

BestPractices Steam
2005 SURVEY OF
STEAM WORKSHOP ATTENDEES
Summary Report

March 2006



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S A V E E N E R G Y

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TITLE:	BestPractices Steam: 2005 Survey of Steam Workshop Attendees
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ABSTRACT:	This report presents findings from a survey of attendees who participated in recent <i>Optimizing Steam System Performance</i> workshops sponsored by the U.S. Department of Energy. The survey's purpose was to analyze the success of the workshops in encouraging participants' subsequent pursuit of steam efficiency improvements. This report describes: 1) the workshop's influence on attendees' steam efficiency efforts; 2) areas of the workshop which may be improved; and 3) recommendations for future promotion of energy efficiency.



The Alliance to Save Energy is a bipartisan, nonprofit coalition of business, government, environmental, and consumer leaders committed to promoting energy efficiency worldwide to achieve a healthier economy, a cleaner environment, and energy security. The Alliance was founded in 1977 by Sens. Charles Percy (R-Ill.) and Hubert Humphrey (D-Minn.). The current Chair is Sen. Mark Pryor (D-Ark.) and Co-Chair James H. DeGraffenreidt, Jr. Congressional Vice-Chairs include Sens. Susan Collins (R-Maine), Jeff Bingaman (D-N.M.), James Jeffords (I-Vt.), Reps. Ed Markey (D-Mass.), Zach Wamp (R-Tenn.) and Ralph Hall (R-Texas). The board includes leading voices on energy from business, government, and the environmental community. Over 100 companies and organizations currently support the Alliance through our Associates Program. The Alliance has a long history of initiating efforts to advance energy efficiency through strategic partnerships with government, business and public interest organizations.

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Executive Summary

The U.S. Department of Energy's (DOE) *Optimizing Steam System Performance* workshops are designed to deliver general information on steam efficiency opportunities. These regional, one-day workshops promote energy-efficiency improvements to industrial steam system operators primarily in industry, although attendees also include institutional steam operators. Workshop agendas concentrate on the tools and analysis needed by plant managers to identify, prioritize, and implement efficiency improvements.

In order to determine the effectiveness of these workshops in stimulating greater pursuit of energy efficiency, the Alliance to Save Energy conducted a survey that documented feedback from 50 participants who attended one of 11 workshops held between December 2003 and June 2005. Some highlights of the survey completed in 2005 include:

- Seventy-eight percent of participants had only positive impressions of the workshop. All participants had at least partially positive feedback. [Section 3.1]
- Ninety percent of respondents who specifically ranked the workshop experience felt the workshop was more than helpful in influencing their approach to energy efficiency. [Section 3.4]
- The workshop influenced 44 percent of respondents to implement at least one improvement project. Overall, approximately 66 total improvement projects can be directly attributed to the 11 workshops attended by survey respondents. Respondents were generally unable to quantify their energy savings at the time of the survey. [Section 3.5]
- Whether or not the workshop directly led to improvement projects, 58 percent of respondents claimed that information gained at the workshop sped up the implementation process for ongoing improvements at their organizations. [Section 3.6]
- Eighty-two percent of respondents indicated that rising energy prices are making energy efficiency a managerial priority for their organization. [Section 4.1]
- A majority of respondents (82 percent) said that they encounter obstacles in advocating and implementing their energy-efficiency projects. Fifty-six percent of the obstacles described were financial (lack of funding/payback period too long). Another 30 percent cited a lack of managerial support. [Section 4.2]
- In describing future resources that DOE should provide, 61 percent of respondents indicated a need for additional workshops and training opportunities. Eighteen percent recommended financial assistance mechanisms (loans, grants, rebates or credits). Fourteen percent asked for product information on improvement technologies. [Section 4.4]

1) Introduction

In November 2005, the Alliance to Save Energy performed a phone survey of individuals who attended steam efficiency awareness workshops between December 2003 and June 2005. A total of 157 industrial or institutional steam end-user organizations were contacted, with 50 participating in the survey.¹ Respondents were surveyed between October 31 and December 9, 2005. Each respondent was asked 21 questions regarding their organization and their impressions of the workshop. One individual from each organization was surveyed.

1.1 Alliance's Role with BestPractices Steam

Since 1998, the Alliance has played an integral role in the BestPractices Steam Program, sponsored by the Department of Energy's Office of Industrial Technologies (DOE-ITP). The DOE BestPractices Steam Program develops technical references and diagnostic software for industry. The program delivers these materials to industrial energy consumers as well as the utilities, vendors, and consultants that serve them. The Alliance helps DOE accomplish this by organizing awareness workshops across the U.S., publishing articles in trade press, and issuing timely news releases that publicize industrial energy reference materials and events. The Alliance's *Steaming Ahead* newsletter and companion website are key tools in performing this outreach.

1.2 Background on Awareness Workshops

The typical one-day workshop agenda includes:

- Presentations from DOE and state/local energy-efficiency program offices (30 min. each);
- DOE steam software tool exercise (90 min.);
- Non-commercial presentations on topics such as the benefits of condensate-return systems, steam distribution system efficiency (steam traps, piping, insulation, etc.), combustion efficiency, return on investment of training, and combined heat and power (CHP)/cogeneration opportunities (30-40 min. each);
- An overview of the business and management impacts of steam efficiency, and;
- Open discussion and exit evaluations.

The workshops allow for an interactive, face-to-face learning experience which cannot be easily replaced through Internet alternatives. Attendees have the opportunity to network with local steam industry experts, industry peers, and program professionals from utilities, government, and non-profit organizations.

1.3 Workshop Dates

Workshops were held several times a year, starting in 2000 and continuing through 2005. Table 1 lists the dates of the workshops selected for the scope of this survey and the number of survey respondents from each workshop.

¹ One respondent was unable to complete the entire survey, therefore the number of respondents for some sections is 49.

Table 1			
STEAM EFFICIENCY AWARENESS WORKSHOPS			
FROM WHICH SURVEY RESPONSES WERE GENERATED			
Conducted by the Alliance to Save Energy, Dec. 2003 – Jun. 2005			
Workshop Date	Location	Respondents	Percentage of Total Respondents
Dec 10, 2003	New Orleans, LA	1	2%
Feb 18, 2004	Greensboro, NC	6	12%
Mar 23, 2004	Waltham MA	8	16%
Apr 28, 2004	Cedar Rapids, IA	6	12%
Jun 9, 2004	Baltimore, MD	5	10%
Sep 14, 2004	Allentown, PA	8	16%
Sep 28, 2004	Milwaukee, WI	3	6%
Dec 2, 2004	Los Angeles, CA	7	14%
Mar 22, 2005	Atlantic City, NJ	2	4%
Apr 26, 2005	Tulsa, OK	2	4%
Jun 15, 2005	San Diego, CA	2	4%
Total		50	100%

SOURCE: Alliance to Save Energy

2) Respondent Profiles

2.1 Respondent Organizations

Respondents represented 13 different industries, divided for the purposes of this analysis into three main categories. *Industrial* organizations represented 46 percent of total respondents. *Institutional* (non-manufacturing) organizations represented another 46 percent of respondents. The remaining eight percent were classified as *Other*. Table 2 outlines the respondents' industry types.

Table 2			
BREAKDOWN OF STEAM WORKSHOP SURVEY RESPONDENTS			
By Type of Organization			
Type - General	Type – Specific	Respondents	Percentage of Total Respondents
Institutional	Education/University	11	22%
Institutional	Government/Municipal	7	14%
Institutional	Hospital/Medical	4	8%
Institutional	Service/Hospitality	1	2%
Industrial	Chemical	10	20%
Industrial	Foods	4	8%
Industrial	Petroleum	3	6%
Industrial	General Manufacturing	2	4%
Industrial	Rubber	1	2%
Industrial	Aerospace/Defense	1	2%
Industrial	Electronic/Telecommunications	1	2%
Industrial	Automotive	1	2%
Other	Utility/Energy Provider	4	8%

SOURCE: Alliance to Save Energy

2.2 Respondent Job Descriptions

The majority of respondents work in plant level positions. Thirty percent of all respondents were in plant level maintenance/operator/engineer positions. Fifty-six percent were in plant level manager/supervisor positions. Table 3 lists the respondents categorized by their organizational position description.

Role/Organization Type	Industrial	Institutional	Other	All
Maintenance/Engineer (Plant level)	10	5	0	15
Manager/Supervisor (Plant level)	10	16	2	28
Manager/Executive (Corporate level)	3	2	0	5
Vendor/Consultant	0	0	2	2
Total	23	23	4	50

SOURCE: Alliance to Save Energy

2.3 Respondent Plant Size

The majority of respondents (ninety percent) represented organizations that operate plants with annual fuel bills greater than \$100,000. Forty-four percent operate plants with annual fuel bills over \$2.5 million.

Annual Fuel Cost	Respondents	Percentage of Total Respondents
\$0-\$100,000	2	4%
\$100,000-\$2.5 million	23	46%
\$2.5 million +	22	44%
No Answer Given (Unknown or Unable to Answer)	3	6%

SOURCE: Alliance to Save Energy

2.4 Respondents' Preferred Formats for Collecting Technical Information

Many respondents indicated that they receive updated technical information about DOE and non-DOE steam-system improvement resources from the internet (29 percent) or by email (22 percent). Thirty-one percent of respondents could not identify a specific source from which they receive updated information. Table 5 indicates responses by format type.

Format <i>Multiple responses allowed</i>	Responses	Percentage of Total Responses
Email	12	22%
Websites	16	29%
Vendors	4	7%
Other (Corporate office, trade magazines)	6	11%
No source for updates	17	31%
Total	55	100%

SOURCE: Alliance to Save Energy

3) Perceptions of Workshop Value

3.1 Overall Impressions of the Workshop

All respondents indicated some positive opinion about the workshop. Seventy-eight percent of respondents had exclusively positive impressions of the workshop, while 22 percent gave a combination of positive and negative impressions.

3.2 Positive Impressions of the Workshop and Workshop Components

All respondents indicated that the workshop was a positive experience. Forty-six percent described the workshop “in general” as positive. Some respondents noted specific workshop components as being particularly helpful. Of the specific components that respondents mentioned, workshop presentations were the most often identified, followed by energy management information, software, and technical information. Table 6 outlines the various workshop components mentioned by respondents.

Table 6 PROPORTION OF POSITIVE REACTIONS ASCRIBED TO VARIOUS WORKSHOP FEATURES		
Workshop Component (Generalized categories based on verbatim responses) <i>Multiple responses allowed</i>	Responses	Percentage of Total Positive Responses
General or non-specific	24	46%
Presentations	11	21%
Energy management information	8	15%
Software and/or resources	6	12%
Technical Information	3	6%
Total Positive Responses	52	

SOURCE: Alliance to Save Energy

3.3 Influence of Workshop Resources

In distinguishing the workshop resources that positively contributed to influencing respondents’ energy-efficiency activities, 35 percent of the responses identified workshop presentations as effective in this regard. The DOE SSAT/SSST software package was the second most identified resource, with 31 percent of all responses. Table 7 lists all the resources that were identified by respondents as having positive influence on their energy-efficiency activities. Respondents were allowed to indicate more than one resource.

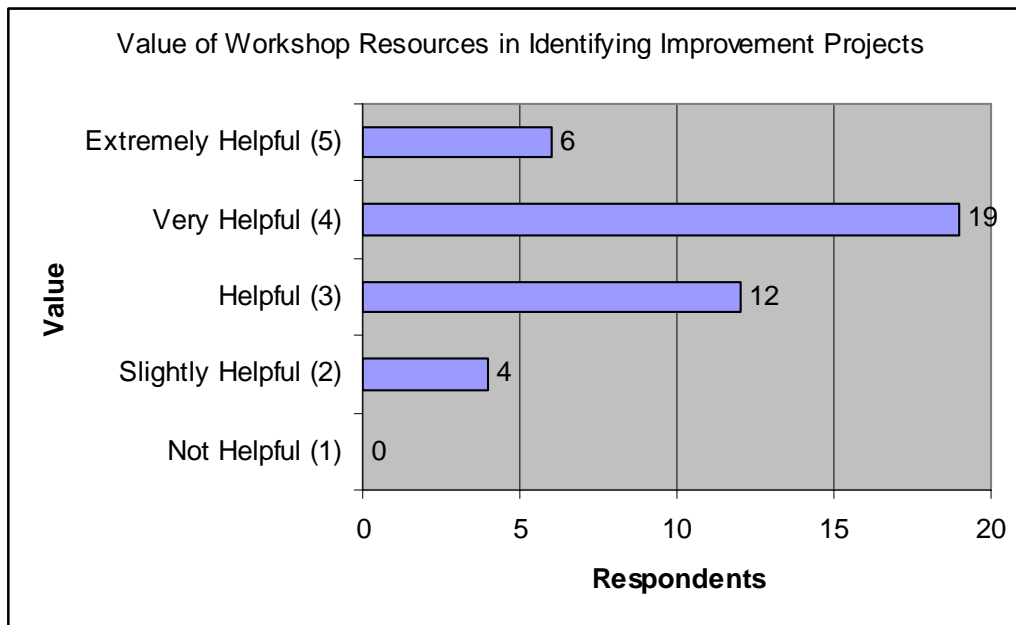
Table 7 RESOURCES THAT POSITIVELY INFLUENCED RESPONDENTS' ENERGY EFFICIENCY ACTIVITIES		
Resource <i>Multiple responses allowed</i>	Responses	Percentage of Total Responses
Workshop Presentations	24	35%
DOE Software	21	31%
Insulation Presentation	9	13%
Unsure/No specific resource identified	8	12%
DOE Publications	4	6%
Plant Assessments	1	~1%
Other DOE Resources	1	~1%
Total Responses	68	100%

SOURCE: Alliance to Save Energy

3.4. Assessing Workshops' Influence on Plant Improvement Projects

All survey respondents indicated that the workshop positively motivated their subsequent energy improvements. Ninety percent of all respondents who specifically rated the workshop indicated that workshop resources were “helpful,” “very helpful,” or “extremely helpful” in identifying improvements (see Figure 1). Every respondent who made improvements following the workshop indicated that the workshop contributed to their organization’s performance.

Figure 1:



SOURCE: Alliance to Save Energy

3.5 Improvements as a Direct Result of the Workshop

Twenty-two respondents indicated that they made improvements as a direct result of the workshop – which resulted in a total of 66 improvement projects of various types. Table 8 lists the improvement efforts that were directly attributable to the workshop. (In cases where organizations made more than one improvement in the same area, that area was only counted once.)

Table 8: SUMMARY OF IMPROVEMENTS SUBSEQUENT TO WORKSHOP ATTENDANCE As Reported by Survey Respondents			
Area of Improvement <i>Multiple responses allowed</i>	Number of Organizations Making Improvement(s) in this Area	Percentage of Total Areas Identified	Percentage of Total Respondents Making This Improvement
Steam Trap Survey/Maintenance	17	37%	34%
Insulation	10	22%	20%
Boiler Efficiency	5	11%	10%
Boiler Replacement/Upgrade	1	2%	2%
Improved Boiler Blowdown	1	2%	2%
Fixed Steam Leaks	1	2%	2%
Lowered Steam Pressure	2	4%	4%
Water Treatment	0	0%	0%
Condensate Return System	2	4%	4%
Heat Recovery	3	7%	6%
Piping/Bundling	1	2%	2%
Monitoring System	2	4%	4%
Humidification	1	2%	2%
Total Improvement Areas Identified	46	100%	

SOURCE: Alliance to Save Energy

3.6 Workshops' Impact on Expediting Planned Improvement Projects

Fifty-eight percent of respondents indicated that when improvements were already under consideration, the workshop experience sped up their implementation. Some comments included: "the workshop provided an effective method of presenting the proposal to my supervisor" and "the workshop presented new ideas or technologies that we had not previously considered."

3.7 Value of DOE Software

Respondents were very positive about the value of the demonstration of the Steam System Assessment Tool (SSAT) or the Steam System Scoping Tool (SSST) software. Of the 41 respondents who rated the workshops' software tool demonstration, 87 percent rated it "helpful" or better, and 70 percent rated it "very helpful" or better. Overall, respondents rated the value of the software demonstration at an average of 3.7 out of 5. No respondent who rated the demonstration found it "not helpful."

3.8 Contribution of DOE Software to Improvement Projects

Approximately half of respondents used the DOE Steam System Assessment Tool (SSAT) or Steam System Scoping Tool (SSST) software since the workshop. Of the respondents who used the software, 74 percent identified at least one improvement project, and 40 percent identified five or more improvement projects. To date, respondents have implemented two-thirds of all projects identified by the software. Table 9 presents the incidence of software usage.

Table 9: INCIDENCE OF STEAM SOFTWARE USAGE By Workshop Attendees		
Use of Steam System Assessment Tool or Steam System Scoping Tool Software Since Workshop	Respondents	Percentage of Total Respondents
Yes	23	46%
No	24	48%
Unsure	3	6%
Total	50	100%

SOURCE: Alliance to Save Energy

Table 10 summarizes the nature of project implementation in response to the use of the DOE SSAT software.

Table 10: ENERGY IMPROVEMENTS IDENTIFIED AND IMPLEMENTED As Facilitated by the Use of DOE's Steam System Assessment Tool Software		
Projects Identified & Implemented by the SSAT Software	Cases	Percentage of Total Cases
0 Projects Identified	6	26%
1 Project Identified	3	13%
2 Projects Identified	4	17%
3 Projects Identified	0	0%
4 Projects Identified	1	4%
5 or More Projects Identified	9	39%
Total Number of Projects Identified	95	
Average Number of Projects Identified (per software user)	4.13	
Number of Projects Implemented	63	
Average Number of Projects Implemented (per software user)	2.74	
Percentage of Identified Projects Implemented	66%	

SOURCE: Alliance to Save Energy

4) Motivations, Obstacles, and Needs:

4.1 Effect of Energy Prices on Managerial Priorities

Many respondents indicated that recent, as well as anticipated, increases in fuel prices are making energy efficiency a much higher managerial priority (see Table 11).

Table 11: IMPACT OF CURRENT AND ANTICIPATED FUEL PRICES on Respondents' Intentions to Pursue Energy Improvements		
Have the recent increases in fuel prices made energy efficiency a managerial priority?	Respondents	Percentage of Total Respondents
Yes	41	82%
No	7	14%
Unsure	2	4%
Total Responses	50	

SOURCE: Alliance to Save Energy

4.2 Obstacles to Energy Efficiency Improvements

Eighty-two percent of respondents indicated that they encountered some obstacle to implementing improvement projects. Fifty-six percent of all respondents indicated that financial challenges (obtaining funding or justifying payback periods) remained an obstacle for improvements. An additional 30 percent cited a lack of managerial or corporate support for their projects. Only eight respondents indicated that they did not encounter any obstacles in implementing improvement projects. Table 12 shows the summary of obstacles cited by respondents. Respondents were allowed to identify multiple obstacles.

Table 12: OBSTACLES TO ENERGY IMPROVEMENT ACTIVITY Cited by Survey Respondents			
Category of Obstacle <i>Multiple responses allowed</i>	Responses	Percentage of Total Responses	Percentage of Identified Obstacles
Financial: funding/capital	24	39%	44%
Lack of manager/corporate support	15	24%	28%
Lack of time	6	10%	11%
Financial: payback period too long	4	6%	7%
Lack of technical resources	3	5%	6%
Lack of implementation staff	2	3%	4%
No obstacles encountered	8	13%	
Total Responses	62		
Total Obstacles Identified	54		

SOURCE: Alliance to Save Energy

4.3 Readership of *Steaming Ahead* Newsletter

The *Steaming Ahead* Newsletter is a bi-monthly online publication produced by the Alliance to Save Energy in support of the DOE's BestPractices Steam program. The newsletter, with approximately 4,000 subscribers, includes details about current DOE initiatives, technical information and upcoming events. About half of the respondents said they were receiving the *Steaming Ahead* newsletters, with most reading it. Of the 23 respondents who were not receiving the newsletter, 13 asked to subscribe. Forty-two percent of respondents receiving the newsletter forward or share it with coworkers – with an average of nine forwards in each instance. The actual circulation of *Steaming Ahead* can be inferred from the survey results, as depicted in Table 13. Only the first level of forwards was used in calculations.

Table 13: ESTIMATED READERSHIP OF STEAMING AHEAD Based on Survey Data and Current <i>Steaming Ahead</i> Statistics	
Primary Subscriptions	3,902
Primary Readership Rate	26.6%
Primary Readership	1,038
Forward Rate (Percent of readership who forward <i>Steaming Ahead</i> to other readers)	42%
Average Number of Forwards per Forwarder (per survey sample)	9
Total Forwarded Messages	3,924
Inferred Readership of forwarded messages (26.6%)	1,044
Total Recipients (Inferred)	7,826
Total Readership (Inferred)	2,082

SOURCE: Alliance to Save Energy

4.4 Demand for DOE Resources

Nearly three quarters (71 percent) of respondents identified resources they would like to see provided by the DOE. Sixty-one percent of resources requested involved additional workshops or training opportunities. The remainder of requests included financial incentives for improvements or product information for improvement technologies. Table 14 lists the DOE resources requested by respondents.

Table 14: ADDITIONAL ENERGY IMPROVEMENT RESOURCES NEEDED As Indicated by Survey Respondents		
What resources should DOE provide? (Multiple responses allowed)	Responses	Percentage of Total Responses
Workshops, additional, specific topic	13	27%
Workshops, additional, general	11	22%
Financial Incentives (Grants, Loans, Tax Credits, Rebates)	9	18%
Product Information	7	14%
Training & Technical Information	4	8%
Other	3	6%
Workshops, additional, local/regional accessibility	2	4%
Total Responses	49	

SOURCE: Alliance to Save Energy

5) Workshop Impacts on Insulation Activity

5.1 “Value of Insulation” Information

Most respondents said that they found any information on insulation to be very valuable. (Selected comments: “Insulation is a no-brainer.” “Insulation is a good starter project since it’s much cheaper than the other projects.”) Respondent sentiments are summarized in Table 15.

Table 15: RESPONDENT IMPRESSIONS OF INSULATION RESOURCES		
Was the information on the value of proper insulation systems valuable?	Respondents	Percentage of Total Respondents
Yes	43	88%
No	2	4%
Unsure	4	8%
Total Responses	49	100%

SOURCE: Alliance to Save Energy

5.2 Familiarity with National Insulation Association Website (www.insulation.org)

Less than a third of respondents were familiar with the website. Several looked it up while the phone survey was administered, and others expressed an interest in looking at it at a later time. These results are summarized in Table 16.

Table 16: RESPONDENT FAMILIARITY WITH THE NIA WEBSITE		
Familiar with the NIA website (www.insulation.org)?	Respondents	Percentage of Total Respondents
Yes	15	31%
No	34	69%
Total	49	100%

SOURCE: Alliance to Save Energy

5.3 Implementation of Insulation Improvement Projects

Insulation projects represented the second highest type of identified projects implemented by respondents following the workshop. Of the improvements directly attributable to the workshop, 22 percent were in insulation, with 20 percent of all respondent organizations implementing an insulation project.

6) Areas for Workshop Improvement:

6.1 Negative Impressions of the Workshop

Overall, negative impressions of the workshop were few. Negative impressions came from those who felt that the industrial focus of the workshop did not target their needs. Half of these respondents were primarily from institutions. Also, respondents who work in an operator role felt the material was too management-oriented for them. A constant struggle for workshop developers and sponsors is to make clear the workshops' intent. To many observers, the term "workshop" implies "training," which the awareness workshop is not. Promotional material always underscores the workshops' intention to introduce a systems-approach to steam efficiency while providing participants with access to additional resources for training, and technical and business information. Only one respondent had more than one negative impression. Table 17 presents respondents' negative impressions.

Table 17: SUMMARY OF RESPONDENTS' NEGATIVE IMPRESSIONS		
Negative Impression <i>Multiple responses allowed</i>	Respondents	Percentage of Respondents
Workshop Targeted Different Audience	6	12%
Too much information was presented	2	4%
Information Provided Was Too Basic	3	6%
Water Treatment Section Was Not Helpful	1	2%
No Negative Impressions	39	78%

SOURCE: Alliance to Save Energy

6.2 Reasons for Workshop Resources Not Making a Direct Measurable Impact

Thirty-six percent of the 28 respondents who could not attribute any improvements directly (or solely) to the DOE workshop, stated that their improvement projects were already under consideration prior to the workshop. Approximately one-quarter (28 percent) of the respondents were either in a position where they could not affect the improvement process, or were unable to convince their manager or supervisor to implement improvements. Finally, 18 percent of responses reflected that the workshop was a contributing but not sole factor in making improvements. Responses are summarized in Table 18.

Table 18: RESPONDENTS' EXPLANATIONS FOR WORKSHOPS' LACK OF IMPACT ON ENERGY IMPROVEMENT ACTIVITY		
Reasons for Inaction <i>Multiple responses allowed</i> <i>*28 Respondents</i>	Responses	Percentage of 28 Respondents*
Improvements already under consideration	10	36%
Workshop not sole factor affecting decision	5	18%
Not in position to affect improvements	4	14%
Not able to convince management/supervisor	4	14%
Other priorities take precedence	4	14%
Vendor/consultant	3	11%
Improvements already made	2	7%
Total	32	

SOURCE: Alliance to Save Energy

Note: Respondents in Table 18 are the 28 respondents whose improvements, if any, could not be directly attributed to the awareness workshop experience.

6.3 Use of DOE Resources

While many respondents indicated that the workshop resources were valuable in helping them to better understand efficiency, the respondents' indicated use of resources (from DOE or other sources) after the workshop was modest. Table 19 indicates the respondents' usage of various assistance resources. Of all the resources, only DOE publications had a use rate higher than 50 percent. Respondents' use of DOE-sponsored plant assessments and training was very low, at ten percent and eight percent, respectively. However, it should be noted that many respondents were surveyed less than a year after attending the steam workshop. It is reasonable to expect that more plant assessments and training will take place as companies enter a new budget year.

Resource	Respondents Having Used This Resource Since Workshop	Percentage of Total Respondents
DOE Publications	27	54%
DOE Software (SSAT/SSST)	23	46%
Plant Assessment (Any)	23	46%
Steaming Ahead Newsletter (Reading)	23	46%
Steam Training (Any)	15	30%
Other Efficiency Software	14	28%
DOE-Sponsored Plant Assessment	5	10%
DOE-Sponsored Steam Training	4	8%

SOURCE: Alliance to Save Energy

7) Lessons Learned About Outreach Through Workshops

7.1 Adjusting Workshops to Meet the Needs of Respondents

Nearly all the respondents found the workshop to be valuable, whether or not they applied the information and resources presented directly toward energy-efficiency activities. Many attendees are responsible for more than steam, and indicate an interest in these other technologies.

Workshop formats with multiple technologies should be considered. Of all DOE resources that respondents requested, 61 percent replied that more workshops would be most beneficial [See section 4.4].

What respondents would like in terms of workshop content varied. Some respondents wanted a refresher course, while others wanted more specific information. This seems to suggest the need for a variety of workshop formats—some shorter than others, and perhaps delivered online versus in person. Another option is to seek opportunities to insert the steam awareness workshop into a larger conference or curriculum.

Respondents' specific areas of interest include:

- More in-depth software demonstration
- How to sell energy-efficiency projects to management
- The process of project implementation (from measurement to funding)
- System maintenance and operations (best practice techniques)

7.2 Continuing to Emphasize DOE Software

Forty-two percent of responses indicated that software was one of the more influential aspects of the workshop in affecting respondents' energy-efficiency activity. Implementation rates varied directly with software utilization. Still, only 46 percent of respondents are using software, indicating a lot of room for growth.

Future software demonstrations may be best administered on a one-on-one basis by DOE's qualified specialists. These mentoring sessions could discuss either: (1) how to obtain the specific input data that the software requires, or (2) how to apply the software specifically to their site. In the first case, the participants could be instructed on proper data collection protocol. In the second case, the participants could be asked to bring the required information with them to the workshop, where they could then learn how to input and manipulate the data accordingly. These

workshops could be combined as a two-part series in which participants would ultimately complete a guided self-assessment.

7.3 Facilitating Communication Across All Organizational Levels

Aside from financial constraints, respondents cited organizational barriers as the key obstacle to implementing energy improvements. A lack of managerial or corporate support represented 28 percent of identified obstacles. In addition, of the respondents who made no improvements because of the workshop [see Section 6.2], 28 percent indicated that either: (1) they were not in a position to affect improvements, or (2) they were not able to convince their superiors of the value of energy improvements.

Respondents with successful implementation experiences informally described corporate support and cooperation with operations personnel. The reflections of other respondents indicate that many workshop attendees still encounter trouble in securing their management's full appreciation of energy improvements.

Access to corporate/executive level managerial decision-makers, who comprised only ten percent of respondents [See Section 2.2 – Table 3], continues to be a challenge. By virtue of its title, a “steam workshop” attracts lower-level operations personnel.

7.4 Harnessing Increased Management Awareness of High Fuel Prices

Eighty-two percent of respondents confirmed that higher fuel prices have captured greater managerial attention. This certainly benefits the promotion of energy efficiency. The Alliance continues to develop promotional materials that describe the wider scope of energy efficiency's impacts, with implications for productivity, environmental and safety compliance, corporate governance, risk abatement, and more. Today's energy market difficulties may also attract greater managerial attention to the BestPractices Steam agenda [see Section 7.3].

7.5 Continuing to Provide Information on Financial Incentives

Fifty-six percent of respondents cited financial obstacles to improvements, while 18 percent requested more financial assistance for their improvements. Future outreach should remind observers to utilize the National Inventory of Manufacturing Assistance Programs (NIMAP*), as well as any resources made available through utilities, the Manufacturing Extension Partnership Centers, and state energy offices.

* <http://www1.eere.energy.gov/industry/bestpractices/nimap.html>

7.6 Aligning Resource Distribution with Preferred Delivery Mechanism of End Users

Fifty-one percent of identified sources for technical information were online, either via email or webpage. Online communications continue to be cost effective, but the increasing load of email runs the risk of being burdensome. The Alliance should seek opportunities to distribute the *Steaming Ahead* newsletter as an insert to other industry media, especially from manufacturer associations.

As of the date of this report, the Alliance is developing a comprehensive users' guide to all DOE BestPractices materials. This report's primary purpose is to support the DOE *Save Energy Now* initiative, and it should benefit any plant manager that seeks to use BestPractices resources. This report will provide energy users with a framework for identifying and employing the appropriate tools from the vast array of BestPractices material.

Survey respondents' low demand (to date) for DOE's steam training and plant assessments may simply reflect a lack of time on the part of plant personnel. It may also indicate a need for either

increased promotion of these resources or development of alternative formats for providing training and plant assessments.

7.7 Providing Product Ratings and/or Lists of Energy-Efficiency Products

Many respondents professed interest in energy efficiency, but often had no basis for judging the relative merits of one technology, brand, or supplier over another. Some depend on vendors for information, but recognize the obvious bias in such recommendations. Fourteen percent of respondents specifically requested that DOE provide a catalogue of rated products (similar to ENERGY STAR). One approach to this could be a web clearinghouse that allows registered users to enter their observations about certain hardware. Some thought should be given to the appropriate organization for hosting such an online forum, to ensure its freedom from commercial bias.

8) Conclusions

Perceptions of Workshop Value:

- The Optimizing Steam System Performance Workshop is still a valued resource according to nearly all respondents. Overall, respondents had a positive impression of the workshop in general, found the resources presented to be valuable, and described the workshops' positive effects in influencing their approach to energy efficiency.
- Sixty-six efficiency improvements/projects at 44 percent of respondents' organizations could be directly attributed to the information or resources presented at the workshop. An additional 58 percent of respondents indicated that the workshop had a noticeable impact on speeding up their improvement implementation process.
- The DOE SSAT/SSST software tools remain the most influential specific resource indicated by respondents. Approximately half of respondents used the DOE software tools after the workshop, with 70 percent identifying savings projects. Improvements identified by the software were implemented approximately two-thirds of the time.

Motivations, Obstacles and Needs:

- Higher energy prices, specifically of natural gas, are making energy efficiency a greater managerial priority at 82 percent of respondents' organizations. If energy prices continue to rise, demand for energy-efficiency resources is expected to increase in turn.
- Financial restrictions and organizational support represent the most encountered obstacles to implementation of efficiency improvements. Fifty-six percent of respondents indicated a lack of financial resources for improvements, and 30 percent of respondents described a lack of managerial support. These areas represent a continuing challenge to increasing the awareness of energy-efficiency as well as the implementation rate of improvement projects.
- Three-quarters of respondents identified resources that they would like DOE to provide, indicating that the DOE continues to be an important resource for energy efficiency. The top three resources demanded were for: 1) additional workshops and training; 2) financial assistance mechanisms, and; 3) efficiency product information.

Workshop Impact on Insulation Activity:

- Eighty-eight percent of respondents found the information on insulation presented at the workshop to be valuable. Only 31 percent were familiar with the NIA website. One fifth of organizations implemented an insulation project directly attributable to the workshop.

Areas for Workshop Improvement:

- Very few respondents had negative impressions of the workshop. Of the few negative impressions, slightly more than half were from either institutional participants who felt the workshop was more oriented towards industrial participants, or from operators who felt some aspects of the workshop were geared more for management. Overall, negative impressions were few in number, indicating that the majority of participants are satisfied with the workshops.
- Some respondents indicated that they either made no energy improvements, or that their improvements could not be attributed to the influence of the BestPractices Steam workshop. The reasons for these outcomes included: 1) improvements were already made or under consideration prior to the workshop; 2) the workshop was one of many contributors to the decision to make improvements, or; 3) the respondent was a vendor of energy services (and therefore their experience was not applicable). These results suggest that the impact of future workshops might be improved by 1) convincing supervisors/management of value of improvements; 2) attracting participants who would be in a position to propose improvements; 3) convincing the participant's organization to make improvements a higher priority.
- Overall, use of DOE resources following the workshop is good, but leaves some room for improvement. DOE-sponsored training and assessments appear to be underutilized, so the uptake of these resources may be improved by continued promotion.

Lessons Learned About Outreach Through Workshops:

- Workshops and training should continue to be offered. This is because most respondents indicate that workshops are positive experiences in influencing their energy-efficiency activities. Also, "additional workshops and training" are the most requested resource.
- Industry's greater focus on energy prices should facilitate communication between operators, engineers, and managers on the value of energy improvements. Workshops and related DOE communications can facilitate that effort.