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ENERGY MANAGEMENT ASSISTANCE
FOR SMALL AND MEDIUM-SIZE
MANUFACTURERS

Manufacturers' Evaluations
of EADCs' Services
1987-88

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EXECUTIVE SUMMARY

Small and medium-size manufacturers continue to express strong confidence in and satisfaction with the energy-conserving and cost-saving services provided by the Energy Analysis and Diagnostic Centers. That conclusion is based upon in-depth interviews with 243 of the 388 manufacturers (63%) served during 1987-88 by an EADC. These interviews were conducted at the manufacturing plants by engineers from the Industrial Technology and Energy Management (ITEM) division of University City Science Center, which manages the EADC program under agreement with the Office of Industrial Programs, U.S. Department of Energy. University engineering faculty and a mix of graduate and undergraduate students who make up the staff of each EADC perform energy audits under subcontract to the Science Center at manufacturing plants which are located within about 150 miles of the university.

This report presents the chief results obtained during two series of interviews with 63% of the manufacturers in 36 states served by 13 EADCs during 1987-88. These include the principal benefits derived by the manufacturers, the extent to which EADCs' recommendations are being understood and implemented, and the manufacturers' perceptions about the ways EADCs carry out their dual mission of industrial service and educational enrichment.

The 243 manufacturers interviewed represent 19 different industries (2-digit SIC codes), and they collectively employed over 39,700 persons and sold more than \$4.7 billion worth of products and services during the past year.

In summary, these manufacturers expressed strong agreement on certain key aspects of the EADC program, such as:

- The EADC program is a good expenditure of taxpayers' money: 94%.
- Energy audit reports are considered extremely well done or well done: 93%.
- Manufacturers agree with all or most of the conclusions expressed in those reports: 88%.
- Manufacturers are implementing at least some energy-conserving and cost-saving recommendations: 94%.

EADCs' audit reports are being widely distributed in these plants to people who are in positions of responsibility and authority. For example, 27.5% of those who saw the reports are company owners or corporate officers, and another 17.8% are plant managers or general managers.

When asked about the primary and the secondary benefits derived from the EADCs' work, the manufacturers chose these most often:

- Confirmation of what had been suspected about energy inefficiency in the plant: 27.8%.
- Identification of ways to lower costs: 21.2%.
- Revelation of sources of energy inefficiency: 16.5%

In addition, another 11.9% of those interviewed said the chief benefit of the EADCs' work was to convince management that the recommendations made would be profitable. The EADCs' independence and objectivity, strengthened by the staff's technological competence and experience, apparently are convincing to the manufacturers.

From the results of these interviews it appears that EADCs as a group are serving manufacturers in an effective manner that fulfills the manufacturers' expectations and the purposes of the EADC program.

RESULTS AND DISCUSSION

Background on the Interviews and the Results

Twice during each period of the Energy Analysis and Diagnostic Center (EADC) program, engineers from the Industrial Technology and Energy Management (ITEM) division of UCSC interview representatives of over 60% of the manufacturers served by each EADC. These interviews, which are structured to generate a progression of information about the performance of each EADC, are held at the manufacturers' plants for their convenience. That setting also provides ITEM's engineers with a first hand picture of the plant's operating conditions and reveals some of the other factors which can influence decisions of plant management about energy conservation.

This report presents the chief results obtained during interviews with representatives of 243 of the 388 manufacturers served by 13 EADCs within the 1987-88 program period. These include the principal benefits derived by the manufacturers from the EADCs' achievements, the extent to which EADCs' recommendations are being implemented, and the manufacturers' perceptions about the ways EADCs carry out their mission of industrial service and educational enrichment.

In addition to the overall program results identified from these interviews, there is another important purpose which they serve. For an individual EADC, the manufacturers' responses to the questions asked can reveal certain strong or weak performance characteristics, especially to a skilled interviewer. It is the responsibility of the ITEM engineer-interviewer to detect such patterns, recognize their implications, and communicate their meaning to the EADC director.

Clearly, the manufacturers' interviews produce two broad kinds of results. One is an overall understanding of how the EADCs' services are performed and

perceived. The other is an insight on the performance of each EADC, a complex representation of the impressions created, the efforts expended, the benefits derived (by the manufacturers), the attitudes generated, and the likelihood of implementation. These insights become effective management tools for ITEM's engineers in evaluating EADCs' performance, and the EADC staff members at the universities have come to recognize these interviews as a means to understanding what their manufacturers think about the EADCs' efforts.

The purpose of this report is to communicate what the 243 interviews showed about how the EADCs' services are performed and perceived.

The EADCs which served the manufacturers interviewed are located at and staffed by engineering faculty and students from Colorado State University, Georgia Institute of Technology, Louisiana Tech University, North Carolina A&T State University, Oklahoma State University, Oregon State University, Rutgers University, Texas A&M University, and the Universities of Dayton, Kansas, Massachusetts (Amherst), Tennessee (Knoxville), and Wisconsin (Milwaukee). Each EADC serves small and medium-size manufacturers located within about 150 miles of the university.

Manufacturers' Size and Other Characteristics

Of the 243 manufacturers interviewed during 1987-88, all but five supplied data on their plants' employment and gross sales. In number, these manufacturers represent 19 different industries (2-digit SIC codes) served by the 13 EADCs. From Table 1, which presents a count of the manufacturers interviewed in each industry together with their aggregate data on employment and gross sales, it is reasonable to draw the following conclusions:

- Food processors (SIC20) continue to be the type of manufacturer served most often (38 plants), and collectively they had the largest total employment (5391) and annual gross sales (\$1.08 billion).
- The fabricated metals industry (SIC34, 30 plants) and the rubber and plastics industry (SIC30, 27 plants) were next in frequency; they generally employed proportionately as many people as the food processors, but their sales totals were disproportionately smaller.
- Only one industry (SIC22, textiles) was represented by just a single plant, and that is an unusual occurrence for the EADC program.
- For all 238 respondents, the employment total is 39,703, and the gross annual sales add up to more than \$4.71 billion.

On average, a previously noted trend toward larger plants seems to have been reversed during 1987-88, as these data show:

	<u>1985-86</u>	<u>1986-87</u>	<u>1987-88</u>
Avg. Employment (per plant)	150	195	167
Avg. Gross Annual Sales (\$ million per plant)	17.2	23.3	19.8

The EADCs are continuing to serve a considerable number of manufacturers within many industries, and ITEM's engineers are interviewing a similarly broad sample of them. One danger of numerical summaries is their tendency to obscure some of the more important details contained within them. For example, eight or

TABLE 1
CLASSIFICATION OF MANUFACTURERS INTERVIEWED

<u>SIC</u>	<u>Number Interviewed</u>	<u>Total Employment</u>	<u>Annual Gross Sales (\$ thousand)</u>
20	38	5,391	1,079,300
22	1	185	25,000
23	3	815	35,500
24	12	1,631	154,800
25	8	1,642	135,500
26	6	961	164,500
27	12	2,502	249,900
28	9	682	170,500
29	3	241	104,380
30	27	3,760	289,000
31	2	425	85,500
32	8	1,432	136,800
33	18	2,134	254,900
34	30	4,279	591,750
35	17	3,196	382,000
36	25	4,935	420,480
37	7	1,845	147,000
38	8	2,980	246,500
39	<u>4</u>	<u>667</u>	<u>37,500</u>
TOTAL	238	39,703	4,710,810

(Five manufacturers interviewed were not included in this table because of missing employment numbers or gross annual sales data.)

more manufacturers were interviewed in each of 13 industries; that means 68% of the 19 industries served by an EADC were represented by a group of manufacturers equal to not less than 3% of the total. There is no doubt about the broad nature of the manufacturers' representatives interviewed for this report.

A variety of opinions is held about how important energy use is to manufacturers at this time. When ITEM's interviewers asked who is chiefly responsible for energy management at a particular plant, slightly more than half (51%) of the answers revealed that responsibility is vested in an owner or company president, a vice president, a plant or general manager, a plant superintendent, a manager of production or manufacturing, or an executive of a corporate parent. That does not imply the others responsible for energy management are not important to their plants. But at least half of those responsible also fulfill managerial roles in these plants. It seems clear that energy management is still considered to be a significant responsibility at many of the plants served by EADCs.

Preparation for the Energy Audit

Once communication has been established between a manufacturer and an EADC representative, some preliminary information must be collected so that the manufacturer's eligibility (to be served by an EADC) can be established and the plant's chief operating characteristics can be learned by the EADC staff who will conduct the energy audit. Moreover, it is important for ITEM's engineer-interviewers to ascertain how an EADC's approach to a manufacturer is carried out and received.

A telephone call from the EADC was the most common means by which manufacturers learned of the EADC program during 1987-88. One hundred of the 243 interviewed gave that answer, and another 70 said the initial contact had been by mail. Of the remaining 73 manufacturers, four said they had learned of EADC from a newspaper article; three, from a public service announcement; eight, by word-of-mouth; one was not sure how; and 57 others learned of it from none of the foregoing methods.

Considerably more uniformity appeared among manufacturers' other responses about preparatory information gathering. Among the 243 manufacturers interviewed:

- 184 formed an initial impression that the EADC program is a potentially useful university based program.
- 189 knew that the U.S. Department of Energy funds the EADC program (but every report clearly says so).
- 192 knew that their plants' data and audit reports are not identified with their companies' names.
- 198 had supplied the EADC with plants' historic energy use data prior to the audit team's visit.

- 232 considered that data request to be reasonable, and 194 of them had needed less than two person-hours to compile the energy use data.

Manufacturers' Benefits from EADCs' Energy Audits

During each interview the manufacturer's representative is asked to choose a primary and secondary benefit derived from the EADC's energy audit. These choices are requested because ITEM's engineers are interested in learning how beneficial the work of the EADCs is to the recipients. From reports of the energy audits and of their implemented recommendations, a statistical record of energy conservation and cost savings can be compiled. Despite its obvious importance, that record does not communicate the significance of the EADC's work to a manufacturer because it does not reveal how beneficial the people at the plant considered the EADC's findings to be.

Because each manufacturer's representative interviewed had an opportunity to name two benefits, a total of 486 responses was possible. Table 2 shows that the benefit most often selected as primary or secondary is a confirmation by the audit team of what had been suspected about energy inefficiency (135 replies, or 27.8%). Also ranked very high are:

- Helping to identify ways to lower costs (21.2%).
- Opening people's eyes to sources of inefficiency (16.5%).

A less traditional benefit appeared with somewhat surprising frequency during 1987-88 -- convincing management that the audit team's recommendations would be profitable. All together, 58 persons (11.9%) said that they chose this benefit because the EADC offers objective recommendations, free of any potential for personal financial gains or self interest. This independence, strengthened by the audit team's technological competence and experience, carries considerable weight in convincing manufacturers' management to implement EADCs' recommendations.

In addition, 38 people (7.8%) said that the EADCs' recommendations had assisted in their decisions to install new equipment in the plants.

TABLE 2

MANUFACTURERS' BENEFITS FROM EADCs' ENERGY AUDITS

	<u>Primary Benefit</u>	<u>Secondary Benefit</u>
Opened eyes to sources of inefficiency/waste	52	28
Confirmed what had been suspected about energy inefficiency/waste	101	34
Helped identify ways to lower costs	48	55
Improved monitoring of energy use	7	14
Gave opportunities to increase productivity	0	4
Revealed new technology applicable to your operations	3	15
Assisted decision to install new equipment	9	29
Helped whole operation to be more efficient	1	5
Convinced management recommendations would be profitable by quantifying savings	12	48
Other	3	4
No answer	7	9

The benefits attached to the EADCs' work are consistent with the levels of management reached by the EADCs' energy audit reports. From Table 3 it is apparent that 881 persons saw the 243 reports (average = 3.6 persons/report) and that 242 of those persons (27.5%) were corporate officers or company owners and that another 157 (17.8%) were plant managers or general managers. Obviously, the energy audit reports and the benefits which they offer are reaching the decision-makers associated with the manufacturing plants served.

TABLE 3

TITLES OF PERSONS WHO SAW ENERGY AUDIT REPORTS

Owner, Board Chairman, CEO, President	114
Vice President	99
Other Corporate Officer	29
Plant Manager, General Manager	157
Plant Superintendent, Asst. Plant Manager	13
Corporate Parent or Division Executive	36
Director of Operations, Manager of Production or Manufacturing	44
Facilities Manager, Maintenance Manager, Superintendent, or Foreman	165
Manager of Engineering	21
Engineer (various kinds)	117
Plant Foreman or Craft Superintendent	11
Others	<u>75</u>
Total	881

Results Achieved and Expected

ITEM's interviewers question plant representatives about the intelligibility and quality of the EADCs' energy audit reports. Of the 243 interviewed, 228 considered the report understandable to corporate management and 229 held the same opinion about the reports' intelligibility among plant managers. Large numbers of them also thought these reports were either well done (170) or extremely well done (56) and agreed with all of the conclusions stated (58) or most of them (157). When asked whether the energy audit had led to energy conservation and savings or was expected to, 228 plant representatives (94%) said yes. In 160 instances the implementations involve capital expenditures for equipment, categorized in this manner:

- replacements of existing equipment: 71.
- modifications of existing equipment: 76.
- additions of new equipment: 79.

(Obviously some people gave more than one answer.)

Methodology of an EADC Energy Audit

The EADC program is intended to operate in a plant-specific manner. EADC audit teams are expected to draw upon basic knowledge of standard equipment (such as boilers, furnaces, ovens, compressors, refrigeration equipment, and lights), but they should seek to understand each plant, analyze its individual aspects, and recommend energy conservation opportunities applicable under each plant's specific characteristics. The emphasis is upon addressing every plant's needs as they occur, not upon trying to fit a plant into an idealized pattern which adheres to a standardized checklist.

For example, the size of an EADC energy audit team has never been standardized, but Figure 1 shows that 2-7 persons were involved in virtually all the audits. The length of time spent in auditing a plant depends upon the size of the team and the magnitude, complexity, and condition of the plant. Table 4 and Figures 2 and 3 reveal a distribution of visit frequencies and durations, including 9 plants where the length of the first visit was unknown to the one interviewed. Performing a weighted average calculation on the number and duration of the 234 known visits gives a figure of 0.96 day (8 hr = 1 day). However, in only about half the plants (52%) was the first visit for a full day, but in 73 plants (30%) there was a second visit.

Because an EADC is expected to approach each plant as an individualized operation, every audit is to be based on measurements of equipment performance. At least 217 audits were reported to have included such measurements, and another 15 of those interviewed said they did not know whether measurements had been made. All together, the interviews revealed these judgments of EADCs' audit performance:

- 200 audits performed thoroughly and another 27 considered thorough in some aspects, but not in others.

- 232 audit teams who knew what they were doing.
- 226 audit teams that understood the plants' operations; 228 that recognized the plants' key energy problems; and 235 that seemed to be genuinely interested in their work.
- 218 audits which helped the people at the plants to understand their energy usage better.

TABLE 4
DISTRIBUTION OF TIME SPENT IN PLANTS
PERFORMING ENERGY AUDITS

<u>Duration of Visits</u>	<u>Number of Plants</u>		
	<u>Visit #1</u>	<u>Visit #2</u>	<u>Visit #3</u>
1 hour	10	12	6
2 hours	9	8	3
3 hours	7	5	-
Half day	41	21	2
5 hours	1	-	-
6 hours	39	4	1
Full day	127	20	-
Don't know	<u>9</u>	<u>3</u>	<u>-</u>
Totals	243	73	12

DISTRIBUTION OF EADC PERSONNEL PRESENT DURING ENERGY AUDIT

Figure 1

DISTRIBUTION OF TIME SPENT IN PLANTS PERFORMING ENERGY AUDITS

Figure 2

DISTRIBUTION OF TIME SPENT IN PLANTS PERFORMING ENERGY AUDITS

Figure 3

Manufacturers' Outlook on Energy Conservation

ITEM's engineer-interviewers always ask whether a plant had received other offers of energy conservation assistance. Though not every plant had, a total of 417 such offers was identified, of which 246 (59%) had been accepted and 171, rejected.

Table 5 shows that the highest rates of acceptance occurred with offers from electric and gas utilities. Offers from vendors and representatives of equipment manufacturers had a 60% acceptance rate in the sense that manufacturers eventually purchased some equipment from them on the basis of claims for its energy-conserving characteristics.

Consulting firms did not fare as well. Although they had been the source of most previous offers (137), they enjoyed only a 36% rate of acceptance, and not all of those led to payment of a fee. The fewest offers (8) had come from state government and miscellaneous sources, and none was accepted.

It should also be noted that manufacturers often recalled their disappointment with other offers of assistance and contrasted that with their attitude toward the EADC audit.

These results resemble those reported from 310 interviews during the 1986-87 period of the EADC program. Small and medium-size manufacturers seem willing to accept more than half the offers of energy conservation assistance received, some of which involve a cost for the service or the equipment recommended. However, the present acceptance rate has consistently been found among consulting firms, but that is not necessarily attributable to consulting firms.

The experience of ITEM's interviewers suggests that this low acceptance rate is somewhat endemic among small and medium-size manufacturers. A consulting firm provides its services for a fee and, if that fee is to be based upon costs saved, there has to be a baseline of energy costs in order to measure savings.

TABLE 5

OTHER OFFERS OF ENERGY CONSERVATION ASSISTANCE

Source	Number of Offers	TYPES OF ASSISTANCE				ACCEPTANCE	
		Literature	Training	Individual Analysis	Rate Schedule Analysis	Yes	No
Electric Utility	108	1	10	70	27	83	25
Natural Gas Utility	37	2	5	22	8	29	8
Consulting Firm	137	10	0	100	27	50	87
Manufacturer Vendor	127	38	3	71	15	76	51
State Government	5	0	0	5	0	5	0
Other	3	0	0	3	0	3	0
Totals	417	51	18	271	77	246	171

Small and medium-size manufacturers have difficulty in establishing that baseline and relating it to product mix and volume. ITEM's experience suggests only 1 or 2% are willing to base the fee on savings. If a flat fee is to be charged by the consulting firm, the small and medium-size manufacturer sees that dollar figure as a bigger risk than a large manufacturer does and declines the offer. Thus the low acceptance rate seems to be due more to a wariness about risk than a negative attitude toward energy conservation assistance.

This aversion to risk is reflected in the replies of manufacturers' representatives when they are asked whether they would have paid a fee for the EADC audit if one had been requested beforehand (Figure 4). Only 125 (52%) said they would, and the amounts they would have paid are either very small (48% of the affirmatives chose amounts less than \$2000) or unknown (43%).

DOLLAR AMOUNTS MANUFACTURERS WOULD HAVE SPENT FOR ENERGY SERVICES
COMPARABLE TO THE EADC PROGRAM

Legend

A = \$ 0 - 200

B = \$ 201 - 500

C = \$ 501 - 1000

D = \$1001 - 2000

E = \$2001 - 5000

F = \$5001 - 10,000

G = 1% Identified Savings

H = 5% Identified Savings

I = 10% Identified Savings

J = Don't know/No Opinion

Figure 4

Manufacturers' Summary Evaluation

At the close of each interview, the representative of the plant is asked whether the EADC program is a good expenditure of taxpayers' money. During 1987-88, 228 (94%) of those asked said that it is. Almost from the beginning of the EADC program, this figure has consistently been 90-98%, and most of those who answer negatively add that their verdict is based upon personal viewpoint rather than the quality of the EADCs' work. This strong degree of public approval is reassuring to those who carry out the program and to those who sponsor it.

A P P E N D I X

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ENERGY ANALYSIS AND DIAGNOSTIC CENTER PROGRAM

EVALUATION FORM

1. SIC Code _____ 2. Name of Industry _____
3. Principal Product _____
4. Number of Employees _____ 5. Gross Annual Sales _____
6. How did you first learn of the EADC program?
 - (a) direct mailing _____ (d) word-of-mouth _____
 - (b) newspaper article _____ (e) telephone call from EADC _____
 - (c) public service announcement _____ (f) other _____
7. What was your initial impression of the EADC program?
 - (a) a potentially useful university based program _____
 - (b) a potentially useful federally funded program _____
 - (c) not optimistic, but worth a try _____
 - (d) some college professor is going to tell me how to operate my plant _____
 - (e) another federally funded "boondoggle" _____
 - (f) other (please specify) _____
8. Did you know that DOE funds the EADC program?
 - (a) Yes _____ (b) No _____
9. Did you know that, to protect your confidentiality, your data and report do not leave the EADC with your name on it?
 - (a) Yes _____ (b) No _____
10. Who was your primary contact at the Energy Analysis & Diagnostic Center?

11. Did you supply the EADC with historic energy data prior to the site visit?
 - (a) Yes _____ (b) No _____
12. Please state your impression of the kinds of data sought:
 - (a) too much _____ (b) about right _____ (c) not enough _____

13. How long did it take you to compile these data?

(a) 15 minutes or less _____	(d) half-day _____
(b) half-hour _____	(e) other _____
(c) 1-2 hours _____	(f) do not know _____

14. How many EADC personnel were present for the site visit?

(a) 1 _____	(c) 3 _____	(e) more than 4 _____
(b) 2 _____	(d) 4 _____	(f) do not know _____

15. How many site-visits were made by EADC personnel?

(a) 1 _____	(c) 3 _____	(e) more than 4 _____
(b) 2 _____	(d) 4 _____	(specify number)

16. What was the approximate duration of each visit?

First Visit

(a) 1 hour _____	(d) half-day _____	(f) full day _____
(b) 2 hours _____	(e) 6 hours _____	(g) other _____
(c) 3 hours _____		

Second Visit

(a) 1 hour _____	(d) half-day _____	(f) full day _____
(b) 2 hours _____	(e) 6 hours _____	(g) other _____
(c) 3 hours _____		

17. In your opinion was this time:

- (a) about right? _____ (b) too short? _____ (c) too long? _____

18. Did they make measurements in your plant? (a) Yes _____ (b) No _____

19. How did they interact with your staff?

- (a) They talked chiefly to management. _____
- (b) They talked chiefly to foremen and plant workers. _____
- (c) They talked with all kinds of people involved in plant operation and management. _____

20. In your opinion how was the audit conducted?

(a) thoroughly _____	(c) thoroughly in some aspects, but not in others _____
(b) superficially _____	
	(d) some opportunities (or trouble spots) were missed _____

21. Would you say that the auditors:

- (a) knew what they were doing _____
- (b) knew only a little about their business _____
- (c) seemed nice but naive _____
- (d) appeared to be incompetent _____

22. In your opinion, would you say that the auditors:

(Check as many as applicable.)

- (a) understood your operations _____
- (b) recognized your key problems _____
- (c) seemed genuinely interested _____
- (d) failed to understand your operations _____
- (e) failed to recognize your key problems _____
- (f) didn't really care about your problems _____
- (g) seemed willing to help but were unable to do so _____

23. Did the audit help you to understand your energy usage?

- (a) Yes _____
- (b) No _____

24. What do you think have been the primary and secondary benefits of the audit?

(Indicate by 1 and 2):

- (a) Opened your eyes to sources of energy inefficiency/waste. _____
- (b) Confirmed what you had suspected about energy inefficiency/waste. _____
- (c) Helped you to identify ways to lower costs. _____
- (d) Improved monitoring of your energy use. _____
- (e) Gave you opportunities to increase productivity. _____
- (f) Revealed new technology applicable to your operations. _____
- (g) Assisted your decision to install new equipment. _____
- (h) Helped your whole operation be more efficient. _____
- (i) Convinced management that recommendations would be profitable by quantifying their savings. _____
- (j) Other _____ (Specify) _____

25. Would you have paid a fee for the energy audit? (a) Yes _____ (b) No _____

26. What percentage of your energy bill or what dollar amount would you have been willing to spend for this service? _____

27. Was the audit report easily understood?

	Corp.	Mgt.	Plt.	Mgt.	Plt.	Engrs.	Plt.	F./Mnt.
(a) Yes	_____	_____	_____	_____	_____	_____	_____	_____
(b) No	_____	_____	_____	_____	_____	_____	_____	_____

28. Did you think that the completed audit report was:

(a) extremely well done _____	(c) satisfactory _____
(b) well done _____	(d) poorly done _____

29. Would you say that in reference to the report, you agreed with:

- (a) all of the conclusions _____ (c) some of the conclusions _____
(b) most of the conclusions _____ (d) none of the conclusions _____

30. Please name (by title) all persons in your company who have seen the energy audit report.

31. Did the energy audit lead to energy and dollar savings or do you expect it to do so?

- (a) Yes _____ (b) No _____

32. Did (or will) the energy audit lead to capital investments for equipment?

- (a) Yes _____ (b) No _____

33. Is that investment for:

- (a) replacement of existing equipment _____
(b) modification of existing equipment _____
(c) addition of new equipment _____

34. If not, why?

- (a) recommendations did not call for new equipment _____
(b) business climate is too uncertain _____
(c) a product is being discontinued _____
(d) other uses for funds have a higher priority _____
(e) disagree with recommendations _____
(f) other (specify) _____

35. (1) Has your plant made other capital investments of \$5000 or more within the past 12 months?

- (a) Yes _____ (b) No _____

(2) Do you expect to within the next 12 months?

- (a) Yes _____ (b) No _____

36. Will this other equipment be primarily for:

- (a) replacement of worn-out equipment _____
(b) improvements in existing processes or products _____
(c) expansion of plant capacity _____
(d) addition of new product or process _____

37. Has there been any follow-up by EADC personnel since the audit report has been received?

(a) Yes _____

(b) No _____

38. (1) If yes, please specify the type of follow-up received:

(a) telephone call to see if report received/understood _____

(b) other telephone conversation _____

(c) meeting _____

(d) plant visit _____

(e) other (Specify) _____

(2) Have you been invited to or attended a client conference?

(a) invited _____

(b) attended _____

39. (1) Have you requested any follow-up?

(a) Yes _____

(b) No _____

(2) If yes, what was the follow-up?

(a) telephone conversation _____ (c) plant visit _____

(b) meeting _____ (d) other (specify) _____

40. Who in your plant is chiefly responsible for energy management?

41. Has any other organization offered you any energy conservation assistance?

(a) Yes _____

(b) No _____

42. If yes, please specify:

(a) electric utility _____ (e) government agency _____

(b) natural gas utility _____ (local, state and _____

(c) private consulting firm _____ federal) _____

(d) manufacturer/vendor _____ (f) other _____

43. What kind of assistance was offered by each?

From 42

a b c d e f

(a) literature _____

(b) training _____

(c) individual analysis _____

(d) rate schedule _____

44. Have you taken advantage of it?

From 42

a b c d e f

(a) Yes _____

(b) No _____

45. If not, why did you decide against it? _____

46. Do you feel that the EADC program represents a good expenditure of taxpayers' money?

(a) Yes _____ (b) No _____

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