June	[ ] October
[ ] March	[ ] July	[ ] November
[ ] April	[ ] August	[ ] December

INTERVIEWER INSTRUCTIONS:

If respondent moved in after the winter of 1988-89, do not ask the questions about that winter in Sections B through G.

B. Major Heating Fuel

Next, I will ask some questions about the fuels you used to heat your home during the winter of 1988-89 and the winters of 1990-91 and 1991-92. We are asking about these time periods because other houses being studied were weatherized during the time between the winter of 1988-89 and the winters of 1990-91 and 1991-92.

INTERVIEWER INSTRUCTIONS:

HAND EXHIBIT BOOKLET TO THE RESPONDENT and ask him/her to look at Exhibit B. Discuss the time line and ask the respondent to identify any personal events that coincide with the winter of 1988-89 and the winters of 1990-91 and 1991-92.

INTERVIEWER INSTRUCTIONS:

If two or more heating fuels are used, the **main heating fuel** is the one that provides most of the heat for the home. The main heating fuel may not necessarily be the one used for the central heating system.

B1. Please look at Exhibit B1. What was the **one main heating fuel** used for heating your home during the winter of 1988-89?*

	B1 Main Fuel (Mark only one)	B2 (Mark all other fuels that apply)
Gas from underground pipes serving the neighborhood	[ ]	[ ]
Bottled gas (LPG or Propane)	[ ]	[ ]
Fuel oil	[ ]	[ ]
Kerosene or coal oil	[ ]	[ ]
Electricity	[ ]	[ ]
Coal or coke	[ ]	[ ]
Wood	[ ]	[ ]
Solar collectors	[ ]	[ ]
Other (specify)_____	[ ]	[ ]
NO FUELS USED	[ ]	[ ]
DON'T KNOW	[ ]	[ ]

B2. Please look at Exhibit B1 again. You mentioned that your **main heating fuel** used during the winter of 1988-89 was (FUEL FROM QUESTION B1). What **other** fuels were used to heat your home during the winter of 1988-89 -- including those used to provide heat just occasionally? Don't forget to include fuels that ran portable heaters if you used them. (MARK ALL THAT APPLY IN COLUMN B2. IF NONE, MARK "NO FUELS USED")*

IF ADDITIONAL FUELS ARE IDENTIFIED FROM QUESTION B2, ASK:

B3. Going back to your **main heating fuel** used during the winter of 1988-89--(FUEL FROM QUESTION B1) -- did this fuel provide all or almost all of the heat for your home, about three-fourths, or closer to half of the heat for your home?*

[ ] All or almost all (95% or more)
[ ] About three-fourths (67-94%)
[ ] Closer to half (66% or less)
[ ] DON'T KNOW/REMEMBER

Now, I will ask similar questions about the fuels you used during the last two winters.

B4. Please look at Exhibit B1 again. What was the **one main heating fuel** used for heating your home during the last two winters?*

	B4 Main Fuel (Mark only one)	B5 (Mark all other fuels that apply)
Gas from underground pipes serving the neighborhood	[ ]	[ ]
Bottled gas (LPG or Propane)	[ ]	[ ]
Fuel oil	[ ]	[ ]
Kerosene or coal oil	[ ]	[ ]
Electricity	[ ]	[ ]
Coal or coke	[ ]	[ ]
Wood	[ ]	[ ]
Solar collectors	[ ]	[ ]
Other (specify)_____	[ ]	[ ]
NO FUELS USED	[ ]	[ ]
DON'T KNOW	[ ]	[ ]

B5. Please look at Exhibit B1 again. You mentioned that your **main heating fuel** used during the last two winters, was (FUEL FROM QUESTION B4). What **other** fuels were used to heat your home during the last two winters -- including those used to provide heat just occasionally? Don't forget to include fuels that ran portable heaters if you used them. (MARK ALL THAT APPLY IN COLUMN B5. IF NONE, MARK "NO FUELS USED")*

IF ADDITIONAL FUELS ARE IDENTIFIED FROM QUESTION B5, ASK:

B6. Going back to your **main heating fuel** used during the last two winters -- (FUEL FROM QUESTION B4) -- did this fuel provide all or almost all of the heat for your home, about three-fourths, or closer to half of the heat for your home?*

[ ] All or almost all (95% or more)
[ ] About three-fourths (67-94%)
[ ] Closer to half (66% or less)
[ ] DON'T KNOW/REMEMBER

B7a. Please look at Exhibit B7. During the winter of 1988-89, did you use any of the following to **help** heat your home? (USE COLUMN B7a TO CHECK AS MANY AS WERE USED.)

(B7a) 1988-89	(B7b) Last 2 Winters
[ ] Wood/coal stove	[ ]
[ ] Fireplace	[ ]
[ ] Cooking stove/range/oven	[ ]
[ ] Non-portable room heater burning gas, oil, or kerosene	[ ]
[ ] Portable kerosene heater	[ ]
[ ] Non-portable electric heater	[ ]
[ ] Electric portable heater (cord-connected)	[ ]
[ ] Other (specify):_____	[ ]
[ ] NONE	[ ]

B7b. Please look at Exhibit B7 again. During the last two winters, did you use any of the following to **help** heat your home? (USE COLUMN B7b TO CHECK AS MANY AS WERE USED.)

INTERVIEWER INSTRUCTIONS:

Confirm that responses to B7a do not contradict responses to B1 and B2. Confirm that responses to B7b do not contradict responses to B4 and B5. Probe the respondent if the responses contradict.

ASK QUESTION B8 ONLY FOR EACH ITEM IN QUESTION B7 USED BOTH IN THE WINTER OF 1988-89 AND THE WINTERS OF 1990-91 AND 1991-92:

B8. Please turn to Exhibit B8. Please tell me how often you used the following to help heat your home during the last two winters, as compared to the winter of 1988-89. Did you use it less, about the same, or more during the last two winters as compared to the winter of 1988-89? (CIRCLE ONE NUMBER IN EACH LINE ASKED.)

	Used Less in 1990-92	Used About The Same	Used More in 1990-92
1. Wood/coal stove	1	2	3
2. Fireplace	1	2	3
3. Cooking stove/range/oven	1	2	3
4. Non-portable room heater burning gas, oil, or kerosene	1	2	3
5. Portable kerosene heater	1	2	3
6. Non-portable electric heater	1	2	3
7. Electric portable heater (cord-connected)	1	2	3
8. Other (_____)	1	2	3

C. Demographics

Now I have some questions about the people who live here and about your housing costs.

C1. Please tell me how many people living in your home during the winter of 1988-89 were . . . (READ EACH ITEM).

Under the age of 5 _____

Between 5 and 17 years old _____

Between 18 and 64 years old _____

65 years old or older _____

TALLY -- so that is (READ NUMBER) in total? _____
ENTER CORRECT TOTAL HERE

C2. You have told me that there were (READ TOTAL NUMBER FROM QUESTION C1) people living in your home during the winter of 1988-89. How many people were living in your home during the winters of 1990-91 and 1991-92?

_____
NUMBER OF RESIDENTS IN THE WINTER OF 1990-91

_____
NUMBER OF RESIDENTS IN THE WINTER OF 1991-92

C3. Were any of the people living in your home during the winter of 1988-89 handicapped? By handicapped, I mean a permanent condition. I do not mean a temporary condition, such as a short-term illness. (EYEGLASSES ARE NOT CONSIDERED A HANDICAP. IF YES, ASK HOW MANY.)

_____
NUMBER HANDICAPPED

C4. Do you or members of your household own your home, or rent?*

[ ] Own (buying)
[ ] Rent
[ ] Occupied without payment of rent (SKIP TO SECTION D)

FROM QUESTION C4, IF HOUSEHOLD OWNS OR PAYS RENT, ASK:

C5. Please tell me which category best describes the monthly rent or mortgage payment the household pays for your home. Is it . . .? Stop me when I reach the category. (READ CATEGORIES.)

[ ] less than $200 per month
[ ] $201 - 300 per month
[ ] $301 - 400 per month
[ ] $401 - 500 per month
[ ] $501 - 600 per month
[ ] $601 - 700 per month
[ ] $701 - 800 per month
[ ] $801 - 900 per month
[ ] more than $900 per month

[ ] OWNED, MORTGAGE PAID OFF (SKIP TO SECTION D)
[ ] DON'T KNOW

C6. Does this payment include: (READ ITEMS AND PROBE FOR "YES" OR "NO".)

	Yes	No	DON'T KNOW
1. electricity.	[ ]	[ ]	[ ]
2. natural gas.	[ ]	[ ]	[ ]

D. Conditioned Living Space

My next question is about the number of different types of rooms in your home.

INTERVIEWER INSTRUCTIONS:

For one-bedroom efficiency or studio apartment, record "0 bedrooms" and number of bathrooms and other rooms.

Full Bathroom -- sink with running water **and** flush toilet **and** bathtub or shower.

Half Bathroom -- toilet **or** bathtub **or** shower

D1. How many of each of the following rooms does this home have? (ASK EACH ITEM AND RECORD NUMBER FOR EACH.)*

	D1 Total Number	D2A Number heated during the winter of 1988-89	D2B Number heated during the last two winters
Bedrooms?	_____	_____	_____
Full bathrooms?.	_____	_____	_____
Half bathrooms?	_____	_____	_____
All other rooms:.	_____	_____	_____

(Do not count laundry rooms, foyers or unfinished storage space. Only count porches if they are enclosed and used year-round.)

D2. (FOR EACH TYPE OF ROOM THE RESPONDENT HAS IN THE HOME, ASK D2A, THEN D2B. A HEATED ROOM IS ONE THAT IS WARM ENOUGH TO BE USED.)

D2a. Of the (READ NUMBER OF ROOMS AND TYPE OF ROOM), how many were heated during the winter of 1988-89 (RECORD ABOVE ON COLUMN D2A.)

D2b. And how many (READ TYPE OF ROOM) were heated during the winters of 1990-91 and 1991-92? (RECORD ABOVE ON COLUMN D2B.)

E. Thermostat Management

I would now like to ask you some questions about the temperature at which you kept your home.

INTERVIEWER INSTRUCTIONS:

Remember, we are interested in the respondent's perceptions. Ask the respondent for their opinion; avoid checking the thermostat for the actual settings.

If respondent keeps different sections of the home at different temperatures, we want to know the temperature in the part of the house where the people are. If, for example, the heat is turned off upstairs during the day because the family is downstairs, we want the downstairs temperature.

We would like to know the actual temperature of the home. If the respondent doesn't know the temperature, but does know the thermostat setting, record the thermostat setting. Otherwise, probe for best estimate.

E1a. During the winter of 1988-89, did you keep your home at the same temperature at all times of the day, or did you change the temperature?

[ ] Kept home at same temperature (ASK QUESTION E1B)
[ ] Changed the temperature (GO TO QUESTION E1C)

IF KEPT HOME AT SAME TEMPERATURE ON QUESTION E1A, ASK:

E1b. During the winter of 1988-89, at what temperature did you **usually** keep your home?

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

(GO TO QUESTION E2A)

IF CHANGED THE TEMPERATURE ON QUESTION E1A, ASK:

E1c. During the winter of 1988-89, at what temperature did you **usually** keep your home during the day **when someone was at home**?*

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

E1d. During the winter of 1988-89, at what temperature did you **usually** keep your home during the day **when no one was at home**?*

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

E1e. During the winter of 1988-89, at what temperature did you **usually** keep your home **during sleeping hours**?*

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

(ASK EVERYONE:)

E2a. During the winters of 1990-91 and 1991-92, did you keep your home at the same temperature at all times of the day, or did you change the temperature?

[ ] Kept home at same temperature (ASK QUESTION E2B)
[ ] Changed the temperature (GO TO QUESTION E2C)

IF KEPT HOME AT SAME TEMPERATURE ON QUESTION E2A, ASK:

E2b. During the last two winters, at what temperature did you **usually** keep your home?

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

(GO TO SECTION F)

IF CHANGED THE TEMPERATURE ON QUESTION E2A, ASK:

E2c. During the last two winters, at what temperature did you **usually** keep your home during the day **when someone was at home**?*

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

E2d. During the last two winters, at what temperature did you **usually** keep your home during the day **when no one was at home**?*

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

E2e. During the last two winters, at what temperature did you **usually** keep your home **during sleeping hours**?*

Degrees Fahrenheit: _____
[ ] HEAT TURNED OFF

F. Events Affecting Energy Use

The next questions are about events which may have affected your energy use during the winter of 1988-89 and during the last two winters.

F1a. During the winter of 1988-89, was there ever a time when you wanted to use your main source of heat, but could not, for one or more of the following reasons?

	Yes	No
Your heating system was **broken**?	[ ]	[ ]
The utility company **discontinued**. . . . . your gas or electric service?	[ ]	[ ]

IF "YES" TO EITHER PART OF QUESTION F1A, ASK:

F1b. Thinking about these times that you went without heat, during the winter of 1988-89, how many separate times were there?

Total times: _____

F1c. Altogether, how many hours or days were you without heat?

Total hours without heat: _____ OR Total days without heat: _____

F2a. During the last two winters was there ever a time when you wanted to use your main source of heat, but could not, for one or more of the following reasons?

	Yes	No
Your heating system was **broken**?	[ ]	[ ]
The utility company **discontinued**. . . . . your gas or electric service?	[ ]	[ ]

IF "YES" TO ANY PART OF QUESTION F2A, ASK:

F2b. Thinking about these times that you went without heat, during the last two winters, how many separate times were there?

Total times: _____

F2c. Altogether, how many hours or days were you without heat?

Total hours without heat: _____ OR Total days without heat: _____

F3. Was there any home repair, major house renovation, or damage to your home that would affect energy use between January 1987 and September 1992?

[ ] Yes
[ ] No
[ ] DON'T KNOW

IF YES ON QUESTION F3, ASK:

F4. Please describe the home repair, renovation, or damage. (RECORD VERBATIM BELOW.)

		MONTH/YEAR
(1)	_____	_____
	_____	_____
(2)	_____	_____
	_____	_____
(3)	_____	_____
	_____	_____

F5. In which month/year was the work or damage done? (RECORD UNDER COLUMN FOR MONTH/YEAR ABOVE.)

G. Impacts on Health, Safety, Comfort, Affordability

My next questions ask for your opinion about whether the health, safety, and comfort of your home has changed during the last few years.

G1a. First I have some questions about the temperature of your home. Please look at Scale G1. Using a scale of 1 to 7, where 1 is too cold, 4 is comfortable, and 7 is too hot, how would you rate the temperature in your home during the winter of 1988-89?

1988-89							
1	2	3	4	5	6	7	8
too cold			comfortable			too hot	DON'T REMEMBER

IF 1-3 OR 5-7 ON QUESTION G1A, ASK:

G1b. Why couldn't you keep your home the temperature you preferred during the winter of 1988-89? (DO NOT READ ANSWER CATEGORIES.) (CHECK ALL THAT APPLY.)*

[ ] Heating system problem
[ ] Landlord controls the temperature
[ ] Difference of opinion in household
[ ] Fuel shortage
[ ] High cost of fuel
[ ] Construction problem, such as broken windows, or holes in walls
[ ] Other (please specify)_____
[ ] NOT SURE

G1c. Using the same scale (REPEAT SCALE IF NECESSARY) how would you rate the temperature in your home during the last two winters?

Last 2 Winters							
1	2	3	4	5	6	7	8
too cold			comfortable			too hot	DON'T REMEMBER

IF 1-3 OR 5-7 ON QUESTION G1C, ASK:

G1d. Why couldn't you keep your home the temperature you preferred during the last two winters? (DO NOT READ ANSWER CATEGORIES.) (CHECK ALL THAT APPLY.)*

[ ] Heating system problem
[ ] Landlord controls the temperature
[ ] Difference of opinion in household
[ ] Fuel shortage
[ ] High cost of fuel
[ ] Construction problem such as broken windows, or holes in walls
[ ] Other (please specify)_____
_____
[ ] NOT SURE

G2. Now I have some questions about the draftiness of your house. Please look at Scale G2. Using a scale of 1 to 7, where 1 is very drafty, 4 is somewhat drafty, and 7 is not at all drafty, how would you rate the draftiness of your home during the winter of 1988-89?

1988-89							
1	2	3	4	5	6	7	8
very drafty			somewhat drafty			not at all drafty	DON'T REMEMBER

Using the same scale (REPEAT SCALE IF NECESSARY), how would you rate the draftiness in your home during the last two winters?

Last 2 Winters							
1	2	3	4	5	6	7	8
very drafty			somewhat drafty			not at all drafty	DON'T REMEMBER

G3. Next I have some questions about how the operation of your heating system or the temperature of your home may have affected your health. Please look at Scale G3. Using a scale of 1 to 7, where 1 is many health problems, 4 is some health problems, and 7 is very few health problems, how would you rate the health of household members during the winter of 1988-89? By health I mean illnesses (such as colds, flus, allergies, frequent headaches, frequent nausea, or arthritis), which may be affected by temperature or heating system problems.

1988-89							
1	2	3	4	5	6	7	8
many health problems			some health problems			very few health problems	DON'T REMEMBER

Using the same scale (REPEAT SCALE IS NECESSARY), how would you rate the health of household members during the last two winters?

Last 2 Winters							
1	2	3	4	5	6	7	8
many health problems			some health problems			very few health problems	DON'T REMEMBER

G4. Now I have some questions about the safety of your home. Please look at Scale G4. Using a scale of 1 to 7, where 1 is very unsafe, 4 is acceptable, and 7 is very safe, how would you rate the safety of your home during the winter of 1988-89? By safety, I mean absence of hazards. Some examples of hazards in the home are faulty electrical, heating, or plumbing systems; combustible materials or other fire hazards; unstable porches or broken doors; or the absence of safety precautions such as bolt locks or smoke detectors.

1988-89							
1	2	3	4	5	6	7	8
very unsafe			acceptable			very safe	DON'T REMEMBER

Using the same scale (REPEAT SCALE IF NECESSARY), how would you rate the safety of your home during the last two winters?

Last 2 Winters							
1	2	3	4	5	6	7	8
very unsafe			acceptable			very safe	DON'T REMEMBER

G5. Next I have some questions about your heating bills. Please look at Scale G5. Using a scale of 1 to 7, where 1 is very expensive, 4 is acceptable, and 7 is very inexpensive, how would you rate the cost of your heating bills during the winter of 1988-89?

1988-89							
1	2	3	4	5	6	7	8
very expensive			acceptable			very inexpensive	DON'T REMEMBER

Using the same scale (REPEAT SCALE IF NECESSARY), how would you rate the cost of your heating bills during the last two winters?

Last 2 Winters							
1	2	3	4	5	6	7	8
very expensive			acceptable			very inexpensive	DON'T REMEMBER

END

On behalf on the U.S. Department of Energy, I would like to thank you for your time and patience today. The information that you have shared with us will be helpful in our study.

*These items are modified versions of questions taken from the 1990 Residential Energy Consumption Survey (RECS) conducted by the Energy Information Administration.

INTERVIEWER INSTRUCTIONS:

Check to make sure each question has been answered and that verbatim responses are clear and legible.

EXHIBIT B1

GAS FROM UNDERGROUND PIPES SERVING THE NEIGHBORHOOD

BOTTLED GAS (LPG OR PROPANE)

FUEL OIL

KEROSENE OR COAL OIL

ELECTRICITY

COAL OR COKE

WOOD

SOLAR COLLECTORS

OTHER

EXHIBIT B7

WOOD/COAL STOVE

FIREPLACE

COOKING STOVE/RANGE/OVEN

NON-PORTABLE ROOM HEATER BURNING GAS, OIL, OR KEROSENE

PORTABLE KEROSENE HEATER

NON-PORTABLE ELECTRIC HEATER

ELECTRIC PORTABLE HEATER (CORD-CONNECTED)

OTHER

EXHIBIT B8

USED LESS DURING LAST TWO WINTERS

USED ABOUT THE SAME DURING LAST TWO WINTERS

USED MORE DURING LAST TWO WINTERS

SCALE G1
Temperature

1	2	3	4	5	6	7
too cold			comfortable			too hot

SCALE G2
Draftiness

1	2	3	4	5	6	7
very drafty			somewhat drafty			not at all drafty

SCALE G3
Health

1	2	3	4	5	6	7
many health problems			some health problems			very few health problems

SCALE G4
Safety

1	2	3	4	5	6	7
very unsafe			acceptable			very safe

SCALE G5
Heating Costs

1	2	3	4	5	6	7
very expensive			acceptable			very inexpensive

ORNL/CON-379

UTILITY INVESTMENTS IN LOW-INCOME ENERGY-EFFICIENCY PROGRAMS

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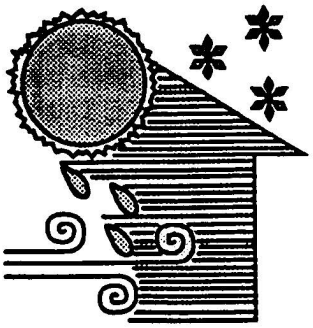

U.S. DEPARTMENT OF ENERGY

NATIONAL WEATHERIZATION EVALUATION

This questionnaire requests information concerning the operation of utility programs that offered demand-side management (DSM) or conservation services at no cost to low-income households in 1992.

The following definitions are used in refering to dwelling types:

Single-family: a single-family dwelling that is an independent structure, not joined to any adjacent dwelling.

Small Multifamily (2-4 units): a structure consisting of 2 to 4 dwelling units that are integrated into a single structure which has a common roof and foundation or slab for all involved dwellings (duplex, small apartment building, etc.).

Large Multifamily (5+ units): a structure consisting of 5 or more dwelling units that are integrated into a single structure which has a common roof and foundation or slab for all involved dwellings (large apartment building, cooperative, etc.).

Please complete one questionnaire for each DSM or conservation program that your utility operated in 1992 that provided services at no-cost to low-income participants.

Please return your completed questionnaire to:

Dr. Marilyn A. Brown
Oak Ridge National Laboratory
P.O. Box 2008, MS 6206
Oak Ridge, TN 37831-6206

FAX: 615-574-4747

If you have any questions, we would be glad to help. Feel free to contact Mark Beyer at (615) 482-2721, or Marilyn Brown, ORNL evaluation manager at (615) 574-5939.

Thank you very much for your assistance.

Questions 1-7 are designed to determine the rationale and size of the DSM program in 1992, and the number of the low-income households served. We ask that you provide exact information where possible, or a firm estimate in the event that precise figures are not available.

1. What is the official name of this program ? _____

2. Was this program mandated by the body that regulates your utility? **YES NO**

3. Was this program expected to pass the same cost-effectivness test that is applied to your utility's other DSM Programs ? **YES NO**

4. What were the primary and secondary goals of this program ?

	Primary	Secondary	Not at all
a.) to make energy services more affordable to low-income customers	P	S	N
b.) to provide a cost-effective energy resource	P	S	N
c.) to reduce arrearages of low-income customers	P	S	N
d.) to improve customer relations and the utility's image	P	S	N
e.) other: _____	P	S	N

5. What was the total utility budget for this low-income program in 1992 ? $ _____

6. How many low-income households participated in this program in 1992 ? _____

7. Please indicate the number of each dwelling unit type served, or the percentage of the total units served, by this program.

Unit Types	Estimate Number of Units	Not Known
1. Single-family		
2. Small Multifamily (2-4 units)		
3. Large Multifamily (5+ units)	# Buildings:_____ # Dwellings:_____	
4. Mobile Homes		

Questions 8-10 attempt to define how program participants were selected and how utility company resources were invested in 1992.

8. Please indicate the household selection criteria used in this program from those listed below. (Check all that apply.)

	Type of Heating Fuel or System		Strict Cost-test
	Priority for Elderly		Participation in Other Programs
	Priority for Children		LIHEAP
	Priority for Persons with Disability		AFDC
	A Minimum Level of Arrears		Budget or Level Billing
	Minimum Fuel Consumption		Other _____

9. How much did this utility program invest in each household in 1992 ? (Please give actual dollars spent or a firm estimate that includes all administrative, overhead, labor and materials costs.)

Average investment level per household: $ _____

10. Please indicate the manner in which the crew decided the investment level per household under this program in 1992. (Check all that apply.)

	Level of energy consumption		Measures check list (please attach)
	Savings to investment ratio		Written energy analysis (please attach an example)
	Other cost-effectiveness test		Other _____
	Uniform investment level		Other _____

Questions 11-13 attempt to identify partnerships between the utilities and government sponsored conservation programs. We are especially interested in cooperation with State weatherization programs.

11. Did this program, either directly or through energy services companies, use any non-profit agencies to deliver energy conservation services in 1992 ?

YES NO Don't Know (If you do not know the non-profit status of your service providers, please attach a list of these service providers.)

12. To your knowledge, did any of the non-profit organizations also provide energy services under the 1992 State weatherization programs ?

YES NO Don't Know (If you do not know, please attach a list of these service providers.)

IF YES Please estimate your utility program expenditures in 1992 made through entitites working in your utility program and in the State weatherization program: $ _____

13. Please describe any direct coordination between this utility program and the State weatherization programs. (Please give utility program expenditures involved through this coordination.)

None, **OR** describe: _____

_____

_____

_____

_____

_____

_____

_____

_____

14. Please indicate the types of energy conservation assistance provided to low-income households under this program. (Circle one letter in each row, indicating the percentage/frequency of units that receive the indicated measure.)

Measure	Never (0%)	Some-times (1-25%)	Often (26-50%)	Most times (51-75%	Almost Always (76-99%)	Every Unit (100%)
Mobile home Measures	N	S	O	M	A	E
vapor barrier	N	S	O	M	A	E
under pinning or skirting	N	S	O	M	A	E
other _____ _____	N	S	O	M	A	E
Multi-family Measures	N	S	O	M	A	E
space conditioning control system	N	S	O	M	A	E
water heater distribution system	N	S	O	M	A	E
repair/replace ventilation fans	N	S	O	M	A	E
public area lighting measures	N	S	O	M	A	E
other _____ _____	N	S	O	M	A	E
Insulation	N	S	O	M	A	E
attic insulation, first install	N	S	O	M	A	E
attic insulation, additional	N	S	O	M	A	E
wall insulation, normal	N	S	O	M	A	E
wall insulation, high density	N	S	O	M	A	E
floor insulation	N	S	O	M	A	E
rim or band joist	N	S	O	M	A	E
other _____ _____	N	S	O	M	A	E
Air Leakage Control:	N	S	O	M	A	E
general caulking/weatherstripping	N	S	O	M	A	E
air sealing, with blower door bypass testing	N	S	O	M	A	E
air sealing, no blower door bypass testing	N	S	O	M	A	E
distribution system leakage control (eg., duct sealing, duct repair, etc.)	N	S	O	M	A	E
other (not windows) _____ _____	N	S	O	M	A	E

Measure	Never (0%)	Some-times (1-25%)	Often (26-50%)	Most times (51-75%	Almost Always (76-99%)	Every Unit (100%)
Windows and Door Energy Measures	N	S	O	M	A	E
storm windows	N	S	O	M	A	E
thermal replacement windows	N	S	O	M	A	E
window films or shades	N	S	O	M	A	E
window frame repair/reconstruction	N	S	O	M	A	E
window glazing	N	S	O	M	A	E
storm doors	N	S	O	M	A	E
other _____ _____	N	S	O	M	A	E
Space Heating System:	N	S	O	M	A	E
clean and tune-up	N	S	O	M	A	E
entire system replacement	N	S	O	M	A	E
set back thermostat	N	S	O	M	A	E
component retrofits: _____	N	S	O	M	A	E
safety problems fixed: _____	N	S	O	M	A	E
repairs: _____	N	S	O	M	A	E
other _____ _____	N	S	O	M	A	E
Water Heating System:	N	S	O	M	A	E
tank insulation	N	S	O	M	A	E
entire system replacement	N	S	O	M	A	E
pipe insulation	N	S	O	M	A	E
low flow showerheads	N	S	O	M	A	E
temperature reduction	N	S	O	M	A	E
other _____ _____	N	S	O	M	A	E
Lighting and Appliances:	N	S	O	M	A	E
compact fluorescents	N	S	O	M	A	E
replace AC unit	N	S	O	M	A	E
waterbed replaced with standard mattress	N	S	O	M	A	E
refrigerator replacements	N	S	O	M	A	E
other _____ _____	N	S	O	M	A	E

Measure	Never (0%)	Some-times (1-25%)	Often (26-50%)	Most times (51-75%	Almost Always (76-99%)	Every Unit (100%)
Client Education/Information:	N	S	O	M	A	E
written materials	N	S	O	M	A	E
home visits/on-site education	N	S	O	M	A	E
center based demonstration or training	N	S	O	M	A	E
other _____ _____	N	S	O	M	A	E
Space Cooling System	N	S	O	M	A	E
tune-up	N	S	O	M	A	E
entire system replacement	N	S	O	M	A	E
install/replace fans	N	S	O	M	A	E
set-back thermostat	N	S	O	M	A	E
other _____ _____	N	S	O	M	A	E
Structural Repairs	N	S	O	M	A	E
attic ventilation	N	S	O	M	A	E
roof	N	S	O	M	A	E
repair doors/threshold	N	S	O	M	A	E
replace doors	N	S	O	M	A	E
walls	N	S	O	M	A	E
floor	N	S	O	M	A	E
other _____ _____	N	S	O	M	A	E
Other Health and Safety Repairs	N	S	O	M	A	E
smoke detectors installed/battery replaced	N	S	O	M	A	E
radon testing	N	S	O	M	A	E
carbon monoxide testing	N	S	O	M	A	E
other _____ _____	N	S	O	M	A	E