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An Evaluation of Selected FEMP Software Programs: Results of a 1998 Customer Survey on Building Life Cycle Costing Software Federal Energy Decision System Software

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An Evaluation of Selected FEMP Software Programs:

Results of a 1998 Customer Survey

On

Building Life Cycle Costing Software Federal Energy Decision System Software

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Abstract

This report presents the results of a customer telephone survey of the users of two software programs provided by the U. S. Department of Energy Federal Energy Management Program (FEMP) during calendar years 1995 and 1996. The primary purpose for the survey is to provide the Team Leader for FEMP Technical Assistance and members of the team with detailed customer feedback pertaining to how well selected FEMP software programs are being used and to identify areas for improvement. The information presented enables managers to see both the strengths of their software programs and software components that can be improved. The survey was conducted during the fall of 1997 in conjunction with a FEMP workshop attendee survey. The results of the workshop survey are presented in a sister document entitled, "An Evaluation of the Federal Energy Management Program's Technical Assistance Workshops."

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An Evaluation of Selected FEMP Software Programs: Results of a 1998 Customer Survey

On Building Life Cycle Costing Software Federal Energy Decision System Software

Introduction

This report presents the results of a customer telephone survey of the users of two software programs provided by the Federal Energy Management Program (FEMP) during calendar years 1995 and 1996. The primary purpose for the survey is to provide the Team Leader for FEMP Technical Assistance (Ms. Anne Sprunt-Crawley) and members of the team with detailed customer feedback pertaining to how well selected FEMP software programs are being used and to identify areas for improvement. The information presented enables managers to see both the strengths of their software programs and software components that can be improved.

The survey was conducted during the fall of 1997. The survey measured customers' experiences, satisfaction, use and usefulness of FEMP acquired software. The survey was administered in conjunction with a FEMP workshop attendee survey conducted during the same period of time. The results of the workshop survey are presented in a sister document entitled, "An Evaluation of the Federal Energy Management Program's Technical Assistance Workshops."

The FEMP software programs included in this evaluation are the:

- Federal Energy Decision Systems software program (FEDs) and the
- Building Life Cycle Costing (BLCC) program.

Executive Summary

This section of the report provides an overview of the findings obtained through the FEMP software survey.

1. FEMP software is being used by customers

The software programs examined in this study (FEDs, BLCC) are being used by about 80% of the customers who obtain them. The reasons customers give for not using software center around the availability and compatibility of computer systems, the operating requirements of the program and the size and type of the disks used to transfer the program. (*see: Customers who have examined or used the software*)

2. Software is easy to load and use but improvements are needed

Customers feel the programs are easy to load and most feel they are easy to use. However, customers will benefit from improvements in the on-screen displays and in help prompts to make the programs more user friendly. This is especially important for the BLCC program. (*See: Ease of loading the software*)

3. Documentation is good for workshop attendees, not as good for others

Documentation is good for customers who have attended the associated workshops, but is lacking for individuals who have not taken advantage of these workshops. This combined with the level of system helps and prompts makes use of the software by customers not attending the workshop a problem. Many customers will benefit from improved documentation and comprehensive on-screen system aids. (*See: Quality of the documentation*)

4. Software support is better than most, but access is a problem

Customers consider the software support services provided by the FEMP offices to be better or much better than similar services provided by other companies or organizations and customers report high marks for the technical nature of the support and the ability of the staff to understand their problems or situations. Improvements to the support services can be focused on helping customers quickly reach the right person and in providing easy access to these people. (*See: Software support*)

5. Software helps customers understand projects, but enhancements are wanted

Both programs help customers analyze opportunities to save energy, understand energy savings opportunities and compare different technologies and systems. However, customers will benefit from software modifications that address a wide range of customers needs that are associated with how customers use the program and the need for electronic communications between the FEMP software and other programs. (*See: Impacts on customer operations*)

6. Software helps customers conduct analysis, but can be improved

The programs provide valuable support for customers analytical needs and help customers accomplish their jobs. However, customers can benefit from program modifications that make them more in-tune to customer-specific analytical needs, system input and output requirements and improvement in the quality of the printed information produced by the programs. *(See: Ability of the software to support analysis needs, Comments and recommendations, and Customer Satisfaction and Software Use)*

7. Software helps get the job done better, faster, cheaper

In a majority of cases the programs are helping customers get their job done better, faster and cheaper, although improvements can strengthen the ability of the software to help customer achieve these goals. *(See: Impacts on customer operations)*

8. Software is providing energy savings for some customers

The software packages examined in this study are helping customers achieve energy and dollars savings for about a third of the customers contacted. However customers are not able to estimate the energy savings, the dollar savings or the environmental benefits that are associated with their projects. *(See: Impacts on energy savings, dollar savings or pollution reduction)*

9. Customer recommend changes to the programs

Customers provide an impressive list of recommendations for modifications to the two programs. These recommendations allow the FEMP management team to better understand what modification should be considered for system improvements.

The primary customer recommendations include:

- The need for programs that operate in a Windows environment that are designed to mimic Windows operating systems, and which are more user friendly,
- The need for programs to serve small, uncomplicated project as well as large, more complicated projects,
- The need for improved screens, help windows, user prompts, and support tools,
- The need for programs to be able to communicate with other software,
- The need for program flexibility to allow for a wide range of customer driven system requirement, user routines, modified specification tables, and other customer-specific requirements.

While the above recommendations summarize customer comments they do not give a complete picture of the range of recommendations. Because of the number and range of recommendations it is clear that customers use the FEMP software differently and software designers need to understand the environment in which these programs operate. The individual comments can be read in the "customer comments" section of this report and will help FEMP managers and software designer understand a small aspect of the environment in which FEMP software must function. *(See: Comments and recommendations provided by surveyed customers)*

Overview of the Research Methodology

The evaluation was conducted using standard telephone survey research techniques with users of two FEMP software packages (FEDs and BLCC). The survey was conducted with customers who obtained their programs in conjunction with two FEMP workshops directly focusing on the use of the software and with customers who obtained their programs through one or more of the national FEMP offices, without the benefit of workshop attendance. The survey was administered to workshop attendees in conjunction with a more comprehensive survey pertaining to the workshops. The total survey length for these customers was just over 50 minutes. The survey administered to customers who did not attend the workshops included a small portion of the questions included in the workshop survey pertaining to the software being used. The software questions took about 8 minutes to administer. The software questions administered to both groups were identical.

The development of the survey instrument was coordinated through Anne Sprunt-Crawley of the FEMP Technical Assistance Team located in Washington DC, with detailed reviews and recommendations from FEMP field managers responsible for workshop implementation and software programs. A copy of the software portion of the survey is presented in the appendix section of this report. Surveyed customers were randomly targeted using a customer contact database provided by the FEMP. A detailed description of the research methodology can be found in a sister document entitled, *An Evaluation of the Federal Energy Management Program's Technical Assistance Workshops*.

The survey was conducted with 117 software users consisting of 66 customers identified as receiving the FEDs software and 51 identified as receiving the BLCC software. Of the 66 customers who received the FEDs software, 50 received the software through one of the FEDs workshops and 16 received the software directly from a FEMP office. Of the 51 customers receiving the BLCC software, 32 received the software through a BLCC workshop and 19 received the software from one of the FEMP offices.

The following sections of the report present the study findings.

The FEMP Software

To confirm the receipt and use of the software and to check the accuracy of the contact database we first asked customers if they remembered receiving the software. Of the 117 surveyed customers, 93% said they remember receiving the software. Only 5% said they did not receive the software and 2% said they did not know. This response means that the FEMP database used for identifying contacts for the software survey is accurate and can be relied on for valid customer contacts.

Version of the software being used

The majority of customers (69%) are unable to identify the version of the software they received. This ranges from a high of 84% of customers receiving the BLCC software from a FEMP office, to a low 67% of the customers receiving FEDs software during the FEDs workshop. Table 1 provides the percentage of customers who were able to recall which version of the software they received and demonstrates that the majority of FEMP customers are unable to identify which version of the software they are using. Because of the high percentage of customers who do not know which version of the software they are using, it is not possible to tie customer responses to software versions at an acceptable level of accuracy. If future FEMP surveys are to focus on customer use and satisfaction with specific software versions, sample sizes will need to be planned to account for the ability of respondents to recall which version they are using.

Table 1 Which software version customers received

Software and provider	Percent who do not know the version they received	Percent who know the version they received
FEDs software received during the workshop	67	33
FEDs software received from FEMP office	69	31
BLCC software received during the BLCC workshop	60	40
BLCC software received from FEMP office	84	16

When customers were asked if they were still using the same version of the software they received through the workshop or from a FEMP office 70% of the attendees of the FEDs workshop and 73% of the BLCC workshop said they are using the same version. All of the customers who received their software from a FEMP office report using the same version. This data indicates that about 30% of the workshop attendees may have upgraded or replaced the software they received through the workshop. It also indicates that customers who receive their software through a FEMP office may not be upgrading their software or may not know they are able to upgrade. As a result, because of the accuracy of the customer contact database and the potential ability to predict which versions of the software customers received as a function of their workshop attendance or

the software ship date, there may be an opportunity for FEMP to provide software upgrades to customers who are using out-dated versions of the software, as well as a method for mailing up-grade notices to these customers.

Software users guide

Ninety-three percent of the customers who received the software also report receiving a users guide with their software. Only 10% of the customers who received the FEDs software through the workshop and 20% who received it from a FEMP office report not knowing if they received the users guide. One-hundred percent of the customers who received the BLCC software also report receiving the users guide with their software.

Customers who have examined or used the software

Seventy-nine percent of the customers receiving the software indicate that they have loaded, examined or used the software. This ranges from a high of 100% of the customers receiving the FEDs software through a FEMP office to a low of 66% of the FEDs workshop attendees. The following Table 2 displays the percent of customers who report having loaded, examined or used the software.

Table 2 Customer use of the software

Software and provider	Percent indicating they have loaded, examined or used the software	n
FEDs software received during the workshop	66	33
FEDs software received from FEMP office	100	16
BLCC software received during the BLCC workshop	80	24
BLCC software received from FEMP office	95	18

Why customers have not used software

Thirty-four of the surveyed customers provided one or more reasons why they have not used their FEMP software. The average respondent gave 3.8 reasons for not using the software. The vast majority of these reasons deal with customer's computers, including the lack of computers or the inability of their computer to use the programs as provided. Table 3 presents the reasons customers gave for having not used their software.

Table 3 Why customers have not used software on projects

Why customers have not used their software	Number of respondents	Percent of respondents
Do not have a computer	22	18.9
Do not have enough memory or disk space	13	11.1
Software was provided on the wrong size disk	13	11.1
Too difficult to load	8	6.8
Lost or misplaced the software	5	4.3
No need for the software	5	4.3
Too difficult to understand	5	4.3
Gave it to someone else	4	3.5
Have not had time to use it	4	3.5
Computer not capable of using it	2	1.7
Miscellaneous other reasons	10	8.5

Customer Satisfaction and Software Use

This section presents the results of the survey questions pertaining to the use of the FEMP software and the associated levels of customer satisfaction.

Opinions of software performance

Customers were asked to rate the performance of the software in nine different categories, including:

- Ease of loading the software,
- Quality of the documentation,
- Visual appearance and lay-out of the screens,
- Ability of the software to work on customer's hardware,
- Compatibility of the software with their operating system,
- On-screen tools and prompts to help use the program,
- Ability of the program to support analysis needs,
- Quality of the printouts and presentations from the software, and
- Ability to down-load and transfer information from the program.

The results of these rankings indicate that, in general, customers who attend one of the software-related workshops rate the software higher than those who received the software directly from a FEMP office. The experiences and training provided during the workshops significantly help customers understand and use the software. Customers who obtain their software from a FEMP office, without the benefits of the workshop, are not as successful at loading and using these programs.

Survey results for each of the nine performance measurement categories are provided below:

Ease of loading the software

The majority of customers rated the ease of loading the software in the good to excellent range, with scores ranging between 8 and 10 on a 10 point satisfaction scale. However, several customers report scores in the 6 to 7 range, indicating that there is some problem associated with loading the software for some customers, this is especially the case for the attendees of the FEDs workshop where 18% of the responding customers provide scores of 5 or less for "ease of loading the software". Table 4 provides the survey results to this question.

Table 4 Ease of loading the software

Ease of loading the software	Percent				
	Significant improvements needed (5 or less)	Improvements needed (6-7)	Good performance (8-9)	Excellent performance (10)	Don't know
FEDs software received during the workshop	18	6	33	36	6
FEDs software received from FEMP office	7	33	40	13	7
BLCC software received during the BLCC workshop	4	8	42	39	7
BLCC software received from FEMP office	11	11	44	17	17

Quality of the documentation

A strong percentage of customers rate the quality of the documentation in the good to excellent range and suggest that for many people the software documentation provided with the software supports customer needs. This is especially the case for attendees of the workshops where over 50% of the attendees report the documentation in the good to excellent range. However, many customers, especially customers not attending the workshops rated the quality of the documentation in a way that suggests the documentation should be evaluated for improvements. It appears that the documentation used in conjunction with the knowledge obtain during the workshops provides the information needed to operate the software. It also appears that the documentation may not be adequate for individuals not attending the workshops where the software is presented. Table 5 presents the results of customers opinions on documentation quality.

Table 5 Quality of the documentation

Quality of the documentation	Percent				
	Significant improvements needed (5 or less)	Improvements needed (6-7)	Good performance (8-9)	Excellent performance (10)	Don't know
FEDs software received during the workshop	9	24	42	21	3
FEDs software received from FEMP office	21	21	36	7	14
BLCC software received during the BLCC workshop	7	27	46	19	0
BLCC software received from FEMP office	17	39	28	17	0

Visual appearance and lay-out of the screens

Visual appearance of the screens, especially for the BLCC program is also an area that can be improved from the customers perspective. The majority of customers using the BLCC software scored screen appearance and lay-out in the range that suggests improvement are needed and 34% of the customers who attended the BLCC workshop scored in the range where significant changes to screen appearance and lay-out are needed. Customers using the FEDs software report scores that indicate satisfaction with the screen lay-outs. Table 6 provides the results to the questions pertaining to screen appearance and lay-out.

Table 6 Screen appearance and lay-out

Visual appearance and lay-out of the screens	Percent				
	Significant improvements needed	Improvements needed	Good performance	Excellent performance	Don't know
	(5 or less)	(6-7)	(8-9)	(10)	
FEDs software received during the workshop	6	15	51	24	3
FEDs software received from FEMP office	13	13	60	7	7
BLCC software received during the BLCC workshop	34	35	23	8	0
BLCC software received from FEMP office	22	39	22	11	6

Ability of the software to work on customer's hardware

A strong majority of customers for the BLCC software and a majority of the FEDs software customers report program compatibility with their hardware, indicating that the software is configured to operate on most standard systems found in the field. However, here again, there are some scores in the 7 or less range to suggest that people are having some problems with hardware compatibility. This is not unexpected in view of the different operating systems and system capabilities commonly found in the field as well as the rapidly changing technologies associated with different hardware systems. Table 7 provides the survey results to this question.

Table 7 Ability of the software to work on customer's hardware

Ability of the software to work on customer's hardware	Percent				
	Significant improvements needed (5 or less)	Improvements needed (6-7)	Good performance (8-9)	Excellent performance (10)	Don't know
FEDs software received during the workshop	18	12	39	24	6
FEDs software received from FEMP office	7	20	47	20	6
BLCC software received during the BLCC workshop	8	11	46	35	0
BLCC software received from FEMP office	22	6	39	33	0

Compatibility of the software with customer's operating system

The results of this question are similar to the results of the hardware compatibility question. The FEMP software is compatible with the majority of the customer's systems, but there are a significant number of scores in the 5 or less range and in the 6 to 7 range to suggest that some customers are having problems with software compatibility or want the software to be more compatible with other software or operating systems. Table 8 provides the results to the software compatibility question.

Table 8 Compatibility of the software with customer's operating system

Compatibility of the software with customer's operating system	Percent				
	Significant improvements needed (5 or less)	Improvements needed (6-7)	Good performance (8-9)	Excellent performance (10)	Don't know
FEDs software received during the workshop	18	15	39	24	3
FEDs software received from FEMP office	7	7	47	33	6
BLCC software received during the BLCC workshop	15	23	27	35	0
BLCC software received from FEMP office	22	6	28	39	5

On-screen tools and prompts to help use the program

The results to the question pertaining to on-screen tools, prompts and help modes indicate that users of the FEDs software are somewhat more satisfied than users of the BLCC software. A majority of BLCC customers want better on-screen tool and help prompts as do a significant number of FEDs customers. Improvements in these areas will benefit both programs, but especially the BLCC program. Table 9 presents the satisfaction results for the on-screen tools and prompts.

Table 9 On-screen tools and prompts

On-screen tools and prompts to help use the program	Percent				
	Significant improvements needed (5 or less)	Improvements needed (6-7)	Good performance (8-9)	Excellent performance (10)	Don't know
FEDs software received during the workshop	18	21	45	12	3
FEDs software received from FEMP office	13	27	40	7	13
BLCC software received during the BLCC workshop	27	31	30	11	0
BLCC software received from FEMP office	22	39	33	0	6

Ability of the program to support analysis needs

A key satisfaction indicator for the use of analytical software is the ability of the software to support the customer's analytical needs. The survey results to this question indicate that both programs are meeting the needs of a group of customers very well and in some cases this group represents the majority of the customers. With other customers the software seems to be meeting some of the needs and with others there is a gap between the needs of the customer and the performance of the software. This response range is not unexpected. It is very difficult for a single program to meet the analytical needs of a wide range of customers working on a wide range of projects, each with different analytical goals which may or may not be compatible with the reasons for the development of the FEMP software. One question FEMP managers will want to address with regards to meeting customer's analytical needs is if the program should be designed to meet a wide range of customer needs, or if the program should be designed for the potentially more defined needs directly associated with the goals of the FEMP program. If the FEMP program goals drive software development, then many customer needs may not be addressed and the software may serve a limited purpose for the customers and will not be extensively used. If the customer's needs drive software development then the software needs to address a wide range of customer conditions, expectations, projects and operational environments, which may or may not directly address FEMP goals. The key is to have the program meet most all of the customer's needs while still focusing on the FEMP goals.

From this perspective the survey scores reflect that these software packages are filling both the operational needs of the customer and FEMP's needs to encourage energy savings and pollution reductions and are doing both reasonably well. However, the scores also reflect that there are customers who would like to see the software be more in-tune with their individual needs. Table 10 presents the result to this question.

Table 10 Ability to support the customer's analysis needs

Ability of the program to support analysis needs	Percent				
	Significant improvements needed (5 or less)	Improvements needed (6-7)	Good performance (8-9)	Excellent performance (10)	Don't know
FEDs software received during the workshop	12	27	42	9	9
FEDs software received from FEMP office	13	33	33	0	20
BLCC software received during the BLCC workshop	19	31	23	27	0
BLCC software received from FEMP office	17	28	39	11	5

Quality of the printouts and presentations from the software

The quality of the software printouts and presentations needs to be addressed and improved for both the FEDs program and the BLCC software. However, it is especially important to improve the presentations of the BLCC program where the majority of customers scored in the ranges that indicate a need for improvements. This data indicates that while some people score the printouts, presentations, and graphical outputs as good or excellent this is not the case for a great many FEDs users and for a majority of the BLCC customers. Table 11 presents the responses to the printout and presentation quality question.

Table 11 Quality of printouts and presentations

Quality of the printouts and presentations from the software	Percent				
	Significant improvements needed (5 or less)	Improvements needed (6-7)	Good performance (8-9)	Excellent performance (10)	Don't know
FEDs software received during the workshop	15	27	33	12	12
FEDs software received from FEMP office	13	0	33	0	53
BLCC software received during the BLCC workshop	23	42	15	11	8
BLCC software received from FEMP office	17	50	16	6	11

Ability to down-load and transfer information from the program

In general, customers who are aware of the software's ability to down-load or transfer information are not overly satisfied with these performance features. The FEDs software scored more favorable than the BLCC software, but clearly customers are indicating that transferring data from these programs is not a primary strength of these packages. Fifty percent of the customers who were able to rate the BLCC program scored this ability at 7 or less, indicating that this aspect needs attention. Table 12 presents the results from this question.

Table 12 Ability to down-load and transfer information

Ability to down-load and transfer information from the program	Percent				
	Significant improvements needed (5 or less)	Improvements needed (6-7)	Good performance (8-9)	Excellent performance (10)	Don't know
FEDs software received during the workshop	12	27	21	15	24
FEDs software received from FEMP office	7	0	13	0	80
BLCC software received during the BLCC workshop	31	19	15	11	23
BLCC software received from FEMP office	22	17	11	11	39

Software support

Of the 117 individuals surveyed only 13 have attempted to obtain or have obtained software support. As a result, we are unable to report customer satisfaction or experience for the individual software packages. In addition, the experiences of the 13 individuals surveyed may not reflect the experiences of the population of individuals who have taken advantage of the support services offered. However, what is significant is that of the 117 individuals surveyed only 11% have attempted to obtain or obtained support services one and two years after receiving the software. Put differently, 88% of the software customers have not obtained or attempted to obtain software support in the two years they have had the software.

As a result of the low response rates for the support questions all of the survey responses for both packages and for both delivery methods are grouped as a single set of customer comments on software support rather than the experiences pertaining to any single program.

Table 13 presents the distribution of customer who have obtained support across the two packages and two delivery methods.

Table 13 Number of customers obtaining software support

Attempted to obtain or obtained software support	Number of customers who have attempted to obtain or obtained software support
FEDs software received during the workshop	7
FEDs software received from FEMP office	1
BLCC software received during the BLCC workshop	3
BLCC software received from FEMP office	2

Satisfaction with FEMP support

While the total number of customers attempting to or obtaining software support is small, there is a clear trend in the data. Customers report they are satisfied to very satisfied with the familiarity of support staff with their problem, the amount of time available to them from the support staff and the timeliness of obtaining support once they have reached the right person. Satisfaction levels tend to be lower for the ease of determining where to go to obtain support and is significantly eroded when it comes to the amount of time needed to get in contact with the right person. What this data reflects is that customers are, in general, satisfied to very satisfied with the support they receive, but need a better method for identifying and reaching the appropriate support staff. Table 14 presents the survey results on customer satisfaction with support services.

Table 14 Satisfaction with FEMP software support

Satisfaction with FEMP support for FEDs and BLCC software programs n=13	Percent				
	Significant improvements needed (5 or less)	Improvements needed (6-7)	Satisfied (8-9)	Very satisfied (10)	Other
Amount of time needed to contact the right person or office	15	23	15	46	0
Ease of determining where to go for support	16	17	17	50	0
Timeliness of support once you have reached the right person or office	0	0	46	39	15
Amount of time available from the support staff	0	0	39	46	15
Familiarity of support staff with your problem	0	0	31	54	15
Level of staff expertise regarding program uses and applications	0	8	31	46	15
Ability of support staff to understand your specific situation or needs	0	15	31	39	15

The high satisfaction levels associated with obtaining support are also reflected in customer comparisons to non-FEMP software support. That is, the majority of FEMP customers report that the support services they received was better, to much better, than the support they have received from other companies or organizations. Only 8% of the customers included in this response said the FEMP support was worse than others while 33% said it was much better than others. These numbers, while from a small population, demonstrate strong customer satisfaction with FEMP support services, but that some minor modifications in contacting procedures may be needed. Table 15 presents the results of the support services comparison question.

Table 15 FEMP support compared to others

FEMP support compared to others	Percent				
	Worse	About the same	Better	Much better than others	Other
How would you rate FEMP's software support compared to others?	8	25	25	33	8

Overall satisfaction with software

Overall, satisfaction scores for both the FEDs and the BLCC software demonstrate that customers are from somewhat satisfied to satisfied with these programs, with slightly more people reporting satisfaction on the lower half (scores 1-7) of a satisfaction analysis than on the upper half (scores 8-10). In summary, the software programs are providing valuable assistance to FEMP customers, but there is room for improvement in the performance of the software programs to improve customer satisfaction levels. Table 16 presents the customer's responses to the overall satisfaction question.

Table 16 Overall satisfaction with FEDs and BLCC software

Overall software satisfaction n=90	Percent				
	Significant improvements needed (5 or less)	Somewhat satisfied (6-7)	Satisfied (8-9)	Extremely satisfied (10)	Other
FEDs software received during the workshop	10	30	43	17	0
FEDs software received from FEMP office	19	38	37	0	6
BLCC software received during the BLCC workshop	19	35	42	4	0
BLCC software received from FEMP office	17	39	44	0	0

Project and Energy Impacts

The survey also contained a series of questions designed to determine how the use of the software was affecting job activities and if customers were using the software to save energy, dollars or reduce pollution. The results of these questions indicate that the programs are helping professionals accomplish their work and in some cases, are being used to help achieve savings. The results also indicate the programs are providing assistance to many professionals and support their energy projects and decisions, although the programs may not be the only factor or tool being used. That is, the FEMP programs play an important role in job activities along with other tools, working aids and decision systems. The data also shows that there is room for improvement in these areas.

Impacts on customer operations

This section reports survey finding pertaining to the use of the software by surveyed customers and helps quantify the benefits obtained through the use of the software packages.

Help in analyzing opportunities to save

Table 17 demonstrates that customers find the software helpful to somewhat helpful in analyzing opportunities to reduce or control energy consumption. In addition, a significant number (23%) of the BLCC users have found the program to be extremely helpful in this area. However, in both cases a number of customers scored this question low enough to suggest that the program is not as helpful to some users in some situations.

Table 17 Help analyzing opportunities to save

Did the software help you analyze opportunities to reduce or control energy consumption?	Percent				
	Significant improvements needed (5 or less)	Somewhat helpful (6-7)	Helpful (8-9)	Extremely helpful (10)	Other
FEDs software received during the workshop	17	22	52	9	
FEDs software received from FEMP office	20	30	50	0	
BLCC software received during the BLCC workshop	18	27	32	23	
BLCC software received from FEMP office	23	23	46	8	

Comparing energy systems and technologies

Similarly, the programs were also helpful to customers for comparing different energy systems, methods or technologies. In a majority of cases customers responded to this question with scores of 8 or higher, indicating strong satisfaction with the programs. However, in some cases, particularly for customers who did not attend the associated workshops, the software was less useful for this task. It appears that workshop attendance impacts the customer's ability to use the software for comparing different energy systems or technologies. Table 18 presents the results for this question.

Table 18 Software use for comparing energy systems and technologies

Did the software help you compare different energy systems, methods or technologies?	Percent				
	Significant improvements needed (5 or less)	Somewhat helpful (6-7)	Helpful (8-9)	Extremely helpful (10)	Other
FEDs software received during the workshop	4	25	58	13	0
FEDs software received from FEMP office	30	0	70	0	0
BLCC software received during the BLCC workshop	13	26	35	26	
BLCC software received from FEMP office	27	27	36	9	0

Understanding energy efficient opportunities

Customers were also asked if the software helped them obtain a clearer understanding of an energy efficient opportunity. To this question customers indicated that the programs were helpful and in some cases extremely helpful, however, here again, enough scores were in the 5 or less and the 6 to 7 range to indicate there is room for improvement. The programs are providing strong assistance for at least half of the users in helping them understand available energy efficient opportunities and is providing somewhat less assistance for others. Table 19 provides the responses provided by surveyed customers.

Table 19 Software help in understanding energy efficient opportunities

Did the software help you obtain a clearer understanding of an energy efficient opportunity?	Percent				
	Significant improvements needed (5 or less)	Somewhat helpful (6-7)	Helpful (8-9)	Extremely helpful (10)	Other
FEDs software received during the workshop	16	12	54	17	0
FEDs software received from FEMP office	30	20	50	0	0
BLCC software received during the BLCC workshop	29	21	25	25	0
BLCC software received from FEMP office	16	33	42	8	0

Identifying, defining, initiating or improving a project

The FEDs and BLCC software are helping the majority of customers identify, define, initiate or improve a project to some degree and in some cases this assistance is helpful to extremely helpful for a majority of customers. However, as with other questions of this type, the responses also reflect a potential for improvement in this area for some customers.

Table 20 Software help in identifying, defining, initiating or improving a project

Did the software help you identify, define, initiate or improve a project?	Percent				
	Significant improvements needed (5 or less)	Somewhat helpful (6-7)	Helpful (8-9)	Extremely helpful (10)	Other
FEDs software received during the workshop	17	22	48	13	
FEDs software received from FEMP office	22	56	22	0	
BLCC software received during the BLCC workshop	30	22	22	26	
BLCC software received from FEMP office	27	27	36	9	

Help getting the job done faster

In several cases the software helped customers get their job done faster. This was especially true for the FEDs software provided to customers attending the workshop where almost 60% scored this question in the 8 to 10 range. However several customers also indicated that the programs need improvement in this area by scoring this questions at 5 or less. This was especially true for the BLCC software received by attendees in the workshop where almost

40% scored this question at a 5 or less, indicating substantial opportunities for improvements. Table 21 presents the results for this question.

Table 21 Software help in getting the job done faster

Did the software help you get your job done faster?	Percent				
	Significant improvements needed (5 or less)	Somewhat helpful (6-7)	Helpful (8-9)	Extremely helpful (10)	Other
FEDs software received during the workshop	9	32	36	23	
FEDs software received from FEMP office	11	56	33	0	
BLCC software received during the BLCC workshop	38	24	5	33	
BLCC software received from FEMP office	28	21	43	7	

Help getting the job done less expensively

When customers were asked if the software helped them get their job done cheaper or less expensively, many customers indicated that it did. Responses to this question indicate that the software was helpful to extremely helpful in from 43% to 64% of the cases and was somewhat helpful to an additional 14% to 33% depending on the type of software and workshop attendance. The FEMP software is helping customers get to where they need to go using less resources in a significant number of cases. However, significant numbers of customers indicated that the programs may need improvements to help them. This is especially true for customers using the BLCC software and who attended the BLCC workshop. Table 22 presents the results for this question.

Table 22 Software help get jobs done less expensively

Did the software help you get your job done cheaper or less expensively?	Percent				
	Significant improvements needed (5 or less)	Somewhat helpful (6-7)	Helpful (8-9)	Extremely helpful (10)	Other
FEDs software received during the workshop	13	23	41	23	
FEDs software received from FEMP office	22	33	44	0	
BLCC software received during the BLCC workshop	36	21	11	32	
BLCC software received from FEMP office	28	14	50	7	

Help getting the job done better

When customers were asked if the programs helped them do a better job, a majority of customers indicated it did, with most customers scoring this question in the 8 to 10 range. In addition it appears that customers who attended the workshops associated with their software were helped more than customers who received their programs through other FEMP offices. Customers who did not attend the workshops report lower scores for this question than customers attending the workshops. Table 23 presents the customer responses to this question.

Table 23 Software help in doing a better job

Has the software helped you do a better job?	Percent				
	Significant improvements needed (5 or less)	Somewhat helpful (6-7)	Helpful (8-9)	Extremely helpful (10)	Other
FEDs software received during the workshop	9	18	50	23	
FEDs software received from FEMP office	33	33	33	0	
BLCC software received during the BLCC workshop	14	33	19	33	
BLCC software received from FEMP office	28	14	50	7	

Impacts on energy savings, dollar savings or pollution reduction

To supplement the string of questions pertaining to operational impacts the survey included a single question to determine if the software used by the customers were having an impact on saving energy, saving money or in reducing pollution. As reported in a previous workshop evaluation report conducted in conjunction with the software survey and confirmed in the data presented in Table 24, most customers are unable to estimate if, or how, much energy or dollars are being saved as a result of their efforts. On average, for the customers surveyed in the software effort, 61% of the customers could not provide a definitive response to this question. This lack of ability to respond to this question held true for both software programs included in this report. As a result, the scores for both programs are combined for presentation in this report. In summary, managers are unable to report if their efforts are producing savings. This information needs to be collected by methods other than telephone surveys to workshop attendees or software users.

Table 24 Software use to save energy, dollars and reduce pollution

	Percent		
	No	Don't know	Yes
Has the use of the software resulted in a reduction in the use of energy, a pollution reduction or in dollar savings?	25	61	15

Comments and Customer Recommendations

Software users were very responsive with comments and recommendation regarding the software programs they were using. These responses are provided below in the order of the number of customers providing similar comments. For ease of presentation repetitive comments are represented by a number indicating how many times the comment appeared.

In summary, customers want programs that operate in a Windows environment, can work on large and small projects, have high quality printouts and graphics, are up-dated on a regular basis, have excellent on screen help routines and prompts, have faster operations, are easy to operate and understand, have strong documentation and can import and export to other programs customers typically use.

The opinions and recommendations provided by software customers are presented below:

FEDS software customer comments

1. Needs a Windows system (7)
2. Need a simplified program for smaller projects, simple examples and projects (7)
3. Have better graphics, printouts, print options, higher quality output (5)
4. Add new products, technologies and analysis as they become available, up-date more often (5)
5. Need help screens, improved help messages, prompts and error messages (5)
6. Needs to be more user friendly (2)
7. Need a quick reference for help menu use and more documentation (2)
8. Speed up the program, it needs to be faster (2)
9. Needs a version with a CAD interface
10. Need designs for industrial systems
11. Design it for other than federal users
12. Need help with SIR rates and on terms used
13. Need to deal with the differences between actual and estimated savings
14. Need more mechanical system identifications
15. Need a good hard-copy users guide
16. Need to be able to integrate with ASEAM
17. Need import and export capabilities
18. Need to be able to use specs from different countries, (Japan)
19. Has a flawed disk problem that needs to be fixed, program needs quality control
20. Need day and night thermostat setback capability
21. Need to be able to easily change units of measure
22. Need an easier input method and must be able to have different types of output
23. Need to be able to model for special conditions, like museums
24. Need to be more flexible for different buildings and environmental demands
25. Need cost break-downs and real cost figures
26. Needs to be WordPerfect compatible
27. Need more HVAC options

BLCC software customer comments

1. Need a windows version (15)
2. Need better and updated graphics, presentations and outputs (5)
3. Needs to be Excel spreadsheet compatible (2)
4. Program is too slow
5. Program is not accurate
6. Needs to be able to incorporate multiple projects
7. Needs simplification
8. Need more kW decimals points
9. Need to use it with Visual Basic
10. Need to have better help capabilities
11. Need to be able to adjust more default parameters
12. Must be able to merge with MotorMaster and lighting programs
13. Need a quicker format for making comparisons
14. Need more up-dates with projects and stories

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Appendix

Software descriptions

Facility Energy Decision System Software (FEDs)

The Facility Energy Decision System workshop (FEDS) provides training pertaining to the use of FEDs software and other analytical tools for making building energy decisions. The software focuses on selecting energy efficient materials, products and systems and on the operations of those systems in ways that maximize the energy efficiency and reduce the environmental impacts of buildings. The software consists of a method for evaluating different building design systems and identifying opportunities for energy efficient improvements to the building structure, the climate control equipment serving the building and the operation of that equipment. The software helps building operators select and manage different building systems in ways that increase the energy efficiency of the building and in most cases minimize operational costs. The software is provided to attendees of the FEDs workshop which focuses on the use of the software to achieve the results described above.

Building Energy Efficient Life-Cycle Costing Software (BLCC)

The Energy Efficient Life-Cycle Costing software (BLCC) is used to help make decisions pertaining to the energy efficient life-cycle operations of building technologies and systems. In many cases purchase decisions are made on a first-cost, or a first cost plus materials and supplies basis. The LCC software carries the concept further and introduces participants to the concept of making purchase decisions on the total lifetime costs associated with a purchase decision, including the cost of the energy consumed by the product over its useful life. Because in many cases the cost to operate a product is a major component of the total product costs, this software helps identify how to both reduce total costs and increase energy efficiency by including lifetime energy consumption costs in making purchase decisions. This software helps users evaluate different building systems to make purchase and operational decisions.

Software questionnaire

Go to next page.

The entire survey can be found in a sister document entitled, *An Evaluation of the Federal Energy Management Program's Technical Assistance Workshops*. This section only includes the questions asked during the software module included in the larger survey.

Module E1
BUILDING LIFE-CYCLE COSTING SOFTWARE

Our records indicate you received the Building Life-Cycle Costing Software. We would like to ask you a few questions about your experience with this Software. We are interested in your opinions of the software, how you use the software in your organization, and how you think the software can be improved.

E1-1 Before we start I would like to confirm our records. Can you tell me if you received the Building Life-Cycle Costing Software ?

- 1. Don't know, not sure —————→ *(Remind them about the software and ask again)*
- 2. No or repeated response 1. —————↓
- 3. Yes,

Okay, Now lets move on to the next section of the interview
(Section C)

E1-1d Do you recall which version of the software you received?

- 1. No, don't know, not sure *(skip to E1-2)*
- 2. Yes, —————→ E1-1e Which version is that?

Record response as given: _____

E1-1f Are you currently using this version or a different version of the software?

- 1. Same version
- 2. Don't know not sure
- 3. Different version —————→ E1-1g What version are you now using?

Record response as given _____

E1.1g Did you receive a Users-guide with the software?

- 1. Don't know, not sure
- 2. No
- 3. Yes,

E1-2 Can you tell me if you have loaded, examined, or used the software?

- 1. Don't know, not sure
 - 2. No
 - 3. Yes,
- (Remind them about the software and ask again)
- If same response..
- Okay, Now lets move on to the next section. (Section C)

E1-2b What is the main reason why you have not loaded or used the software? (Do not read responses - check all that apply)

- 1. Have not had time to use it
- 2. Have not needed to use it
- 3. Have lost or misplaced it
- 4. Gave it to someone else to use or look at
- 5. Have found it difficult to load
- 6. Have found it difficult to understand
- 7. Do not have a computer available
- 9. Not the right sized disks
- 10. Out of memory and can not load
- 11. My computer is not capable of using it
- 12. Other: _____

Okay, Now lets move on to the next section.

(Go to Section C)

E1-3a I would now like to read a number of topics related to the Building Life-Cycle Costing Software. As I read each topic please rate how well the software performed, or met your expectations by rating each topic on a 1 to 10 scale (with 1 being "very poor performance" and 10 being "excellent performance").

How would you rate the.....

Topics	1-10 Rating	Don't Know	Not Applicable
1. Ease of loading the software	_____	98	99
2. Quality of the documentation with the software	_____	98	99
3. Visual appearance and lay-out of the screens	_____	98	99
4. Ability of the software to work with your hardware	_____	98	99
5. Compatibility of the software with your operating system	_____	98	99
6. On-screen tools and prompts to help you through the program	_____	98	99
7. Ability of the program to support or meet your analysis needs	_____	98	99
8. Quality of the printouts and presentations from the software	_____	98	99
9. Ability to down-load and transfer information from the program	_____	98	99

The next set of questions ask about how you obtain and use software support services and your satisfaction with these services.

E1-3b Have you obtained or attempted to obtain software support services for the Building Life-Cycle Costing Software?

- 1. Don't know or recall —————→ (Skip to E1-4)
- 2. No —————→ (Skip to E1-4)
- 3. Yes,

E1-3c Where did you go or what office did you call to obtain this support?

- 1. Don't know or recall *or*

Record response: _____

E1-3d I would now like to read a number of topics related to the support services you received for the Building Life-Cycle Costing Software. As I read each topic, please rate how well the support you received met your needs on a 1 to 10 scale, with 1 being "very dissatisfied" and 10 being "very satisfied".

How would you rate the.....

Topics	1-10 Rating	Don't Know	Not Applicable
1. Ease of determining where to go, or who to call for support	_____	<u>98</u>	<u>99</u>
2. Amount of time it took to contact the right office or person	_____	<u>98</u>	<u>99</u>
3. Timeliness of support once you reached the right person	_____	<u>98</u>	<u>99</u>
4. Amount of time available to you from the support staff	_____	<u>98</u>	<u>99</u>
5. Familiarity of support staff with the program	_____	<u>98</u>	<u>99</u>
6. Level of staff expertise regarding program uses and applications	_____	<u>98</u>	<u>99</u>
7. Ability of the staff to understand your specific situation or needs	_____	<u>98</u>	<u>99</u>
8. Ability of the support staff to solve your problem or questions	_____	<u>98</u>	<u>99</u>

E1-3e If you were to provide one or two recommendations for improvements to the software support services, what would you recommend?

- 1. _____
- 2. _____

E1-3f When you compare your experiences obtaining support for the Building Life-Cycle Costing Software with support you have obtained for other software designed for specific technical applications, would you say that on average, the support you received for the Building Life-Cycle Costing Software is...

- 1. Much better than others,
- 2. Better
- 3. About the same
- 4. Worse, or
- 5. Much worse than others?
- 6. Don't know

E1-4 Overall, on a 1 to 10 scale, how satisfied are you with the Building Life-Cycle Costing Software?

Score: _____ or 98 Don't know

The next set of questions ask your opinion on how well the Building Life-Cycle Costing Software influenced your ability to incorporate energy efficient technologies and systems into your organization. Please rate each topic using a scale of 1 to 10 (with 1 being not at all helpful and 10 being extremely helpful).

E1-5a How well did the software help you...

Topic Being Measured	Level of software help			
	(1-10 score)	or (Doesn't apply)	or (Already use)	
1. Analyze opportunities to reduce or control energy consumption,	_____	or	98	or 99
2. Compare different energy systems, methods or technologies,	_____	or	98	or 99
3. Obtain a clearer understanding of an energy efficient opportunity,	_____	or	98	or 99
4. Help you identify, define, initiate or improve a project	_____	or	98	or 99
5. Help you get your job done faster	_____	or	98	or 99
6. Help you get your job done cheaper or less expensively	_____	or	98	or 99
7. Help you do a better job	_____	or	98	or 99

E1-5b Now I would like you to think about your projects, and the Building Life-Cycle Costing Software and tell me how you think the software can be changed to improve its usefulness or what capabilities should be added to the program.

(Open-ended, record response)

E1-7 In thinking about the ways that you have used the Building Life-Cycle Costing Software, have any of these uses ultimately resulted in a reduction in the use of energy, pollution or in a dollar savings?

- 1. No —————→ *(Go to Section C)*
- 2. Don't know or not sure —————→ *(Go to Section C)*
- 3. Yes (NOTE: do not read paragraph if workshop fax has been sent)

E1-8 (One of the most important goals for this interview is to determine the amount of energy, pollution or dollar savings that are ultimately being achieved by projects or decisions that use the software packages provided by the Federal Energy Management Programs. We realize that this is sometimes difficult to do because of the different ways the software programs are used by people and organizations. We also realize that people often need to refer to charts or reports to answer questions pertaining to energy and pollution savings. For this reason...)

(I would like to FAX you a very short form that asks about the amount of energy, pollution, and dollars savings from projects where you or your organization have used the Building Life-Cycle Costing Software provided through FEMP's Technical Assistance Services.)

May I FAX this form to you?

- 1. No —————→ *(Go to Section C)*
- 2. Not now, but at a later time —————→ *(Arrange for Fax time)*
- 3. Yes

Date/Day/Time _____

What is your fax telephone number? _____
 Using one form per project, how many forms should I fax to you? _____ Forms

Project 1:

Name of project: _____

Total dollar value of project: \$ _____ .00 Total Square Feet _____
(If Applicable)

Type of Project FEMP Tracks groups here Project Location FEMP Tracks groups here

Energy Savings From Project

Quantity # _____ Units _____ per _____ of _____ Year savings began _____
 kWh Day Electricity
 BTU, Month Natural gas
 Therms Year Propane
 Gallons Other _____ Oil, gasoline, kerosene
 Other _____ Other _____

Dollar Savings From Project

Quantity \$ _____ .00 per _____ from _____ Year savings began _____
 Day Energy savings
 Month Pollution reduction
 Year Both
 Other _____

Pollution Savings From Project

Quantity # _____ Units _____ per _____ of _____ Year savings began _____
 Lbs Day Carbon dioxide
 US tons Month Hydrocarbons
 Metric tons Year Sulfur Oxides
 Gallons Other _____ Nitrous Oxides
 Other _____ Other _____

Actual or Estimated Savings

To the best of your knowledge are these energy, dollar and pollution savings based upon estimates of savings, or are they from actual savings data that you or someone else has measured?

Savings are...	<u>Energy</u>	<u>Dollars</u>	<u>Pollution</u>
	<input type="radio"/> Estimated	<input type="radio"/> Estimated	<input type="radio"/> Estimated
	<input type="radio"/> Actual data	<input type="radio"/> Actual data	<input type="radio"/> Actual data
	<input type="radio"/> Don't known	<input type="radio"/> Don't known	<input type="radio"/> Don't known
	<input type="radio"/> Other _____	<input type="radio"/> Other _____	<input type="radio"/> Other _____

Contribution of Workshop

Which of the following components of the Building Life-Cycle Costing Software were helpful to you in achieving the savings from this project? *(Check all that apply.)*

- The software program
- Printed materials receive through the FEMP workshop along with the software
- Knowledge gained or skills learned in a workshop obtained with this software
- Other _____

Form Tracking Number W001

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