



**ENERGY DESIGN RESOURCES (EDR)
EVALUATION
Prepared for
SOUTHERN CALIFORNIA EDISON**

March 7, 2003

Submitted by:
Opinion Dynamics Corporation
1030 Massachusetts Avenue
Cambridge, MA 02138

TABLE OF CONTENTS

Executive Summary	2
Chapter 1: Introduction	5
Chapter 2: Methodology and Sample	7
Chapter 3: EDR Respondents	10
Chapter 4: Publications	17
Individual Publications	23
eNews	
The Newsletter	
Case Studies	
Commissioning Handbook	
Design Briefs	
Skylighting Guidelines	
Chapter 5: Software Tools	52
Individual Software Tools	57
eQUEST	
eVALUator	
SkyCalc	
EDR Charette	
Energy Savings From Software Tools	88
Chapter 6: Training	99
Chapter 7: Marketing EDR	104
Chapter 8: Major Findings and Recommendations	110
Appendices:	
A: Sources	
B: Survey Instrument	
C: Data Tables (separate attachment)	

EXECUTIVE SUMMARY

Background

Energy Design Resources (EDR), under the auspices of the Savings by Design program, offers a suite of tools (including publications, software tools, and training) to educate architects, engineers, lighting designers, developers, builders, and building operators about techniques and technologies that contribute to energy efficient new construction. The purpose of this evaluation is to describe which tools are used the most, how the tools are used, the extent to which the tools are used, and which tools are of most interest to each of the target market actor groups.

Approach

Opinion Dynamics Corporation collected data through secondary research, depth interviews, and an online quantitative survey with over 400 participating market actors. Activities under the secondary research task included a review of all EDR tools and distribution mechanisms, as well as a review of website statistics. Depth interviews were conducted with Southern California Edison program staff and EDR tool designers. The online survey queried EDR participants about the various tools offered by EDR.

Results

Select results are highlighted below:

- **Who is EDR Reaching?** EDR is primarily reaching engineers (34%), architects (29%), and energy consultants (17%)—a large percentage (54%) of whom work in the Southern California new construction market. Notably, EDR is not reaching lighting designers, developers, buildings owners, or facility managers in great numbers, despite the fact that EDR offers tools specifically for these groups.
- **Which Tools are Most Utilized?** In the aggregate, more respondents (53%) have used the EDR publications than the software tools (34%) or trainings (19%). Actual use of each of the individual tools varies, with the largest percentage of respondents using eNews (34%) followed by eQUEST (27%). The other three software tools (EDR Charette-2%, eVALUator-5%, and SkyCalc-11%), as well as the Commissioning Handbook (9%) and most of the trainings, are used by the least number of respondents. In-person training sessions (on-site-8% or at an Energy Center-12%), while infrequently used, have higher rates of participation than online training (1 to 2%).
- **Why are Some Tools Underutilized?** Low levels of awareness is one of the major reasons why some of these tools are not being used. In general, respondents appear to be much more aware of the software tools (with the exception of EDR Charette), than of EDR publications. Respondents are least aware of the trainings offered by EDR. For several specialty-type publications or software tools, like the Commissioning Handbook or SkyCalc, the low levels of awareness and use are due almost entirely to the fact that there are very few building owners, developers, and lighting designers among the current EDR participants.

- **Who is Using the Tools the Most?** While EDR has reached over 2,300 market actors in the new construction market (and more than 1,200 in the Southern California market), unfortunately, more than a quarter of the people reached by EDR are not using the tools provided to them. Although some respondents are not using the tools because the tools are not applicable to the work that they do, others represent missed opportunities to affect the new construction market. Engineers and energy consultants appear to be the primary users of many of the EDR tools such as the publications and software. Architects are less likely than other market groups to use many of the tools, despite the fact that they are probably the most important market actor group because they are in closest contact with the end-user. Market actors outside Southern California actually tend to be users of several EDR tools more so than their Southern California counterparts. However, in-person trainings, as expected, are more frequently used by those in Southern California.
- **What is the Impact of these Tools?** In general, the software tools appear to be used primarily as a rough-cut estimate of energy savings in the schematic phase of the design process. Of all of the tools offered, eQUEST seems to lead to the largest savings. In addition to being used by a large percentage of people, users of eQUEST tend to use it more frequently and on more projects. Users also indicate that this tool is useful for a variety of systems. Among publications, eNews is having the largest impact due to its wide readership. Finally, most participants of the various training sessions stated that the training sessions have helped to increase the use of energy efficient design practices.

Conclusions

Transforming the new construction market using the suite of educational tools provided by EDR will require EDR to more actively reach out to architects, engineers, and other key market actors. Our findings, in the context of the existing research on the market, can be useful in the effort to penetrate these segments, educate market actors, and transform the market.

First, awareness and education about energy efficient technologies and designs—as well as the resources available through EDR—must increase among architects and other market actors. In order to increase awareness (and use) of EDR tools, EDR should consider actively cross promoting its tools. Approximately 75% of those that have come into contact with the program (more than 1,700 people) have read at least one publication, used at least one software tool, or participated in at least one training offered by EDR. While the reach of EDR is relatively broad, more than a quarter of the people reached through this program are not using the tools provided to them and very few seem to have used multiple types of tools (such as publications *and* tools *and* training) despite the fact that these different types of tools complement each other. Although some of these respondents are not using the tools because the tools are not applicable to the work that they do, others represent missed opportunities to affect the new construction market. Leveraging the contacts that occur through one tool, to disseminate information about the other available tools, will help to increase the use of all EDR tools and will help guide professionals to the tools that best serve their purposes.

The EDR program should also aggressively promote its website and suite of tools. EDR can do this through the use of trade journals, associations, and links from other key websites that attract new construction market actors. EDR should also consider revising the EDR website to better inform website users about what the tools are best used for, and what value they offer.

While these actions will help to increase awareness, the EDR program may also want to consider providing additional support and trainings to encourage use once awareness is established.

Finally, to increase use of the tools, the EDR program should consider conducting additional research to better understand the needs of the market in relation to the existing tools. The information gathered through additional research will allow program administrators to identify changes that could make the tools more valuable to new construction market actors.

Based on our findings above, therefore, future EDR efforts should be targeted at expanding EDR's reach and getting those who have been reached to further utilize the tools provided.

CHAPTER 1: INTRODUCTION

Energy Design Resources (EDR) began in 1998 as a stand-alone market transformation program to provide information and tools to encourage energy efficient design among non-residential new construction projects. It was developed to educate architects, engineers, lighting designers, developers, builders, and building operators about techniques and technologies that contribute to energy efficient new construction. This study is an evaluation of who is using these tools, how the tools are used, and the extent to which the tools are used.

The tools provided through EDR are primarily disseminated through the EDR website, www.energydesignresources.com, and include six publications, four software tools, and several training opportunities (both in-person or over the internet), as shown in Table 1-1.

Table 1-1. Energy Design Resources Tools

EDR Publications	EDR Software Tools	EDR Trainings
eNews An electronic newsletter for designers	eQUEST® Energy Analysis Software: An easy-to-use building energy use analysis tool that can quickly and accurately estimate the impact of various building design options.	On-Site Presentations Technical seminars for your staff given at your location
Design Briefs A series of publications discussing energy efficient technologies and design techniques.	eVALUator Financial Analysis Software: This program calculates the life-cycle benefits of investments in improved building design. It analyzes the financial benefits from building improvements that reduce energy cost, raise employee productivity, and enhance tenant satisfaction.	Virtual Workshops Sessions that combine multi-media with the internet to provide 24-hour access for participants to complete courses at their own pace.
Skylighting Guidelines An in-depth document written to help architects and engineers use skylights to maximum advantage in commercial and industrial buildings.	SkyCalc™ Skylighting Tool for California: A Microsoft Excel™ spreadsheet application that helps building designers determine the optimum skylighting strategy to achieve maximum lighting and HVAC energy savings for a building.	EDR Lights An online course that provides useful professional level education on high performance lighting for the workplace — especially offices, retail, and industrial buildings.
Commissioning Handbook An in-depth source book that introduces building owners to the benefits and procedures of commissioning, and gives design professionals the tools to incorporate commissioning into their projects.	EDR Charette Online Tool: An online tool that allows the user to investigate energy impacts on a typical building and that presents the analysis graphically in an easy to understand web-based format.	Energy Center Training Seminars and workshops provided by the Customer Technology Application Center (CTAC) in Irwindale.
Case Studies Reports on projects in Southern California that successfully use skylighting or integrated design techniques.		
The Newsletter A quarterly publication targeted at building owners.		

In PY2002, EDR was incorporated into the Savings By Design (SBD) program, which encourages energy efficient designs for new non-residential buildings by offering incentives for proven energy savings. EDR, therefore, is currently used to complement and/or supplement the SBD program by offering additional tools to assist with the design of energy efficient new buildings. Since EDR is part of the SBD program, it has no separate programmatic goals.

Over the years, the budget for EDR has been greatly decreased and the focus of the program has been narrowed. The current focus of this program is on encouraging additional use of the existing tools and enhancing existing tools to meet the needs of the new construction market.

The primary objective of this evaluation is to describe how the EDR tools are transforming the new construction market within SCE's territory. The evaluation is designed to help support any necessary redesign of the program and meet the overall goal of promoting energy efficiency within the Non-Residential New Construction Market in Southern California Edison's Territory.

CHAPTER 2: METHODOLOGY AND SAMPLE

In support of the evaluation of EDR, Opinion Dynamics conducted:

1. *Secondary Research*,
2. *Depth Interviews with Program Staff and Tool Developers*, and an
3. *Online Quantitative Survey* with EDR participants.

Each of these tasks is described in more detail below.

Secondary Research

Activities under the secondary research task included a review of all EDR tools and distribution mechanisms. ODC also reviewed all website statistics gathered prior to this evaluation. As a result of this secondary research review, ODC compiled program data such as the number of website hits, the number of seminar attendees, and other key programmatic data.

Depth Interviews with Program Staff and Tool Developers

Following the secondary research review, ODC conducted informal in-depth interviews, which took place during July and August 2002, with SCE program staff and EDR tool designers, including

- Janith Johnson, Southern California Edison—(Manager of New Construction Services);
- and representatives of:
- JJ Hirsch & Associates – (eQUEST);
 - Architectural Energy Corp. – (eVALUator, Design Briefs, and on-site training);
 - Heschong Mahone Group – (SkyCalc);
 - Geopraxis – (EDR Charette);
 - E-Source– (Design Briefs); and
 - Geltz Communications – (CD-ROM, website, and binder).¹

Through these interviews, ODC gathered information on the development of the EDR tools, the intent of these tools, the target audience and goals of the EDR program and tools, and how all of the EDR information and tools are disseminated. This information on the target audience and the intent of the tools guided the development of the quantitative survey instrument.

Online Quantitative Survey

After conducting the in-depth interviews, ODC developed and fielded an online survey for EDR participants in September 2002. For the purpose of this evaluation, EDR participants are defined

¹ Note that the Commissioning Handbook was done by a project manager at PECEI who has since left the company. Furthermore, this tool was developed under contract to PG&E. For these reasons, we did not interview the developers of the Commissioning Handbook in this evaluation performed for SCE.

as people who have come into contact with any EDR publication, training or seminar, or software tool such as SkyCalc, eQUEST, eVALUator, or the EDR Charette. Survey participants for the sample included all EDR participants since the program's inception in 1998.

The sample came from program lists of training attendees, people who downloaded software, and electronic lists of website members and newsletter recipients. These lists included:

- approximately 640 on-site training participants;
- 2,410 recipients of eNews, the online newsletter;
- 514 recipients of eQUEST;
- 453 recipients of SkyCalc;
- 451 recipients of eVALUator; and
- 362 people who viewed or used the EDR Charette tool.

After removing all invalid and duplicate email addresses (e.g., a single user may have downloaded several tools and received the newsletter), the sample included approximately 3,172 unique EDR participants. Of the 3,172 email addresses, an additional 765 addresses proved to be “undeliverable” and were removed from the sample. We also removed an additional 107 addresses that were not part of the targeted audience (i.e., PG&E staff, SCE staff, SDG&E staff, and the contractors that developed the tools). The total revised sample, therefore, was 2,300.

All of the EDR participants in the sample received an email invitation to participate in the online survey. EDR participants that did not complete the survey were sent two email reminders.

Overall, 405 EDR participants completed the online survey. These respondents represent nearly 18% of the total sample population.

Note that although the available email addresses came from the lists mentioned above, email addresses were not associated with information on whether the participant actually used any of the tools provided. We used survey responses, therefore, to categorize respondents as users or non-users. Throughout our report, therefore, we refer to the following groups:

EDR participants: This group includes all 2,300 market actors in our sample. These market actors all came into contact in some way with EDR. This is demonstrated by the fact that each respondent voluntarily submitted his or her email address to EDR. Despite the fact that all respondents voluntarily submitted their email, due to lack of EDR branding, some respondents may not be aware of EDR. For example, one respondent may have participated in an on-site training session on skylighting design but not realized that this training session was part of EDR.

EDR respondents: This group includes the 405 EDR participants that completed the online survey.

EDR users: This group includes all EDR respondents that have read a publication, used a software tool, or participated in a training session. (Note that just downloading software, signing in to the website, or being emailed the online newsletter does not qualify the respondent as a user. The respondent must indicate that they have *read* a publication, *used* a software tool, or *participated* in a training session.)

EDR non-users: This group includes all EDR respondents that have not read a publication, used a software tool, or participated in a training session. “Non-users” may have signed in to the EDR website or downloaded a tools but not actually used any of the tools. Alternatively, they may have submitted their email address to receive eNews and never read the publication, but rather just deleted it from their inbox.

Since most of the EDR tools are available through the EDR website, these tools are available to people who work across the state of California, the country, and even overseas. For that reason, we also asked respondents whether they work on buildings in Southern California in order to better understand which of our respondents are actually affecting the Southern California market. Many of the tables in the following sections report overall responses in addition to responses for the Southern California market. Often times the responses of the two markets are similar; differences, however, are noted when they exist.

Note also that because this survey was conducted online, we chose not to include a “don’t know” response for several questions in order to encourage respondents to answer rather than allowing them to take the easy way out and check the “don’t know” option. In order to facilitate completion of the survey when respondents truly did not know the answer respondents were given the option of skipping questions. The number of respondents for a particular question, therefore, might be less than expected. For example, although all 405 respondents were asked about the number of employees that work for their company, 48 respondents skipped over this question. Thus the total number of responses ($n=357$) is less than the expected number of 405. In the following chapters, we report responses only for those who answered the question.

The next chapter, Chapter 3, examines some of the major characteristics of the groups of market actors that made up our EDR respondents. Major statistical differences are noted in the tables. For additional details on the data collected, please refer to the survey instrument in Appendix B and the WinCross tables in Appendix C (provided as a separate attachment).

CHAPTER 3:

EDR RESPONDENTS

EDR targets all market actors that are involved in the design of new buildings. The focus of EDR is primarily on mid- and upstream market actors such as architects and engineers, which include a large number of individuals in California. According to a study of new construction market actors, “The [California] NRNC market [is] served by over 7,100 architectural and engineering firms,²” which represent many more individual architects and engineers. The intent of this chapter is to characterize EDR respondents and give the reader a sense of EDR’s penetration into the new construction market.

Table 3-1 breaks down EDR respondents by occupation. Of the 405 EDR respondents, approximately 63% are architects or engineers. Assuming that 63% of all 2,300 EDR participants fall into one of these two groups, this means that EDR has reached approximately 1,500 architects and engineers.³ Only some of these architects and engineers serve the California market while others are located in other areas of the country or in some cases, overseas. These 1,500 architects and engineers, therefore, represent just a fraction of the total number of architects and engineers that serve the California new construction market.

As we look more closely at the data, engineers (including mechanical, electrical, civil, and energy engineers) represent the largest group of EDR respondents (34%). Engineers are thought to be knowledgeable about equipment, controls and designs, but “less interested than architects in the sustainability dimensions of building energy efficiency.⁴” Thus, while engineers are more likely to use energy design tools such as the software tools offered by EDR, they have less control over the final design since they typically deal with the owner through the architect.⁵

Architects, which make up 29% of EDR respondents, are “assumed to be the primary contact with the owner and...the project leader, while the engineer takes a secondary role in the final processes of the design of a building.⁶” Architects, therefore, might represent an even more important market for EDR than engineers since they tend to have more control over the design. Based on secondary information, architects appear to be generally interested in energy efficiency options and link it closely with issues of sustainability.⁷ This group, however, is believed to have less knowledge about equipment and material costs.⁸

Energy consultants represent another large group of EDR respondents. Over 17% of respondents describe their occupation as an “energy consultant.” Our survey asked a limited number of questions about occupation, thus further exploration about the role of an energy consultant might be warranted in future research.

² RLW Analytics Inc., Pacific Gas & Electric Company Market Actors Study, July 28, 1999. (Market Actors Study)

³ Note that this value is extrapolated from our respondent data. There is some possibility that a self-selection bias for a particular type of respondent may have occurred.

⁴ The Heschong Mahone Group, Non-Residential New Construction Market Assessment and Evaluation, February 29, 2000. (NRNC MA&E)

⁵ NRNC MA&E

⁶ Market Actors Study

⁷ NRNC MA&E

⁸ NRNC MA&E

It is interesting to note that despite the fact that EDR offers specific tools for skylighting design and placement, as well as several Case Studies and Design Briefs on daylighting, very few lighting designers appear to be using the tools; lighting designers represent only 3% of respondents. Furthermore, while EDR offers eVALUator, which is a software tool specifically targeted at downstream market actors such as developers, just over 1% of all EDR respondents are owners, owners' representatives or developers.

Table 3-1. Occupations of EDR Respondents

Occupation	All Respondents (n=405)	Works in Southern California Market	
		Yes (n=217)**	No (n=181)
Engineer (including 110 mechanical engineers, 18 electrical engineers, 5 civil engineers and 3 energy engineers)	34%	30%	36%
Architect	29%	35%*	23%
Energy Consultant	17%	16%	18%
Lighting Designer	3%	3%	3%
Facility Manager/Building Operator	3%	1%	4%
Equipment or Materials Vendor	3%	3%	3%
Energy Manager	2%	2%	3%
Contractor/Construction Manager	1%	--	3%
Interior Designer	1%	2%	--
Owner or Owner's Representative	1%	2%	--
Utility Consultant	1%	1%	1%
Environmental Professional	1%	1%	1%
Educator	1%	-%	1%
Software Professional	-%	-%	1%
Developer	-%	-%	--
Other	2%	2%	3%

** Does not add to 100% due to rounding.

*Statistically higher percentage of respondents than comparison group at a 90% confidence level.

Of all EDR respondents, slightly over half, or 54%, work in the Southern California new construction market. Assuming that 54% of all EDR participants work in this market, this represents more than 1,200 people. The remaining 46% work on projects in other parts of California, across the United States, and internationally. As shown in the table above, a significantly higher percentage of architects reached by EDR work *in the Southern California market* compared to outside of this region.

Table 3-2 on the following page shows that EDR respondents appear to work for companies of various sizes. Just over a quarter of respondents work for companies with 10 employees or less, while 34% of respondents work for companies with over 90 employees. Respondents who work on buildings in Southern California, however, tend to represent larger companies.

Table 3-2. Number of Employees at Respondent's Company

Number of Employees	All Respondents (n=357)	Works in Southern California Market	
		Yes (n=217)	No (n=181)
0-10	28%	20%	39%*
11-90	38%	42%*	31%
>90	34%	38%*	30%

* Statistically higher percentage of respondents than comparison group at a 90% confidence level.

Because some of these companies may perform a variety of tasks, (many of which are not related to new construction), the number of non-residential new construction projects started each year by the company serves as a better proxy (when looking at company's influence on the new construction market as a whole) than number of employees. F.W. Dodge data indicate that there were over 9,500 nonresidential projects that started construction in California in calendar year 2001, equally divided between new construction and alteration projects.⁹ Approximately 1,400 of these projects were in Southern California Edison's (SCE) territory.¹⁰ As shown in Table 3-3, the majority of the companies (59%) represented by EDR respondents started less than 20 projects in the last year. However, 17% of the companies represented started over 90 projects last year.¹¹ Specifically in Southern California, 53% of EDR respondents started less than 20 projects in the last year while 21% started over 90 projects. As the data in Table 3-3 shows, EDR respondents that work in the Southern California market appear to represent larger companies than the respondents outside of this region.¹²

Table 3-3. Number of New Non-Residential Projects Started by Respondent's Company

Number of Projects Started Last Year by Respondent's Company	All Respondents (n=336)**	Works in Southern California Market	
		Yes (n=184)**	No (n=146)**
0-10	43%	33%	55%*
11-20	16%	20%*	12%
21-30	8%	11%*	5%
31-40	4%	3%	5%
41-50	7%	8%	5%
51-60	2%	2%	2%
61-70	--	--	--
71-80	1%	2%	1%
81-90	1%	1%	1%
>90	17%	21%*	13%

** Does not add to 100% due to rounding.

⁹ Quantum Consulting, NRNC Market Characterization and Program Activities Tracking Report PY2001, March 2002. (MCPAT)

¹⁰ MCPAT

¹¹ Note that these numbers may be slightly misleading since more than one person from the same company may have answered this question.

¹² While the data in this study reflects the information collected from EDR respondents, it is interesting to note that the MPCAT study indicates that even the top engineering or architectural firms usually start less than 50 projects a year. In the MPCAT study, only one engineering firm and one architectural firm are noted to have started over 50 projects in PY2001.

Even more representative of the respondent's influence on the new construction market is the number of projects that the respondent himself (or herself) worked on. Most respondents (77%) work on less than 10 non-residential new construction projects a year, with the median number of projects per respondent being between 4 and 5 a year.¹³ (See Table 3-4.) Thirteen percent of respondents, however, were involved in 11 to 20 projects a year last year, and 10% of respondents were involved in over 20 projects. This distribution of respondents across the number of projects is mirrored among respondents that work on buildings in Southern California.

Table 3-4. Number of New Non-Residential Projects Started by Respondents

Number of Non-Residential Projects Started Last Year by Respondents	All Respondents (n=340)	Works in Southern California Market	
		Yes (n=184)**	No (n=150)
0-10	77%	76%	78%
11-20	13%	14%	12%
21-30	3%	4%	3%
31-40	1%	1%	1%
41-50	3%	3%	3%
51-60	1%	1%	1%
61-70	--	--	--
71-80	1%	1%	1%
81-90	--	--	--
>90	1%	2%	1%

** Does not add to 100% due to rounding.

While some of the projects included by respondents may overlap (if, for example, both the architect and engineer on the same project), in all, the 405 EDR respondents stated that they were involved in a total of 3,680 projects.

Respondents, as shown in Table 3-5, most frequently work on office buildings (67%), followed by schools (46%), public assembly buildings (29%), and retail stores (28%).

Table 3-5. Types of Buildings Most Frequently Worked On (multiple response)

Tool Used	All Respondents (n=405)
Office	67%
Schools	46%
Public Assembly	29%
Retail	28%
Residential	9%
Industrial	8%
Healthcare (hospitals, etc.)	6%
Government	4%
Laboratories	4%

As mentioned above, the number and type of projects that respondents start each year gives insight into the reach that these respondents have on the new construction market. Educating and

¹³ Note that because the range was so large we used the median rather than the mean.

encouraging just one respondent to use the EDR resources to design more efficiently can affect a number of new building projects each year.

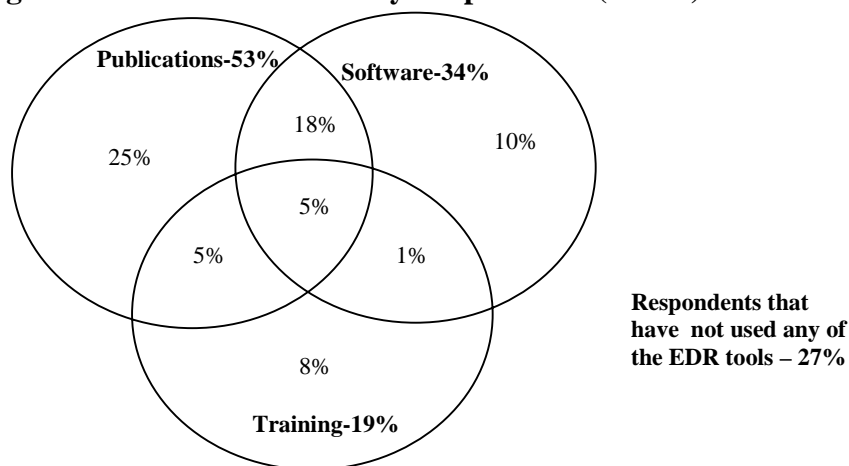
EDR Tools Used By Survey Respondents

Over 2,300 market actors in new construction markets have come into contact with EDR. Yet while the number of people reached by EDR is rather large, over one-quarter (27%) have never read a publication, used the software tools, or participated in a training session. Thus despite the fact that many market actors have been reached through the program,¹⁴ more than one-quarter of the people reached through this program are not using the tools provided to them and remain non-users. Additional insights on the reasons for this and ways to increase tool use are provided in later sections of this report. It is worth mentioning here, however, that although some of these respondents are not using the tools because the tools are not applicable to the work that they do, others represent missed opportunities to affect the new construction market.

While 27% of respondents overall did not use any EDR tools, nearly three-quarters of EDR respondents *have used* the EDR tools. In the remaining sections of this report, we refer to these 294 respondents, representing 73% of all respondents, as “EDR users.”

Figure 3-1 below shows which major categories of tools (i.e., publications, software, or training) respondents have used. In the aggregate, more respondents (53%) have used the EDR publications than the software tools (34%) or trainings (19%). As seen by the percentages in the intersection of the tools, only some respondents are using more than one category of tools. Furthermore, only 5% of respondents are using all three categories (i.e., publications, software and training) despite the fact that many tools in different categories complement each other.

Figure 3-1. EDR Tools Used By Respondents (n=405)



Using Table 3-6, we can see that many (nearly a third) of the architects that responded did not end up using any of the EDR tools. One-half of the architects (50%), however, have read at least

¹⁴ “Reached through the program” indicates that they either visited the site and entered their email address or somehow submitted their email address to one of the EDR sample lists described in Chapter 2.

one EDR publications, and nearly a quarter (22%)—more than any other occupational group—participated in a training.¹⁵ Fewer architects (only 17%) used the software tools.

Engineers were even more likely to read publications (a total of 57% of engineers have read at least one publication) and more likely to use software (a total of 41% of engineers used software compared to only 17% of architects). Overall, 15% of engineers participated in the training.

Energy consultants were equally as likely as engineers to read at least one publication: 58% of energy consultants had read at least one of EDR’s publications. This group was much more likely than architects or engineers, however, to use the software tools: 61% of all energy consultant respondents had used at least one of the software tools. Approximately 20% of energy consultants participated in training sessions.

Table 3-6. EDR Tools Used By Occupation

Tool Used	Architects (n=118)	Engineers (n=136)	Energy Consultants (n=69)	Other (n=82)
None	32%	29%	9%	34%
Publications only	29%	24%	19%	28%
Training only	14%	2%	7%	10%
Software only	4%	10%	26%	5%
Publication and software	13%	22%	26%	13%
Publication and training	8%	4%	4%	4%
Software and training	--	2%	--	--
All three	--	7%	9%	6%
TOTAL	100%	100%	100%	100%

While the EDR tools were designed for the California new construction market, their value clearly extends beyond the California market. As mentioned above, of all EDR respondents, slightly over half work on buildings that are located in Southern California. Others, however, work on projects across the United States and internationally. While some aspects of the tools (such as the energy rates within eQUEST) are clearly geared toward the California market, EDR has made an effort to create tools that can be adapted to other regions. Table 3-7 breaks down EDR users and non-users for Southern California only.

**Table 3-7. EDR Tools Used By Occupation
For Respondents Who Work in the Southern California Market**

Tool Used	Architects (n=75)	Engineers (n=66)**	Energy Consultants (n=35)	Other (n=41)**
None	35%	26%	9%	32%
Publications only	21%	20%	14%	22%
Training only	21%	5%	14%	15%
Software only	5%	12%	20%	5%
Publication and training	11%	6%	9%	5%
Publication and software	7%	17%	23%	12%
Software and training	--	3%	--	--
All three	--	12%	11%	10%

**Does not add to 100% due to rounding.

¹⁵ Note that to arrive at these numbers, add all of the rows that include “publications,” or all of the rows that include “training,” etc.

Additional details on the use of these publications, software tools, and training are provided in the following three chapters.

CHAPTER 4: PUBLICATIONS

This section examines EDR’s six publications in order to provide a better understanding of who reads these publications, which information is most useful, and where improvements can be made. The objective of this chapter is to help SCE understand how to improve the content and market their publications.

Overall, approximately 53% of respondents have read at least one publication. The remaining 46% (nearly half of all respondents) have never read any of the publications offered by EDR despite the fact that they have come into contact with EDR. (See Table 4-1.)

Table 4-1. Respondents Who Have Read at Least One Publication

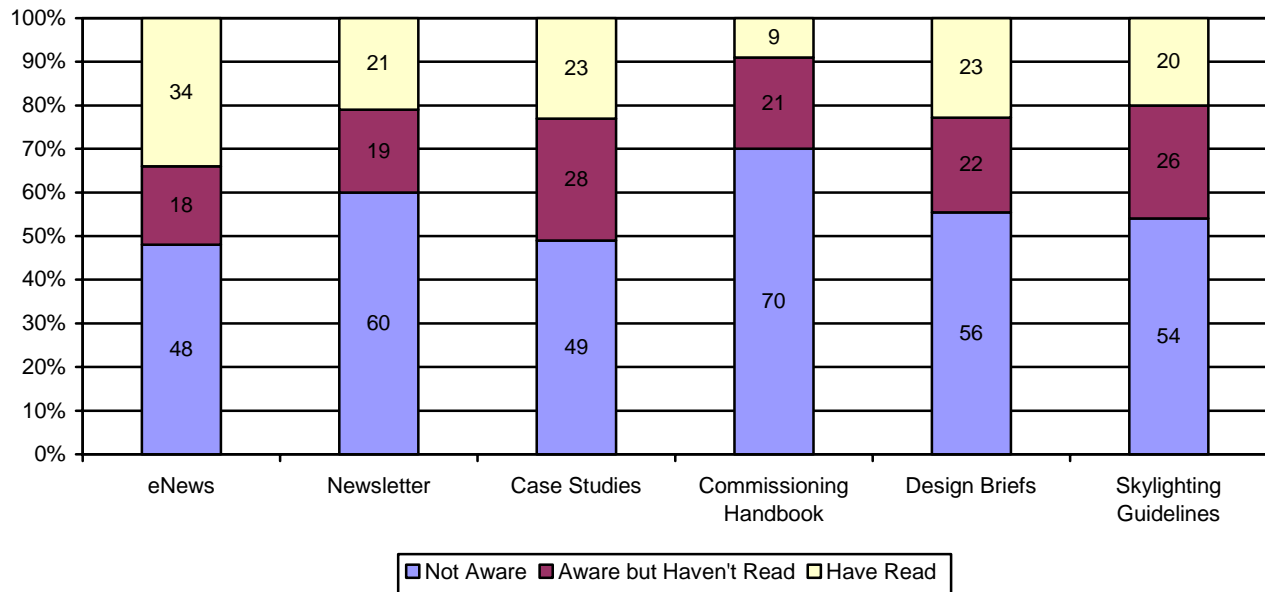
	All Respondents (n=405)**	Work in Southern California Market (n=217)
Publications Only	25%	20%
Publications and Software	18%	13%
Publications and Training	5%	8%
Publications, Software, Training	5%	7%
Have Not Read Any Publications	46%	52%

**Does not add to 100% due to rounding.

Looking individually at the six publications (see Figure 4-1), between 9% and 34% have read the various publications. Out of the six publications mentioned in the survey, respondents are most likely to have read eNews (34%) and least likely to have read the information in the Commissioning Handbook (9%). eNews is the only publication currently being actively sent out to market actors. The fact that this publication is sent out frequently—and therefore is in front of respondents the most often—may help to explain why this publication has the largest readership.

Interestingly, of all the publications EDR offers, eNews is read by the most number of respondents (34%), but it received the lowest score for usefulness. By comparison, the least read publication (with only a 9% readership by respondents), Commissioning Handbook, was also considered the most useful by its readers.

The largest reason for the low readership appears to be a lack of awareness of the publications. As shown in Figure 4-1, familiarity with the publications in general is low. For all six publications, approximately one-half or more of all EDR respondents have never heard of the publication. For each of the six publications, those not aware ranged from 48% (for eNews) to 70% (for the Commissioning Handbook) of respondents.

Figure 4-1. Familiarity with Publications (n=405)

Among the specific occupational groups, 58% of energy consultants, 57% of engineers and 50% of architects have read at least one publication. (See Table 3-6).

Table 4-2 on the following page takes a look at the familiarity and interest in the six EDR publications by occupation. Readership of many of the publications seems to be highest among engineers.

Engineers are most likely to read eNews: 41% of engineers have read eNews. Approximately one-quarter of the engineers have read Design Briefs (28%), Newsletter (25%), Case Studies (24%) and Skylighting Guidelines (24%). Despite the fact that only 14% of engineers have read the Commissioning Handbook, they are more likely than any other group to read this publication.

Architects are also most likely to read eNews than any other publication: 30% of architects have read this publication. After eNews, the next greatest percentage of architects who have read a publication is for Case Studies (22%). Only 4% have read the Commissioning Handbook. While architects are generally not one of the largest groups of readers, interest among this group is generally high. Increasing awareness among architects, therefore, will also help to raise readership.

Among energy consultants, Case Studies (32%), Design Briefs (30%), and eNews (29%) are all relatively widely read. Slightly fewer have read the Newsletter (26%) and the Skylighting Guidelines (23%). Again, the Commissioning Handbook was the least read publication among energy consultants, with only 9% having perused this publication.

Table 4-2. Familiarity and Interest in Publications by Occupation**eNews**

	Engineers (n=136)	Architects (n=118)	Energy Consultants (n=69)	Other (n=82)
Read	41%	30%	29%	32%
Aware and Interested	16%	18%	14%	13%
Previously Unaware but Interested	35%	45%	45%	41%
Not Interested	7%	8%	12%	13%

Commissioning Handbook

	Engineers (n=136)	Architects (n=118)	Energy Consultants (n=69)	Other (n=82)
Read	14%	4%	9%	7%
Aware and Interested	18%	19%	25%	18%
Previously Unaware but Interested	60%	61%	54%	59%
Not Interested	8%	15%	13%	16%

Newsletter

	Engineers (n=136)	Architects (n=118)	Energy Consultants (n=69)	Other (n=82)
Read	25%	13%	26%	23%
Aware and Interested	15%	19%	14%	16%
Previously Unaware but Interested	41%	39%	42%	43%
Not Interested	18%	29%	17%	18%

Design Briefs

	Engineers (n=136)	Architects (n=118)	Energy Consultants (n=69)	Other (n=82)
Read	28%	17%	30%	16%
Aware and Interested	25%	19%	26%	15%
Previously Unaware but Interested	45%	61%	43%	61%
Not Interested	2%	3%	--	9%

Case Studies

	Engineers (n=136)	Architects (n=118)	Energy Consultants (n=69)	Other (n=82)
Read	24%	22%	32%	17%
Aware and Interested	25%	26%	29%	26%
Previously Unaware but Interested	40%	46%	33%	45%
Not Interested	11%	6%	6%	12%

Skylighting Guidelines

	Engineers (n=136)	Architects (n=118)	Energy Consultants (n=69)	Other (n=82)
Read	24%	16%	23%	17%
Aware and Interested	26%	20%	32%	21%
Previously Unaware but Interested	37%	58%	30%	44%
Not Interested	14%	6%	14%	18%

As the data in Table 4-3 shows, respondents who do not work in the Southern California market are more likely to have read eNews, Case Studies, Design Briefs, and Skylighting Guidelines than those in Southern California.

Table 4-3. Publication Readers Who Do and Do Not Work in Southern California

Have Read Publications	Works in Southern California Market	
	Yes (n=217)	No (n=181)
eNews	29%	39%*
Newsletter	19%	24%
Case Studies	20%	28%*
Commissioning Handbook	7%	12%
Design Briefs	18%	29%*
Skylighting Guidelines	17%	24%*

* Statistically higher percentage of respondents than comparison group at a 90% confidence level.

Overall, *interest* among those who have not already read the publications is generally very high. (See Table 4-4.) Therefore, just raising the awareness of the EDR publications and getting these publications to be more visible may significantly increase readership and, in turn, influence current design practices among new building professionals. Respondents who have not already read the publications appear to be very interested in the Commissioning Handbook¹⁶ and the Design Briefs, a series of publications that discuss energy efficient technologies and design techniques. Of all of the publications, respondents are least interested in the Newsletter. This is as expected, however, given that this publication targets building owners and developers, which represent a very small fraction of EDR respondents.

Table 4-4. Overall Interest in Publications (n=405)

	eNews	Newsletter	Case Studies	Commissioning Handbook	Design Briefs	Skylighting Guidelines
Interested	57%	58%	67%	79%	75%	67%
Not Interested	9%	21%	9%	13%	3%	13%

*Note the values in the table sum by column, not row. Note also that the percentage of respondents not represented in each column are respondents who have already read the publication. For consistency, we present this data as a percentage of the overall population. 'Not interested' indicates that once these respondents are informed about the nature and content of the publication, they stated that they were 'not interested.'

Of the small percentages that are 'not interested' in these publications, it is generally because they feel that the information provided is not relevant to the work that they do, or, to a lesser degree, that they do not have time to read the publications. Even for these respondents, however, having access to information in a digestible format would increase the likelihood that they will refer to it in the future.

¹⁶ The large percentage of interested respondents is mostly due to the fact that they were previously unaware of this publication.

Areas of Interest for Future Publications

Respondents who had read at least one of the eNews, Case Studies, or Design Briefs publications were asked what additional information they wanted EDR publications to offer in the future. Information on energy efficient HVAC systems appears to be the most valuable. (See Table 4-5.) Engineers and energy consultants seem to be the most interested in learning more about energy efficient HVAC systems, while architects were more interested than engineers in building envelope issues, daylighting systems and energy efficient lighting design.

Table 4-5. Additional Information Respondents Would Like to See in eNews, Case Studies, or Design Briefs (multiple response)

Type of Information	Total (n=189)	Occupation			
		Architect (n=54)	Engineer (n=68)	Energy consultant (n=33)	Other (n=34)
Energy Efficient HVAC	70%	59%	76%* ¹	85%* ²	62%
Sustainable Building Design	63%	65%	56%	67%	71%
Building Envelope Issues	62%	78%* ³	53%	64%	53%
Daylighting Systems	62%	70%* ⁴	50%	67%	68%* ⁴
Energy Efficient Lighting Design	61%	74%* ⁴	49%	64%	62%
Integrated Design Process	59%	57%	57%	61%	65%
Process Systems	31%	24%	38%* ¹	33%	26%
Case Studies/Examples/Applied Info	3%	2%	3%	6%	3%
Renewable Energy	2%	2%	1%	3%	--
Water Efficiency	1%	--	1%	3%	--
Management Systems	1%	--	--	3%	3%
Nothing	2%	4%	--	3%	--

*¹ Significantly higher percentage of respondents at the 90% confidence level compared to architects.

*² Significantly higher percentage of respondents at the 90% confidence level compared to architects and others.

*³ Significantly higher percentage of respondents at the 90% confidence level compared to engineers and others.

*⁴ Significantly higher percentage of respondents at the 90% confidence level compared to engineers.

Interest among most of the categories listed was extremely high for these eNews, Case Studies, or Design Briefs readers. Since this is the type of information currently provided by the EDR publications, it appears that the content is on target with the interests of respondents. In terms of

increasing readership, raising awareness of the publications offered appears to be a larger issue than changing the content of the publications.

The following six sections present details on each of the individual publications. The flowchart at the end of each section provides a summary of respondents' awareness of and interest in that particular publication.

INDIVIDUAL PUBLICATIONS

(eNEWS, THE NEWSLETTER, CASE STUDIES,
COMMISSIONING HANDBOOK, DESIGN BRIEFS, SKYLIGHTING GUIDELINES)

eNEWS

eNews is an electronic newsletter focused on the design community. This online newsletter promotes efficient design by publicizing projects that have incorporated energy efficiency design techniques. eNews includes articles regarding new facets of both EDR and the larger Savings by Design program, interviews with industry experts, and case studies of successful utility efforts in energy efficiency. According to eNews developers, the main targets of this publication are architects, engineers, and project managers.

Out of all the publications listed in the survey, awareness and readership are highest for eNews. As shown in Table 4A-1 below, a majority of all respondents are aware of eNews and a little more than a third have actually read the publication.

The data show a significant difference between respondents who work on buildings in Southern California and those who do not. Surprisingly, respondents who work in Southern California are less likely to be aware and to have read eNews.

While eNews targets all market actors involved in the design of a construction project, engineers are much more likely than any other group (including architects) to be aware of and to have read eNews. However, according to the NRNC MA&E report, this group has less control over the final design (than architects) since they typically indirectly deal with the owner through the architect.

Table 4A-1. Familiarity with eNews (n=405)

Familiarity	Total (n=405)	Works in Southern California Market		Occupation			
		Yes (n=217)	No (n=181)**	Architect (n=118)**	Engineer (n=136)	Energy consultant (n=69)	Other (n=82)**
Have read publication	34%	29%	39%*	30%	41%* ¹	29%	32%
Aware, but haven't read	18%	17%	19%	18%	21%	16%	15%
Not aware of publication	48%	54%*	41%	53%* ²	38%	55%* ²	54%* ²

* Significantly higher percentage of respondents than comparison group at the 90% confidence level.

¹ Significantly higher percentage of respondents at the 90% confidence level compared to architects and energy consultants.

² Significantly higher percentage of respondents at the 90% confidence level compared to engineers.

**Does not add to 100% due to rounding.

Frequency of Use and Usefulness of eNews

Those respondents who said that they had read eNews were asked to rate the usefulness of eNews on a scale of 1 to 7, with 1 being 'not very useful' and 7 being 'extremely useful'.¹⁷ (See Table 4A-2.) Opinions about the usefulness of eNews vary. Over one-half (57%) say eNews is

¹⁷ Note only respondents who provided valid responses are included. Respondents who skipped questions are not included in the table.

‘somewhat’ to ‘extremely’ useful (a rating of 5 or greater) while 21% of respondents describe eNews as ‘not useful’ (a rating of 3 or less). Another 23% responded with a neutral answer, thus yielding an average response of 4.6 on a scale of 1 to 7 regarding the usefulness of eNews, which indicates that overall, the usefulness of eNews is relatively neutral.

Table 4A-2. How Useful Respondents Find eNews (1=not very useful, 7=extremely useful)

Rating	Total (n=133)**
1 – Not very useful	2%
2	6%
3	13%
4	23%
5	30%
6	22%
7 – Extremely useful	5%
MEAN	4.6

**Does not add to 100% due to rounding.

Table 4A-3. Frequency of Reading or Referring to Information in eNews

Rating	Total (n=135)
Never	3%
Infrequently	43%
Frequently	50%
Always	4%

However, as shown in Table 4A-3, 54% of respondents who have read eNews (n=135) read or refer to information in eNews ‘frequently’ or ‘always’.¹⁸ Thus, of those who have read eNews, more than half do so frequently. Even though eNews readers’ responses about its usefulness appear ambivalent, the frequency with which they refer to it indicates that perhaps the information is more relevant than they recognize.

Interest of Those Who Have Not Read eNews

Respondents who are not aware of or have not read eNews were asked to characterize their level of interest in the publication. As shown in Table 4A-4, approximately one-third of respondents answered that they are very interested in reading the publication. Only 14% of respondents were not interested in the publication. Approximately half of the respondents were fairly neutral on their interest in eNews, responding that they might be interested in reading it. There were no significant differences between the interest level of the different groups such as architects and engineers.

¹⁸ Note that again, only respondents with valid responses are included. Respondents who skipped questions are not included in the table.

Table 4A-4. Interest in eNews Among Respondents Who Have Not Already Read eNews

Rating	Total (n=268)**	Occupation			
		Architect (n=83)	Engineer (n=80)**	Energy consultant (n=49)	Other (n=56)**
Very interested	34%	34%	36%	31%	36%
Might be interested	51%	55%	51%	53%	45%
Not interested	14%	11%	12%	16%	20%

**Does not add to 100% due to rounding.

Reasons for Lack of Interest in eNews

Among the small portion of respondents, 14% (38 respondents) clearly indicated they were not interested in eNews. The top three reasons for their lack of interest were: eNews is ‘not relevant to their work’ (37%), respondents ‘do not have the time’ (29%), or they ‘already have the information they need’ (21%). (See Table 4A-5.)

Table 4A-5. Reasons Why Select Respondents Are Not Interested in eNews

Reasons	Total (n=38)**	Works in Southern California Market		Occupation			
		Yes (n=21)	No (n=16)	Architect (n=9)**	Engineer (n=10)	Energy consultant (n=8)**	Other (n=11)
Not relevant to work I do	37%	38%	38%	--	30%	62%	55%
Do not have the time	29%	19%	44%	44%	40%	12%	18%
Already have information, do not need additional	21%	24%	12%	11%	20%	25%	27%
Do not read these types of information	3%	5%	--	11%	--	--	--
Other	11%	14%	6%	33%	10%	--	--

**Does not add to 100% due to rounding.

eNews Summary

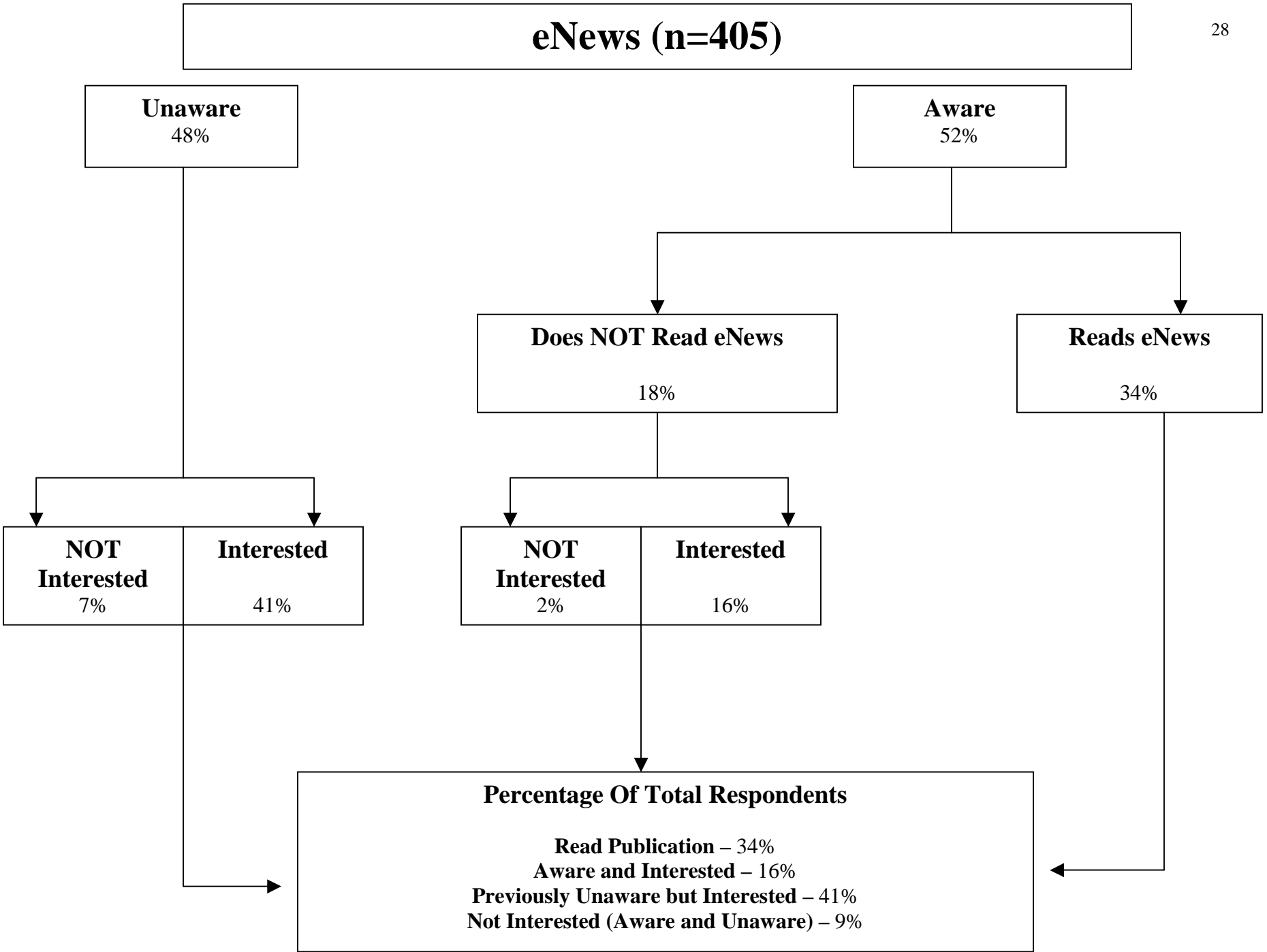
Because it is frequently mailed out, eNews is the most visible EDR publication. Awareness and readership of this publication are also the highest among all of the EDR publications. More than half of all respondents (52%) are aware of this publication. (See the flowchart following this section for an overall summary of eNews.)

Over one-third of respondents (34%) have read eNews and about half find it useful to the work that they do. Architects—one of the primary targets—are not as likely as other market actors to be aware or have read eNews.

Of those who have not read eNews, most are interested. (Only a small percentage of respondents—9% in total—are not interested in this publication and there is no apparent occupational trend among this group.) Overall, awareness of this publication, however, appears to be the largest reason why more individuals have not read this publication. Over 40% of respondents are interested in the publication but were not aware of the publication before this survey.

While engineers appear to be more aware of the publication (and to have read it more often), it may be worth raising awareness among architects since this group appears to have more control over the design process.

One respondent suggested that rather than emailing out the entire newsletter as a pdf file or a single link, EDR should consider an email that includes several highlights with multiple links to the relevant stories within the electronic newsletter. This would help to pique interest among busy readers and would help target readers to the most relevant information for them.



THE NEWSLETTER

The Newsletter is a quarterly publication that was issued between the Fall of 1999 and the Winter of 2000. The Newsletter was sent in hard-copy form to 9,000 different building owners representing schools, hospitals, office buildings and several other markets within PG&E, SCE and SDG&E territory for this two-year period. Back issues of the Newsletters are available as pdf files on the EDR website.

This publication was aimed at building owners and developers—groups that are no longer specifically targeted by EDR. In fact, building owners and developers represent just over 1% of all EDR respondents. (Note that these respondents are represented in the ‘Other’ category.) Very few owners, owner representatives, builders or developers are currently aware of EDR or are using the EDR tools. There is value, however, in reaching out to building owners and developers. Educating these groups about new design practices and energy savings helps to push architects and engineers towards more efficient designs.

The number of actual Newsletter readers is close to the average readership of the other publications. (See Table 4B-1.) Just over one-fifth of the population has read this publication. This is consistent with the findings for the group of respondents classified as “Other,” which would include building owners and developers. Architects—one of the primary groups involved with design—are the least likely group to read this publication.

Table 4B-1. Familiarity with the Newsletter (n=405)

Familiarity	Total (n=405)	Works in Southern California Market		Occupation			
		Yes (n=217)	No (n=181)**	Architect (n=118)	Engineer (n=136)	Energy consultant (n=69)	Other (n=82)
Have read publication	21%	19%	24%	13%	25%* ¹	26%* ¹	23%* ¹
Aware, but haven't read	19%	19%	18%	21%	18%	17%	17%
Not aware of publication	60%	62%	57%	66%	57%	57%	60%

*¹ Significantly higher percentage of respondents at the 90% confidence level compared to architects.

**Does not add to 100% due to rounding.

Another one-fifth of respondents are aware of the Newsletter but have not read the publication. Most respondents, however, have not heard of the Newsletter.

Frequency of Use and Usefulness of The Newsletter

As the data in Table 4B-2 and 4B-3 demonstrate, Newsletter readers read or refer to the Newsletter ‘often,’ and most find the information within to be at least somewhat, if not more, useful.

Respondents gave the Newsletter a 4.9 rating on a scale of 1 to 7, with 1 being ‘not very useful’ and 7 indicating it is ‘extremely useful.’ Readers did not think information in the Newsletter was extremely valuable, as only 7% gave it the highest rating. However, most respondents indicated that the publication was generally useful; more than half found it ‘somewhat’ to ‘very useful,’ and another 24% gave a neutral response.

Similarly, the frequency that readers referred to the Newsletter is not at the highest level but respondents generally gave a positive response. Seven percent ‘always’ read or refer to the Newsletter, and another 48% ‘frequently’ consult the publication.

Table 4B-2. How Useful Respondents Find the Newsletter (1=not very useful, 7=extremely useful)

Rating	Total (n=85)**
1 – Not very useful	--
2	6%
3	7%
4	24%
5	26%
6	31%
7 – Extremely useful	7%
MEAN	4.9

**Does not add to 100% due to rounding.

Table 4B-3. Frequency of Reading or Referring to Information in the Newsletter

Rating	Total (n=86)
Never	1%
Infrequently	44%
Frequently	48%
Always	7%

Interest of Those Who Have Not Read The Newsletter

Nearly three-quarters of respondents who have not read the Newsletter indicated that they are or might be interested in reading it in the future. (See Table 4B-4.) A large number of respondents (27%)—more than for any of the other publications—stated that they are not interested in the Newsletter.

Table 4B-4. Interest in the Newsletter Among Respondents Who Have Not Read It

Rating	Total (n=319)	Occupation			
		Architect (n=103)	Engineer (n=102)**	Energy consultant (n=51)**	Other (n=63)
Not interested	27%	33%	25%	24%	24%
Might be interested	50%	49%	55%* ¹	53%	41%
Very interested	23%	18%	21%	24%	35%* ²

*¹ Significantly higher percentage of respondents at the 90% confidence level compared to others.

*² Significantly higher percentage of respondents at the 90% confidence level compared to architects and engineers.

**Does not add to 100% due to rounding.

Reasons for Lack of Interest in The Newsletter

Those who are not interested are generally not interested because they feel that the information in the Newsletter is not relevant to the work that they do. (See Table 4B-5.) This is as expected since the Newsletter was designed to appeal to developers and building owners, which represent just only about 1% of all EDR respondents.

Table 4B-5. Why Select Respondents Are Not Interested in the Newsletter

Reasons	Total (n=83)**	Works in Southern California Market		Occupation			
		Yes (n=46)**	No (n=36)	Architect (n=32)**	Engineer (n=25)	Energy consultant (n=12)	Other (n=14)
Not relevant to work I do	42%	46%	39%	34%	36%	75%*	43%
Do not have the time	25%	15%	36%*	25%	32%	--	36%
Already have information, do not need additional	12%	17%*	6%	3%	24%* ¹	8%	14%
Not a building owner	10%	11%	8%	16%	--	17%	7%
Do not read these types of information	6%	4%	8%	12%	4%	--	--
Not sure	4%	4%	3%	9%	--	--	--
Too much to read	1%	2%	--	--	4%	--	--

* Significantly higher percentage of respondents than comparison group at the 90% confidence level.

*¹ Significantly higher percentage of respondents at the 90% confidence level compared to architects.

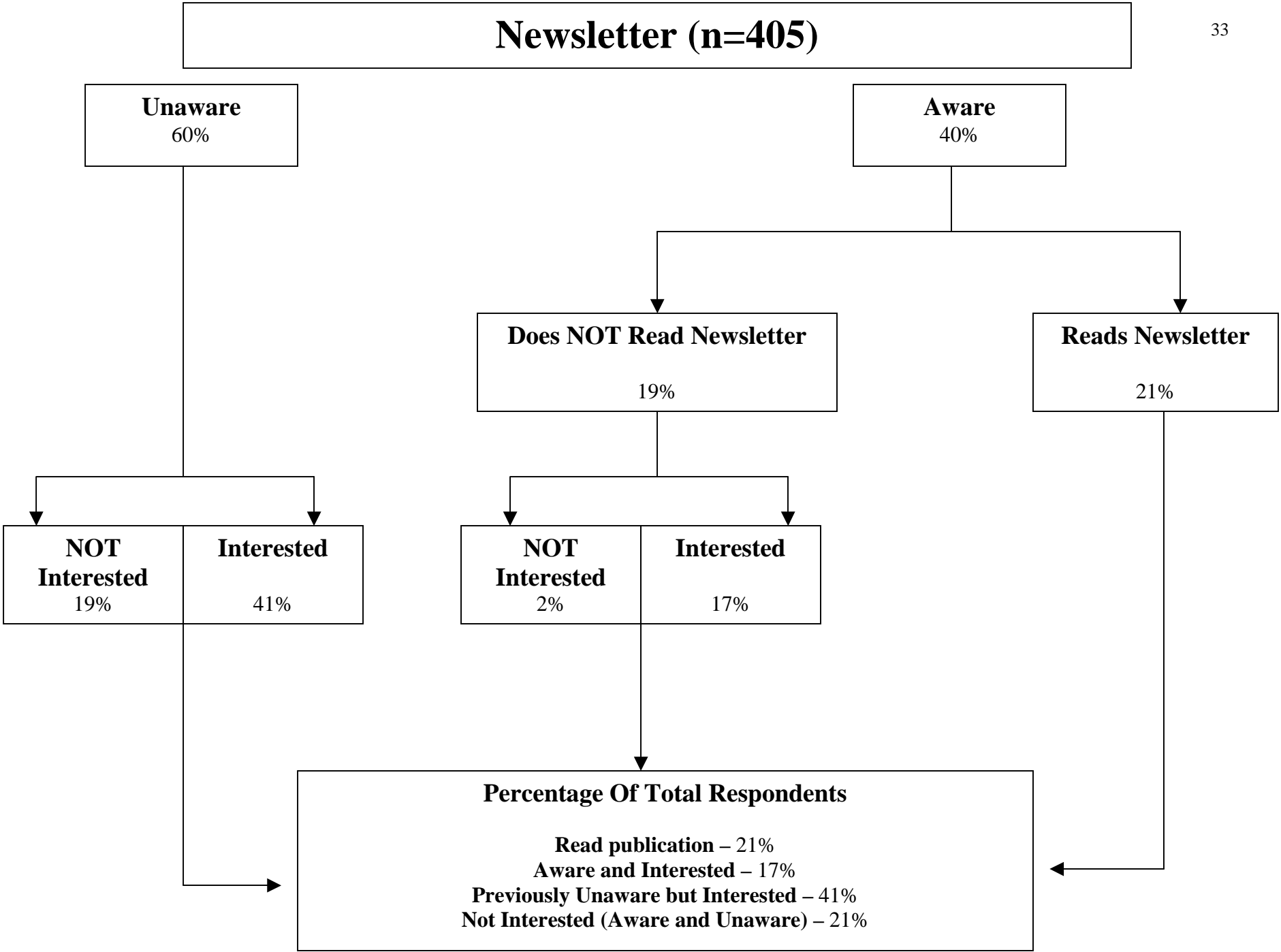
*² Significantly higher percentage of respondents at the 90% confidence level compared to engineers and others.

**Does not add to 100% due to rounding.

The Newsletter Summary

The Newsletter was designed to appeal to building owners and developers, who represent a small percentage of the overall EDR audience and the survey respondents. Due to the fact that the target audience for this publication is not well represented among EDR respondents and the fact that the Newsletter has been discontinued, awareness of, readership of, and interest in this publication is relatively low. (See the flowchart following this section for an overall summary of the Newsletter.) While there is some interest in this publication among mid- and upstream market actors, the value of the Newsletter is relatively low for the professionals currently targeted by EDR.¹⁹ There is value, however, in reaching out to building owners and developers in order to encourage efficient design at all levels of new construction. EDR, therefore, may want to consider an electronic version of the Newsletter if it decides to actively reach out to this group in the future.

¹⁹ Note that building owners and developers are not currently targeted by EDR.



CASE STUDIES

EDR's Case Studies include ten narratives of projects in Southern California that successfully use skylighting or integrated design techniques. These documented Case Studies demonstrate that these methods really do produce high-performance buildings. According to some of the writers of the Case Studies, this publication (or series of publications) are geared towards the design community.

Again, about half of all EDR respondents are aware of the Case Studies and these are relatively evenly split between those that have read the publications and those that have not read the publications. (See Table 4C-1.) Comparatively, therefore, readership of this publication is average.

Energy consultants are the most likely group to have read Case Studies. Furthermore, respondents who do not work on buildings in Southern California are more likely to have read Case Studies than those that work in Southern California. This is understandable given that many other areas look to this region for model projects and new ideas.

Table 4C-1. Familiarity with the Case Studies

Familiarity	Total (n=405)	Works in Southern California Market		Occupation			
		Yes (n=217)	No (n=181)	Architect (n=118)	Engineer (n=136)	Energy consultant (n=69)	Other (n=82)
Have read publication	23%	20%	28%*	22%	24%	32%* ¹	17%
Aware, but haven't read	28%	30%	26%	29%	26%	30%	28%
Not aware of publication	49%	50%	46%	49%	50%* ²	38%	55%* ²

*Significantly higher percentage of respondents than comparison group at the 90% confidence level.

*¹ Significantly higher percentage of respondents at the 90% confidence level compared to 'other'.

*² Significantly higher percentage of respondents at the 90% confidence level compared to energy consultants.

Frequency of Use and Usefulness of Case Studies

As shown in Table 4C-2, of those who have read the Case Studies, most found them generally useful. The average rating among all readers of this publication was a 5.0 on the 1 to 7 scale shown below. Many (59%), however, use these publications infrequently or never, thus signifying that they do not find these Case Studies to be that valuable (or at least that there is little value in reading them more than once). (See Table 4C-3.)

Table 4C-2. How Useful Respondents Find the Case Studies (1=not very useful, 7=extremely useful)

Rating	Total (n=91)**
1 – Not very useful	--
2	5%
3	4%
4	24%
5	32%
6	21%
7 – Extremely useful	13%
MEAN	5.0

**Does not add to 100% due to rounding.

Table 4C-3. Frequency of Reading or Referring to Information in the Case Studies

Rating	Total (n=95)
Never	3%
Infrequently	56%
Frequently	38%
Always	3%

Interest of Those Who Have Not Read Case Studies

A large number of respondents are interested in reading Case Studies in the future. As the data in Table 4C-4 shows, respondents are equally split between those who are very interested (45%) and those who might be interested (44%). Interest is particularly high among architects who have not already read these publications.

Table 4C-4. Interest in the Case Studies Among Respondents Who Have Not Already Read the Case Studies

Rating	Total (n=310)**	Works in Southern California Market		Occupation			
		Yes (n=174)	No (n=130)**	Architect (n=92)	Engineer (n=103)**	Energy consultant (n=47)**	Other (n=68)
Very interested	45%	49%*	38%	53%* ¹	40%	30%	51%* ²
Might be interested	44%	45%	43%	39%	46%	62%*	34%
Not interested	12%	6%	18%*	8%	15%	9%	15%

*Significantly higher percentage of respondents than comparison group at the 90% confidence level.

¹ Significantly higher percentage of respondents at the 90% confidence level compared to engineers and energy consultants.

² Significantly higher percentage of respondents at the 90% confidence level compared to energy consultants.

**Does not add to 100% due to rounding.

Reasons for Lack of Interest in Case Studies

Of the small number of respondents that are not interested in the Case Studies, most are not interested because they do not have time or because they do not feel that the Case Studies are relevant to the work that they do. (See Table 4C-5 for additional data.) Note that due to the

small number of respondents it is not advisable to draw any conclusions from the results by occupation.

Table 4C-5. Reasons Why Select Respondents Are Not Interested in the Case Studies

Reasons	Total (n=33)**	Works in Southern California Market		Occupation			
		Yes (n=10)	No (n=22)**	Architect (n=7)	Engineer (n=14)	Energy consultant (n=3)	Other (n=9)**
Do not have the time	33%	30%	36%	14%	43%	--	44%
Not relevant to work I do	30%	20%	32%	14%	29%	67%* ¹	33%
Already have information, do not need additional	18%	30%	14%	29%	21%	--	11%
Not located in California	9%	--	14%	14%	7%	33%	--
Do not read these types of information	6%	10%	5%	14%	--	--	11%
Not Sure	3%	1%	--	1%	--	--	--

*¹ Significantly higher percentage of respondents at the 90% confidence level compared to architects.

**Does not add to 100% due to rounding.

Case Studies Summary

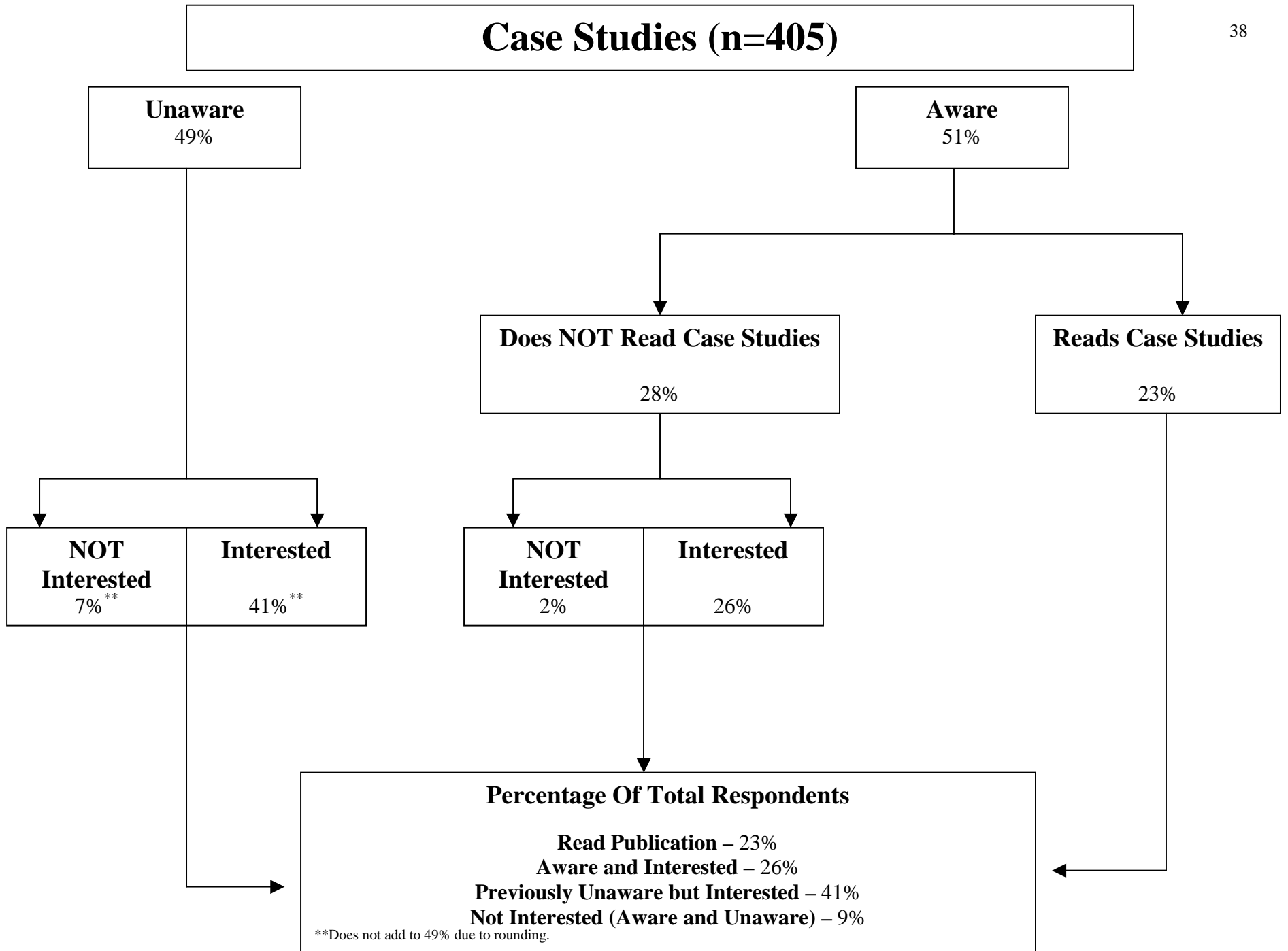
Over half of all respondents (51%) are aware of EDR's Case Studies and approximately half of these respondents (or 23% of the total) have read at least one Case Study. (See the flowchart following this section for an overall summary of Case Studies.) Currently, energy consultants are among the biggest users of Case Studies.

Overall interest is high among respondents who have not already read Case Studies, particularly among architects who have not already read these publications. Over one-fourth of respondents (26%) are aware and interested in these publications and an additional 41% were not previously aware prior to our survey but after the Case Studies were described, indicated that they would be interested in reading some of EDR's Case Studies.

Generally, Case Studies appear to be more frequently read by respondents who work on buildings outside of Southern California. Respondents that work within Southern California, however, did indicate a strong interest in reading these publications.

Overall, awareness and readership of this publication is on the same level with many of the other publications. Case Studies appear to be generally useful, and additional Case Studies would probably be useful. EDR may want to consider focusing on promoting these studies since they are of particular interest to the target audience (architects and those who work on buildings in

Southern California). EDR may also want to consider developing case studies of projects outside of the California market.



COMMISSIONING HANDBOOK

According to the brief description of the Commissioning Handbook available on the EDR website, this publication is primarily geared towards building owners and design professionals. Part one of the publication was designed as a source book and provides information about the benefits and procedures of commissioning—generally for building owners. Part one also offers several case studies of real-life commissioning projects.

In addition to being used by owners, however, it can also be used to assist design professionals in their effort to incorporate commissioning into their projects. Part two of the publication focuses on the roles and responsibilities of each member of the commissioning team and offers tips on how to market commissioning services to clients. The appendices contain sample documents, checklists, and “commissioning-friendly” specification language.

Awareness of this publication is the lowest of all six EDR publications. Furthermore, as shown in Table 4D-1, less than 10% of EDR respondents have read the publication. Based on the data collected, it appears that this publication is used primarily by engineers. Very few architects refer to this publication.

Table 4D-1. Familiarity with the Commissioning Handbook (n=405)

Familiarity	Total (n=405)	Works in Southern California Market		Occupation			
		Yes (n=217)	No (n=181)**	Architect (n=118)	Engineer (n=136)	Energy consultant (n=69)**	Other (n=82)
Have read publication	9%	7%	12%	4%	14%* ¹	9%	7%
Aware, but haven't read	21%	19%	24%	23%	18%	25%	21%
Not aware of publication	70%	74%*	65%	73%	68%	67%	72%

*Significantly higher percentage of respondents than comparison group at the 90% confidence level.

*¹Significantly higher percentage of respondents at the 90% confidence level compared to architects.

**Does not add to 100% due to rounding.

Frequency of Use and Usefulness of The Commissioning Handbook

While the frequency of use varies among readers—that is, 53% use this publication infrequently and 44% use it frequently, as shown in Table 4D-3—almost all of those who use this publication found it at least somewhat useful, represented by a mean rating of 5.3 (See Table 4D-2.) This is the highest rating of all six of the EDR publications, which seems to indicate that although not as many respondents have read the publication, those that have read it found it to be very useful.

Table 4D-2. How Useful Respondents Find the Commissioning Handbook (1=not very useful, 7=extremely useful)

Rating	Total (n=35)**
1 – Not very useful	--
2	--
3	6%
4	11%
5	37%
6	34%
7 – Extremely useful	11%
MEAN	5.3

**Does not add to 100% due to rounding.

Table 4D-3. Frequency of Reading or Referring to Information in the Commissioning Handbook

Rating	Total n=(36)
Never	3%
Infrequently	53%
Frequently	44%
Always	--

Interest of Those Who Have Not Read The Commissioning Handbook

One-third of respondents who have never read this publication (n=369) stated that they ‘might be interested’ in reading this publication in the future, while more than half (53%) stated that they would be ‘very interested’ in reading this publication. (See Table 4D-4.) Overall, therefore, a large percentage of EDR respondents indicated an interest in this publication. This finding is particularly interesting since this publication may not be relevant to many respondents since commissioning is a very specific field. In general, however, if respondents are interested, this publication could help to educate them about the benefits of commissioning so that they would consider incorporating it into future projects.

Table 4D-4. Interest in the Commissioning Handbook Among Respondents Who Have Not Already Read the Commissioning Handbook

Rating	Total (n=369)	Occupation			
		Architect (n=113)**	Engineer (n=117)**	Energy consultant (n=63)	Other (n=76)
Very interested	53%	50%	58%	54%	49%
Might be interested	33%	35%	32%	32%	34%
Not interested	14%	16%	9%	14%	17%

**Does not add to 100% due to rounding.

Reasons for Lack of Interest in The Commissioning Handbook

Again, of those that expressed that they are not interested in the Commissioning Handbook, a large majority are not interested because they are not involved in the commissioning process and feel that the handbook is not relevant to the work that they do. (See Table 4D-5.) While commissioning is not currently a widely used process, it can significantly improve energy savings. Furthermore, starting commissioning as early as possible in the design phase (as opposed to after the project is completed) is valuable. It is possible, therefore, that while most respondents do not think that this Handbook is relevant to the work that they do, further education through EDR could help them to realize its value and use. EDR, therefore, may want to consider additional efforts to educate designers about commissioning.

Table 4D-5. Reasons Why Select Respondents Are Not Interested in the Commissioning Handbook

Reasons	Total (n=48)	Works in Southern California Market		Occupation			
		Yes (n=27)**	No (n=21)**	Architect (n=17)**	Engineer (n=11)	Energy consultant (n=9)	Other (n=11)
Not relevant to work I do	67%	67%	67%	71%	64%	78%	55%
Already have information, do not need additional	15%	19%	10%	12%	18%	--	27%
Do not have time	10%	4%	19%*	--	18%	11%	18%
Do not read these types of information	2%	4%	--	6%	--	--	--
Not a building owner	2%	--	5%	--	--	11%	--
Not sure	4%	7%	--	12%	--	--	--

*Significantly higher percentage of respondents than comparison group at the 90% confidence level.

**Does not add to 100% due to rounding.

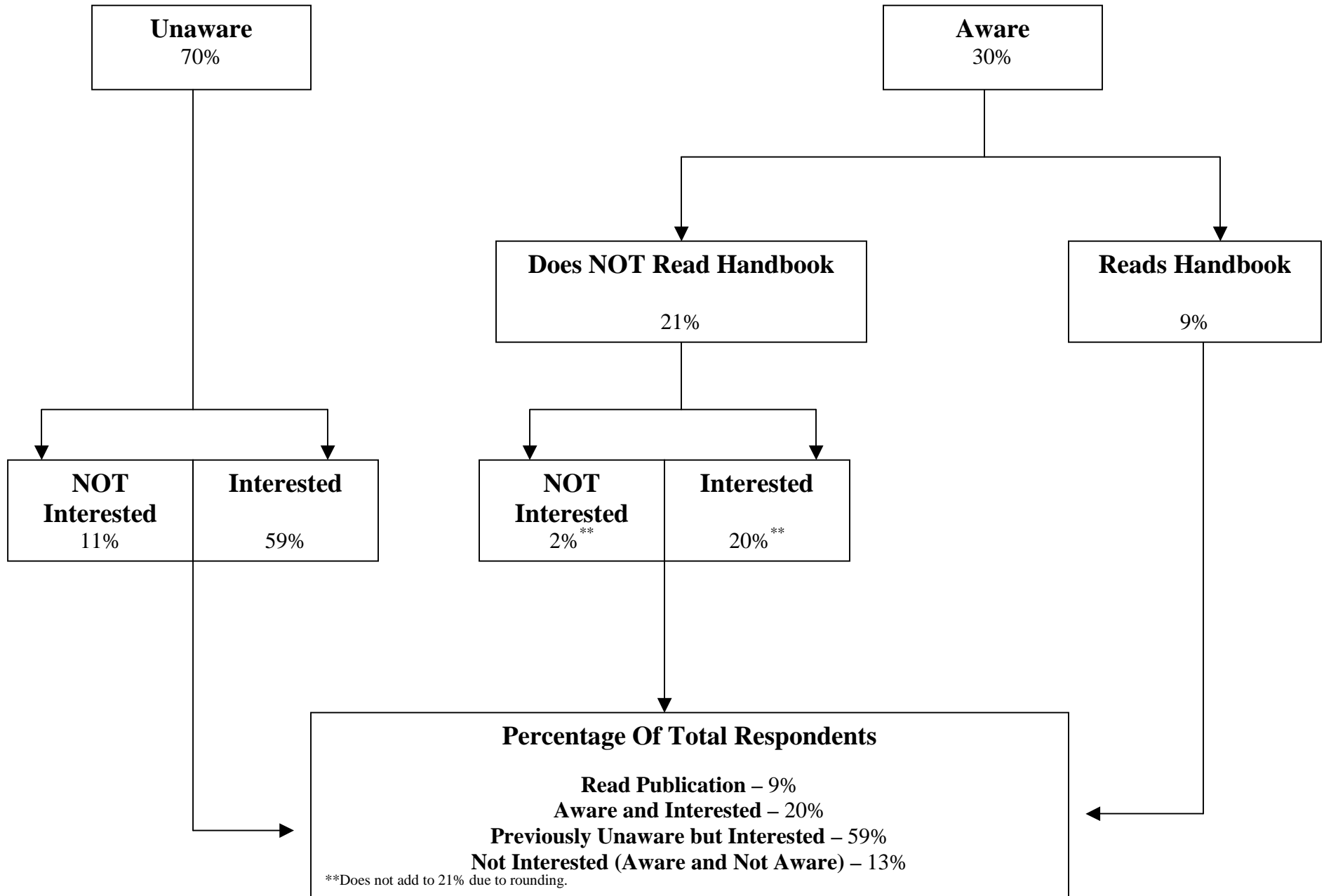
The Commissioning Handbook Summary

Awareness of this publication is extremely low (30%) leading to a very small number of respondents who utilize the information provided in the Commissioning Handbook. (See the flowchart following this section for an overall summary of the Commissioning Handbook.) Less than 10% have read this publication, with engineers being the primary users of this publication. While readership is low, on average, those who have read the Handbook found it to be useful.

Interest among those who have not read this publication is high, and mirrors the rising interest in the topic. Overall, 79% of respondents stated that they are interested in reading the Commissioning Handbook in the future. While part one of the Handbook is geared towards building owners, who represent one of the smallest users of EDR tools, it is applicable to

designers as well. Raising awareness of this publication among the EDR audience would benefit those interested in the topic.

Commissioning Handbook (n=405)



DESIGN BRIEFS

EDR offers a series of 24 “Design Briefs” about design techniques and energy efficient technologies. These Briefs are targeted at the design community (especially architectural firms). They are available on the website or are sometimes hand delivered by SCE staff in a big binder to designers’ offices.

Awareness of this publication is pretty low—over half of EDR respondents (56%) were unaware of this publication. (See Table 4E-1.) However, a slightly larger than average number of respondents had read this publication (compared to other publications, See Figure 4-1). Engineers and energy consultants are among the primary users of the Design Briefs. A smaller percentage of architects have read this publication.

Interestingly, respondents that work on buildings outside of Southern California are more likely to be aware of and have read this publication.

Table 4E-1. Familiarity with the Design Briefs

Familiarity	Total (n=405) **	Works in Southern California Market		Occupation			
		Yes (n=217)	No (n=181) **	Architect (n=118)	Engineer (n=136)	Energy consultant (n=69) **	Other (n=82) **
Have read publication	23%	18%	29%*	17%	28%* ¹	30%* ¹	16%
Aware, but haven’t read	22%	22%	22%	20%	25%	26%	15%
Not aware of publication	56%	60%*	50%	63%* ²	47%	43%	70%* ²

*Significantly higher percentage of respondents than comparison group at the 90% confidence level.

*² Significantly higher percentage of respondents at the 90% confidence level compared to engineers and energy consultants.

*¹ Significantly higher percentage of respondents at the 90% confidence level compared to architects and other.

**Does not add to 100% due to rounding.

Frequency of Use and Usefulness of Design Briefs

Approximately 40% of readers refer to the publication ‘frequently’ (or ‘very frequently’) and there is a general sense that the publication is useful. (See Tables 4E-2 and 4E-3.) Seventy percent of readers gave it a rating of 5 or higher on a 1 to 7 scale for an average rating of 5.1, second only to the Commissioning Handbook.

Table 4E-2. How Useful Respondents Find the Design Briefs (1=not very useful, 7=extremely useful)

Rating	Total (n=88)**
1 – Not very useful	--
2	1%
3	11%
4	17%
5	36%
6	17%
7 – Extremely useful	17%
MEAN	5.1

**Does not add to 100% due to rounding.

Table 4E-3. Frequency of Reading or Referring to Information in the Design Briefs

Rating	Total (n=92)
Never	4%
Infrequently	58%
Frequently	32%
Always	7%

Interest of Those Who Have Not Read Design Briefs

As shown in Table 4E-4, interest among those who have not read the publication is extremely high among all of the major professions. Over 95% of respondents expressed some interest and a large majority of these were ‘very interested.’ In fact, all of those who are aware of the publication but have not read the publication are interested in reading the publication in the future. Raising awareness and accessibility to Design Briefs may help to increase readership.

Table 4E-4. Interest in the Design Briefs Among Respondents Who Have Not Already Read the Design Briefs

Rating	Total (n=313)	Occupation			
		Architect (n=98)	Engineer (n=98)	Energy consultant (n=48)	Other (n=69)
Very interested	68%	71%	66%	69%	64%
Might be interested	28%	26%	31%	31%	26%
Not interested	4%	3%	3%	--	10%* ¹

*¹Significantly higher percentage of respondents at the 90% confidence level compared to architects and engineers.

Reasons for Lack of Interest in Design Briefs

Hardly any respondents (only 12 out of 405) indicated that they are not interested in this publication. Again, the lack of interest among the few remaining respondents (mostly engineers) is generally because these respondents feel that the information in the Design Briefs is not relevant to the work that they do. Most likely, these engineers are not as involved in the design process. (See Table 4E-5 for these 12 responses.)

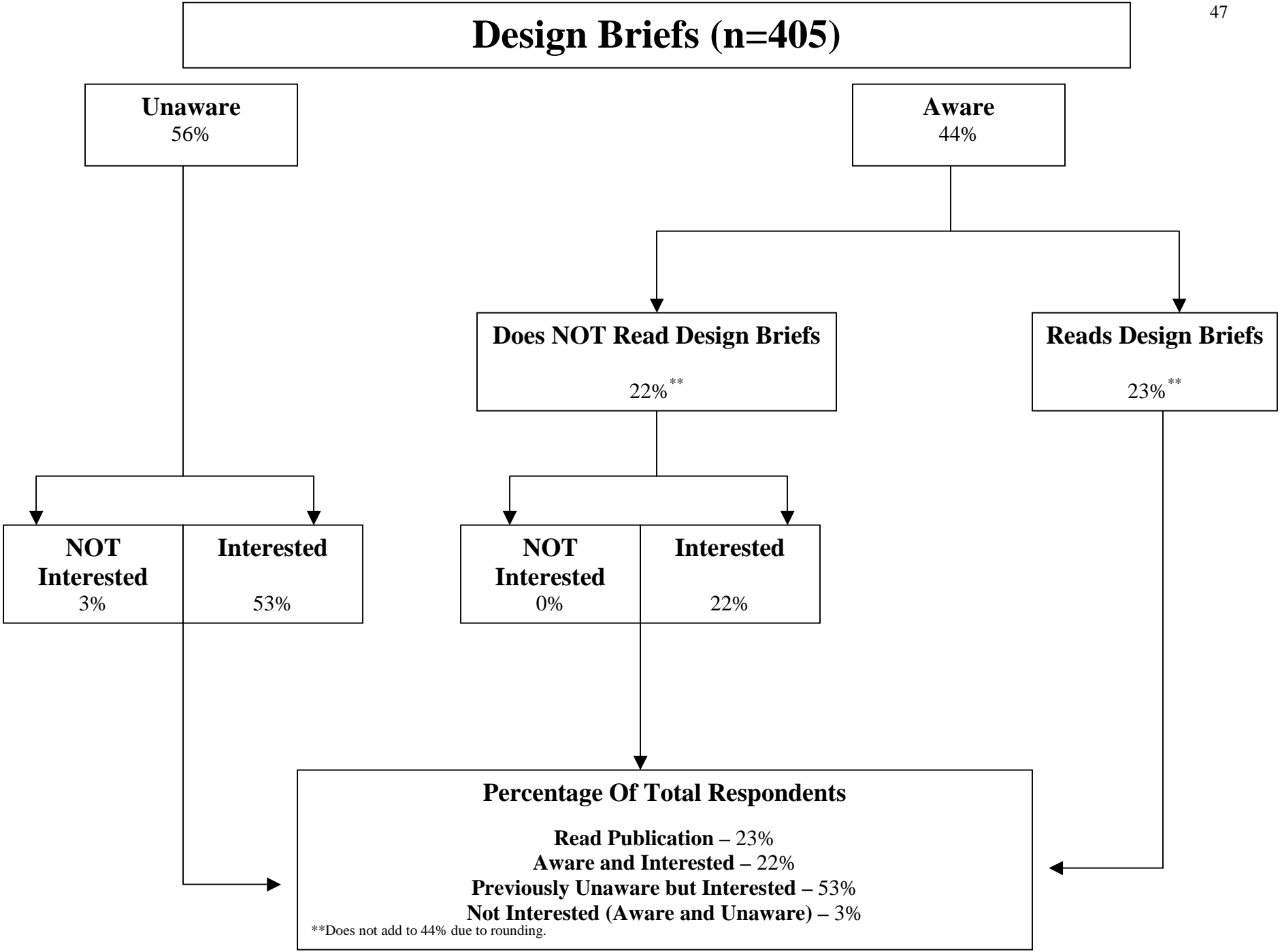
Table 4E-5. Reasons Why Select Respondents Are Not Interested in the Design Briefs

Reasons	Total (n=12)	Works in Southern California Market		Occupation			
		Yes (n=7)	No (n=5)	Architect (n=3)**	Engineer (n=3)	Energy consultant (n=0)	Other (n=6)**
Not relevant to work I do	42%	29%	60%	33%	--	--	67%
Already have information, do not need additional	25%	29%	20%	--	67%	--	17%
Do not have the time	17%	14%	20%	--	33%	--	17%
Do not read these types of information	8%	14%	--	33%	--	--	--
Not sure	8%	14%	--	33%	--	--	--

**Does not add to 100% due to rounding.

Design Brief Summary

Despite the fact that readership of this publication is somewhat high (23%, which is similar to Case Studies and second only to eNews), awareness of Design Briefs is low (44%). (See the flowchart following this section for an overall summary of Design Briefs.) Most notable, however, is the incredibly high interest among respondents who have not already read this series of publications. All respondents who were aware of the publication but had not read it (22%) expressed some interest, and a large majority of these were ‘very interested.’ An additional 53% of respondents were previously unaware but interested. Overall, therefore, 75% of respondents had not read the publication but were interested, while only 3% stated that they were not interested. Given the high level of interest, raising awareness and accessibility to Design Briefs will help to increase readership. This publication should remain one of EDR’s prominent publications.



SKYLIGHTING GUIDELINES

The Skylighting Guidelines are an in-depth document written to help architects and engineers use skylights to the maximum advantage in commercial and industrial buildings. This is, perhaps, one of the most specialized topics of all of the EDR publications. The Guidelines are designed to help determine opportunities for energy savings and good lighting design, explain how to integrate skylights with other building elements, show how to estimate energy and dollar savings, and help designers avoid costly mistakes. It is also important to note that the Skylighting Guidelines are a companion tool to one of the software tools, SkyCalc, covered in more detail in a later section.

Similar to many other publications, more than half of all respondents are not aware of the Skylighting Guidelines. (See Table 4F-1.) Of those that are aware, less than half (representing 20% of all respondents) have read the Guidelines. Despite the fact that the Skylighting Guidelines were developed to assist projects in California and the fact that they are generally geared towards architects and lighting designers, respondents who work in the Southern California new construction market are less likely to have used the Guidelines than respondents in other areas, and architects are among the least aware group of respondents. Furthermore, very few lighting designers are represented among the 405 EDR respondents, which may explain some of the low numbers (since they are the ones most likely to benefit from the Guidelines).²⁰

Table 4F-1. Familiarity with the Skylighting Guidelines

Familiarity	Total (n=405)	Works in Southern California Market		Occupation			
		Yes (n=217)	No (n=181)	Architect (n=118)	Engineer (n=136)	Energy consultant (n=69)	Other (n=82)
Have read publication	20%	17%	24%*	16%	24%	23%	17%
Aware, but haven't read	26%	24%	28%	22%	26%	35%* ³	24%
Not aware of publication	54%	59%*	48%	62%* ¹	50%	42%	59%* ²

*Significantly higher percentage of respondents than comparison group at the 90% confidence level.

*¹Significantly higher percentage of respondents at the 90% confidence level compared to engineers and energy consultants.

*²Significantly higher percentage of respondents at the 90% confidence level compared to energy consultants.

*³Significantly higher percentage of respondents at the 90% confidence level compared to architects.

²⁰ Lighting designers made up 3% of EDR respondents and are included in the "Other" category.

Frequency of Use and Usefulness of The Skylighting Guidelines

Of those who have read the publication, most found it to be generally useful: 67% gave it a rating of 5 or higher, and the average rating among all readers was 5.0 on a 7-point scale as shown in Table 4F-2.

Table 4F-2. How Useful Respondents Find the Skylighting Guidelines (1=not very useful, 7=extremely useful)

Ratings	Total (n=76)
1 – Not very useful	--
2	3%
3	14%
4	16%
5	33%
6	20%
7 – Extremely useful	14%
MEAN	5.0

Table 4F-3. Frequency of Reading or Referring to Information in the Skylighting Guidelines

Ratings	Total (n=81)**
Never	5%
Infrequently	65%
Frequently	27%
Always	2%

**Does not add to 100% due to rounding.

Most readers, however, refer to this publication ‘infrequently’ or ‘never’ indicating that perhaps its usefulness for the larger EDR audience is limited, due to the specialized topic. (See Table 4F-3.)

Interest of Those Who Have Not Read The Skylighting Guidelines

Among those who have not read the Skylighting Guidelines (shown in Table 4F-4), most are at least somewhat interested. Thirty-nine percent of respondents who have not read this publication stated that they ‘might be interested’ and 46% stated that they are ‘very interested’. Architects are among the most interested group of professionals.

Table 4F-4. Interest in the Skylighting Guidelines Among Respondents Who Have Not Already Read the Skylighting Guidelines

Reasons	Total (n=324)**	Occupation			
		Architect (n=99)	Engineer (n=104)	Energy consultant (n=53)	Other (n=68)
Very interested	46%	65%*	36%	38%	40%
Might be interested	39%	28%	46%* ¹	43%* ¹	38%
Not interested	16%	7%	18%** ¹	19%* ¹	22%* ¹

*Significantly higher percentage of respondents than comparison group at the 90% confidence level.

*¹Significantly higher percentage of respondents at the 90% confidence level compared to architects.

**Does not add to 100% due to rounding.

Reasons for Lack of Interest in The Skylighting Guidelines

As shown in Table 4F-5, among respondents who are not interested, most are not interested because they do not work on skylighting issues. Over two-thirds of those who are not interested stated that the main reason was because the Guidelines are not relevant to the work that they do.

Table 4F-5. Reasons Why Select Respondents Are Not Interested in the Guidelines

Reasons	Total (n=50)	Works in Southern California		Occupation			
		Yes (n=32)**	No (n=17)	Architect (n=7)	Engineer (n=19)**	Energy consultant (n=10)	Other (n=14)**
Not relevant to work I do	68%	62%	76%	57%	63%	90%* ¹	64%
Already have information, do not need additional	20%	22%	18%	29%	26%	--	21%
Do not have time	8%	9%	6%	--	5%	10%	14%
Do not read these types of information	2%	3%	--	--	5%	--	--
Not sure	2%	3%	--	14%	--	--	--

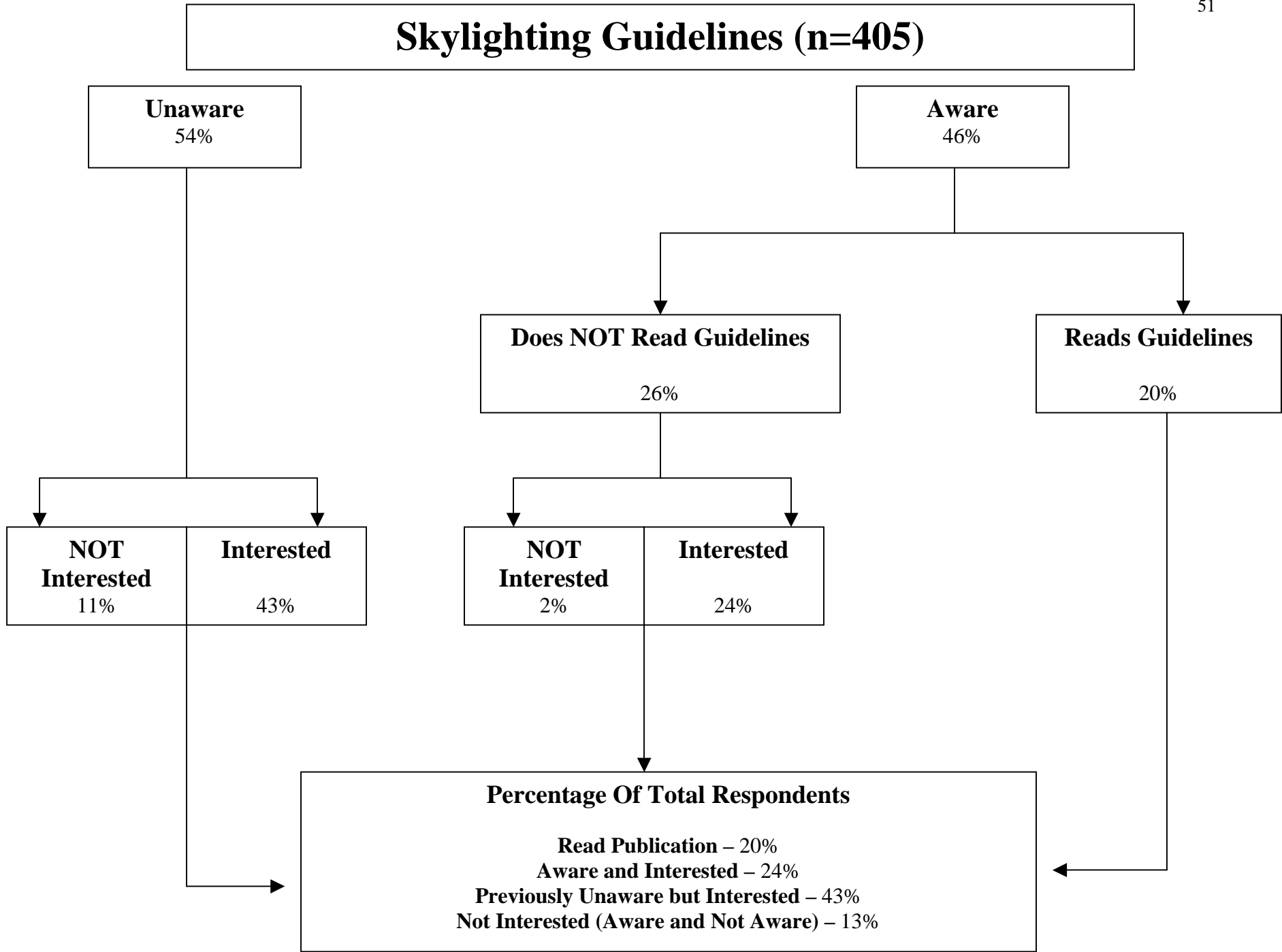
* Significantly higher percentage of respondents at the 90% confidence level compared to engineers.

**Does not add to 100% due to rounding.

The Skylighting Guidelines Summary

Despite the fact that the Skylighting Guidelines were developed to assist projects in California and the fact that they are generally geared towards architects, respondents who work in the Southern California new construction market are less likely to have used the Guidelines, and architects are among the least aware group of respondents. However, architects are among the most interested group of professionals.

Overall, this publication is useful to only the segment of professionals that work on skylighting design (including skylighting manufacturers and sales people that might use the Guidelines to help their customers understand how to use the products), yet it appears that one of the primary audiences, architects, is not being reached. EDR should work to promote this publication among architects and to increase lighting designers' awareness of EDR resources. See the flowchart following this section for an overall summary of the Skylighting Guidelines.



CHAPTER 5: SOFTWARE TOOLS

This section examines EDR's four software or online tools to better understand who uses these tools, what information is most useful, and what improvements can be made to the tools in the future. (Note that although we recognize that the Charette may not technically be seen as a software tool, we have included it in this section for ease of reporting.)

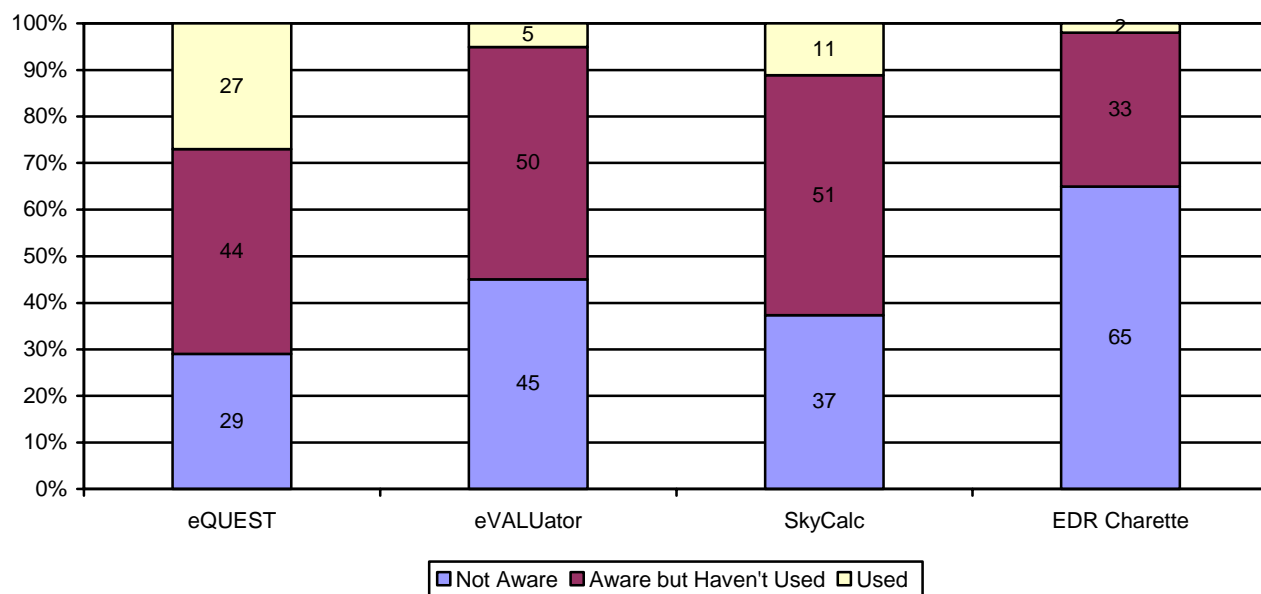
Approximately one-third of all respondents (34%) have used at least one of the four software tools offered by EDR. (See Table 5-1.) The fact that 66% of respondents (and 69% of respondents who work in the Southern California market) have *not* used the software tools demonstrates that even among those already reached by EDR, there is a significant opportunity to increase the use of these tools.

Table 5-1. Respondents Who Have Used at Least One Software Tool (n=405)

	All Respondents (n=405)	Work in Southern California Market (n=217)
Software Only	10%	10%
Software and Publication	18%	13%
Software and Training	1%	1%
Software, Publication, and Training	5%	7%
Have Not Used Any Software	66%	69%

Overall, awareness of the software tools is relatively high compared to EDR publications and trainings. As shown in Figure 5-1, respondents appear to be very aware of eQUEST and slightly less aware of SkyCalc and eVALUator. Many fewer respondents are aware that the EDR website offers an EDR Charette.

Use of the most of the software tools, however, is limited. Even among respondents that are aware of the software tools, use is low. eQUEST has a significantly larger share of users than any of the other tools. eVALUator and the EDR Charette, however, appear to be used very infrequently. For eVALUator, this is most likely because the audience reached by EDR is not the right audience for this tool, while for the EDR Charette, it is due, at least in part, to the lack of awareness of the tool.

Figure 5-1. Familiarity with Software Tools (n=405)

Furthermore, in focus groups conducted by the Heschong Mahone Group prior to this study, participants in the focus group noted that they are hesitant to use *any* new software because of the initial time necessary to learn how to use the tool and because of the worry that the software will change and there will not be support in the future.²¹ Findings from this earlier report may give insights into how to better promote the use of the EDR tools.

In general, as Table 5-2 demonstrates, energy consultants and engineers are the primary users of the tools, whereas architects appear to be the least aware and the least likely to use these software tools. The pattern within SkyCalc is slightly different: energy consultants and ‘other’ users, which includes lighting designers, appear to be the major users.

Consistent with the data in Figure 5-1, more engineers and energy consultants have used eQUEST than the other tools, followed by SkyCalc. Interestingly, however, the percentage of architects that has used SkyCalc is almost as high as the percentage of architects that has used eQUEST. Based on this data, it may be that architects find SkyCalc more useful than engineers, but that they feel that they have less use for a tool such as eQUEST.

²¹ NRNC MA&E.

Table 5-2. Familiarity and Interest in Software Tools by Occupation**eQUEST**

	Engineers (n=136)	Architects (n=118)	Energy Consultants (n=69)	Other (n=82)
Used	36%	11%	51%	13%
Aware and Interested	28%	25%	17%	32%
Previously Unaware but Interested	13%	44%	17%	29%
Not Interested	24%	20%	15%	26%

SkyCalc

	Engineers (n=136)	Architects (n=118)	Energy Consultants (n=69)	Other (n=82)
Used	7%	9%	20%	15%
Aware and Interested	41%	29%	29%	23%
Previously Unaware but Interested	20%	41%	16%	29%
Not Interested	32%	21%	35%	33%

eVALUator

	Engineers (n=136)	Architects (n=118)	Energy Consultants (n=69)	Other (n=82)
Used	7%	1%	9%	4%
Aware and Interested	41%	27%	29%	33%
Previously Unaware but Interested	27%	52%	36%	40%
Not Interested	24%	20%	26%	23%

EDR Charette

	Engineers (n=136)	Architects (n=118)	Energy Consultants (n=69)	Other (n=82)
Used	3%	--	3%	1%
Aware and Interested	24%	19%	32%	23%
Previously Unaware but Interested	54%	66%	52%	59%
Not Interested	20%	15%	13%	17%

Even though eQUEST is the most widely used software among EDR's software offerings, architects are significantly unaware of this tool and may represent a substantial missed opportunity. Also, specialized software, such as SkyCalc, or programs that are designed with specific market actors in mind, such as eVALUator, do not appear to be reaching the targeted market groups.

Use of software tools is relatively even between those who work in Southern California and those who work outside of the area. (See Table 5-3.)

Table 5-3. Software Users Who Do and Do Not Work in Southern California

Have Used Software	Works in Southern California Market	
	Yes (n=217)	No (n=181)
eQUEST	25%	29%
eVALUator	5%	6%
SkyCalc	11%	11%
EDR Charette	2%	1%

Users of the tool were asked about their reasons for using the tool. Many feel that the software tools are most useful for offering a rough-cut of energy savings in the early stages of a project. Users also seem to appreciate the fact that the tools cost nothing and are easy to use, despite the fact that some feel that the tools are too generic.

In general, the majority of users feel that use of the tools leads to more efficient designs. This is particularly true for eQUEST and SkyCalc, which are more frequently used. (See Energy Savings section beginning on page 88.)

Despite the fact that very few respondents have used the tools, interest among those who have not already used the software tools appears to be high, as shown in Table 5-4. For all four of the software tools, a large majority of those who have not already used the tools indicate interest in using the tools in the future.

Table 5-4. Software Tools (n=405)²²

	eQUEST	eVALUator	SkyCalc	EDR Charette
Interested	52%	71%	59%	81%
Not Interested	21%	23%	30%	17%

* Note the values in the table sum by column, not row. Note also that the percentage of respondents not represented in each column are respondents who have already used the software tool. For consistency, we present this data as a percentage of the overall population. 'Not interested' indicates that once these respondents are informed about the nature and content of the software tool, they stated that they were 'not interested.'

²² Note that while questions directly pertaining to the level of interest were asked of respondents who were unaware of or had not tried the software, respondents who initially said they had tried the software but do not use it were asked a different question. This group of respondents had to answer instead why they have not used that particular software, even though they had viewed, downloaded, or tried it. These responses were then categorized by ODC as either positive or negative comments and extrapolated to represent respondent interest.

Of the fraction that is not interested in these tools, it is generally because they feel that the tools are not relevant to the work that they do.

The following four sections present details on each of the individual software tools. The flowchart at the end of each section provides a summary of respondents' awareness of and interest in that particular publication. Double asterisks (**) appear next to "Not Interested" and "Interested" under the "Aware" and "Took Steps to Use, But Didn't" categories in the flowcharts to indicate that these respondents were not directly asked about their interest. Instead, respondents who took steps to use but did not actually use the tool were asked why they had not used the software, which we then categorized as "Not Interested" or "Interested."

INDIVIDUAL SOFTWARE TOOLS

(eQUEST, eVALUator, SKYCALC, EDR CHARETTE)

eQUEST

The eQUEST Energy Analysis software is designed to allow users to perform detailed analysis of state-of-the-art building design technologies. It uses sophisticated simulation techniques similar to DOE-2 models but it can be used by professionals who have not been trained in the art of building modeling. According to the tool designers, the targeted market includes architects, and engineers who work with architects in the building design process. Architects, overall, however, very seldom used this kind of tool.

The idea behind eQUEST was to make it possible for the average architectural or engineering firm to do in-house analysis of alternative designs in order to examine the impact on a building's energy use. According to the creators of eQUEST, "The whole idea behind eQUEST was to create a tool that gave people access to the full capabilities of complex simulation programs but greatly simplified the interaction between the user and the simulation tool. [The objective was] to create a lot of automation and a lot of knowledge into the tool so that the user of the tool didn't have to be an expert in simulation, and didn't have to be an expert in the use of these tools and how to do energy modeling in order to get a reasonable result."

Out of all the software programs listed in the survey, respondents are most aware of eQUEST. Over 70% of respondents are aware of this tool. (See Table 5A-1.) Respondents who work on buildings in Southern California, however, are significantly less aware of eQUEST than those who work on buildings in other regions, indicating that additional marketing and promotion within this region may be useful. In addition, familiarity among architects is low. Only 50% of architects have heard of this tool.

Table 5A-1. Respondent's Familiarity with eQUEST

Familiarity	Total (n=405)	Works in Southern California Market		Occupation				# non-residential projects last year		
		Yes (n=217)**	No (n=181)	Architect (n=118)**	Engineer (n=136)	Energy consultant (n=69)	Other (n=82)**	<5 (n=161)	5-10 (n=101)**	>10 (n=78)**
Use this tool	27%	25%	29%	11%	36%* ¹	51%*	13%	19%	39%* ⁴	33%* ⁴
Viewed, tried, or downloaded it, but haven't used it	25%	23%	27%	19%	35%*	19%	23%	25%	29%	19%
Aware of it, but haven't downloaded or viewed it	19%	18%	19%	19%	16%	13%	28%* ²	19%* ³	11%	23%* ³
Not aware of this tool	29%	33%*	25%	50%*	13%	17%	35%* ²	37%*	22%	24%

*Significantly higher percentage of respondents than comparison group at the 90% confidence level.

*¹Significantly higher percentage of respondents than architects and other at the 90% confidence level.

*²Significantly higher percentage of respondents than engineers and energy consultants at the 90% confidence level. *³Significantly higher percentage of respondents than those with 5-10 projects at the 90% confidence level.

*⁴Significantly higher percentage of respondents than those with <5 projects at the 90% confidence level.

**Does not add to 100% due to rounding.

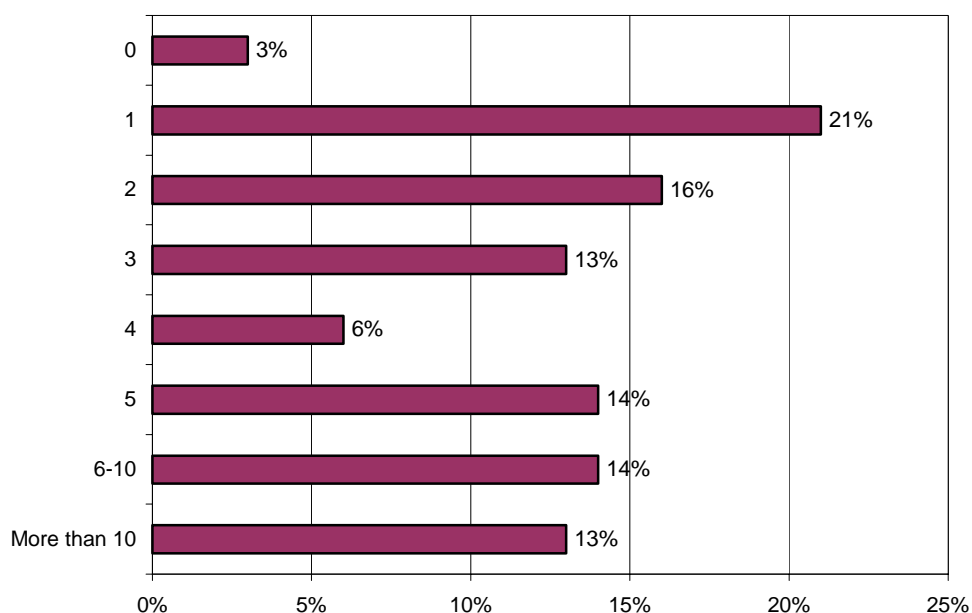
Of all of the tools, eQUEST is also the most utilized tool, with over 27% of respondents having used it. The main users of this tool appear to be engineers, followed by energy consultants. Architects are significantly less likely to be aware of eQUEST and less likely to be users than other occupational groups.

Respondents who use the eQUEST software also tend to have started five or more non-residential projects last year, thus indicating that market actors that do a lot of this type of work may find more use for this type of tool. Moreover, because more active market actors tend to use the tool, the impact that this tool is having will be greater.

Frequency of Use, Usefulness and Ease of Use

When we looked specifically at how many projects respondents used eQUEST for over a year, the trend was split. A large percentage (21%) used eQUEST for only one project; however, most used eQUEST more than once, demonstrating that they worked on multiple relevant projects and found it to be valuable enough to use again after their first encounter with the tool. (See Figure 5A-1.) (Note that the majority of respondents that used the tool only once felt that it did not result in changes to their design.) Of those that use eQUEST, 42% have used the tool for five projects or more. Respondents use eQUEST a mean of seven times per year; however, the median average of times respondents use eQUEST is three times per year. Several respondents use eQUEST more than 20 times per year, thus skewing the mean significantly higher than the median.

Figure 5A-1. Number of Projects For Which Respondents Used eQUEST in The Past Year (n=108)



Note that three people who ‘used the software’ never actually used it for projects. Two of these respondents stated they are ‘somewhat likely’ to use the tool in the future, and the other

respondents stated that he was ‘not likely at all.’ Of those who have used eQUEST for only one project (n=23), most were either ‘somewhat’ or ‘very likely’ to use the software in the future. Only two respondents stated that they were ‘not likely at all.’

According to the responses provided in Table 5A-2, some training is necessary for eQUEST users. Generally, it is designed to be a simplified version of DOE-2 with a friendly interface, so rather than taking a week or more to learn DOE-2, it is designed to take about a day of training. It is possible to take a course on using eQUEST, or to download the tutorial from the website. The manual for the program is also posted as freeware on the EDR website.

Respondents who have used eQUEST were also asked how easy it was to learn how to use the program. Nearly one-third feel that it is relatively easy to learn how to use, rating the ease of learning as a 6 or 7 on a scale of 1, ‘not easy to use,’ to 7, ‘extremely easy to use.’ The mean of respondents’ answers is 4.7; thus, respondents generally felt neutral to slightly favorable about the ease of learning eQUEST. Many open-ended responses elsewhere in the survey, however, seem to indicate that several users had difficulties. Several respondents requested additional technical support or an interactive forum with other users for discussing difficulties, for this tool in particular. In other parts of the survey, several respondents indicated that they would like “more training” or would like to see “more online help for eQUEST about refrigeration system simulation.”

Table 5A-2. Ease of Learning How to Use eQUEST

Rating	Total (n=108)**
1 – Not easy	1%
2	6%
3	18%
4	17%
5	29%
6	19%
7 – Extremely easy	11%
MEAN	4.7

**Does not add to 100% due to rounding.

For those respondents (n=60) who rated learning how to use eQUEST between a 1 and a 5 (from not easy to only somewhat easy), the major difficulties they encountered were that they did not have enough instruction or training (60%) or they did not have the required inputs available (30%). Despite the fact that these respondents all rated the ease of learning between ‘not easy’ and only ‘somewhat easy,’ when asked about the difficulties that they encountered, 18% of these 60 respondents answered they had no difficulties with eQUEST.²³

²³ Note that this question was a multiple response question so these percentages do not add to 100%.

Primary Uses for eQUEST

Table 5A-3 on the following page lists the reason respondents gave for using eQUEST. Most architects, engineers, and energy consultants—those who are usually involved during the design phase—who use eQUEST agreed that it is useful in determining a first rough-cut amount of savings (77%, 69%, and 66%, respectively). Overall, two-thirds of eQUEST users said that it is useful in ‘initially estimating energy, or cost savings, during the schematic design phase’.

Table 5A-3. Reasons for Using eQUEST (multiple response)

Reasons	Total (n=108)	Works in Southern California Market		Occupation			
		Yes (n=55)	No (n=52)	Architect (n=13)	Engineer (n=49)	Energy consultant (n=35)	Other (n=11)
As a first rough-cut at determining savings during schematic design phase	66%	58%	73%	77%	69%	66%	36%
For determining appropriate energy efficient measures to install	54%	58%	50%	38%	55%	66%* ¹	27%
For double checking energy or cost savings calculations done elsewhere	39%	40%	37%	23%	41%	40%	45%
Educational purposes	34%	27%	42%*	62%*	29%	34%	27%
As general information	26%	25%	27%	46%	22%	26%	18%
Marketing to clients	24%	20%	29%	--	24%	34%	18%
Simulation/Evaluation/Proposal	6%	7%	6%	8%	2%	9%	18%
Other	4%	4%	4%	--	2%	9%	--

*Significantly higher percentage of respondents than comparison group at the 90% confidence level.

*¹Significantly higher percentage of respondents than architects and other at the 90% confidence level.

Many users also felt that eQUEST is particularly useful for ‘determining the appropriate energy efficient measures to install,’ and for ‘double-checking savings calculations done elsewhere.’

Interestingly, 62% of the *architects* who have used eQUEST felt that it was particularly valuable for ‘educating clients and others.’ Architects were significantly more likely to use the tool in this way than any other occupational group. This is to be expected given that architects are more likely to interact with the client.

eQUEST users were also given a list of five benefits and asked about the software’s major benefits. They were also given the opportunity to list additional benefits. eQUEST’s greatest benefit, according to nearly 90% of respondents, is that eQUEST is ‘available free of charge’. (See Table 5A-4.) Around two-thirds of the population cited its ‘ease of use’ and its ‘simple format’ in presenting findings. The response ‘Provides information I can’t get elsewhere’ was mentioned by 27% of respondents.

Table 5A-4. Major Benefits of eQUEST (multiple response)

Benefits	Total (n=106)	Works in Southern California		Occupation			
		Yes (n=54)	No (n=51)	Architect (n=13)	Engineer (n=49)	Energy consultant (n=34)	Other (n=10)
Available free of charge	90%	91%	88%	100%* ¹	92%	82%	90%
Easy to use	67%	70%	65%	46%	63%	74%* ²	90%* ³
Presents findings in simple format	62%	57%	69%	62%	67%	62%	40%
Does not require great deal of expertise	45%	46%	43%	54%	39%	50%	50%
Provides information I can't get elsewhere	27%	31%	24%	23%	29%	26%	30%
Other	1%	2%	--	--	--	3%	--

*Significantly higher percentage of respondents than comparison group at the 90% confidence level.

*¹Significantly higher percentage of respondents than engineers and energy consultants at the 90% confidence level.

*²Significantly higher percentage of respondents than architects at the 90% confidence level.

*³Significantly higher percentage of respondents than architects and engineers at the 90% confidence level.

Table 5A-5. Limitations of eQUEST (multiple response)

Limitations	Total (n=96)	Works in Southern California		Occupation			
		Yes (n=49)	No (n=46)	Architect (n=13)	Engineer (n=42)	Energy consultant (n=32)	Other (n=9)
Too generic and cannot deal with parameters of my project	52%	57%	48%	46%	52%	53%	56%
Reports don't provide the information I need	19%	22%	15%	8%	17%	28%* ¹	11%
Not enough graphical presentations	17%	18%	13%	23%	10%	28%* ²	--
Not designed to meet state energy standards	17%	22%	11%	23%	19%	12%	11%
Requires too much time to learn	16%	12%	20%	15%	17%	16%	11%
Requires too much expertise	12%	8%	17%	23%	14%	9%	--
Requires too much time to use	8%	10%	7%	8%	7%	9%	11%
Other	11%	4%	20%*	8%	12%	12%	11%

*¹Significantly higher percentage of respondents than architects at the 90% confidence level.

*²Significantly higher percentage of respondents than engineers at the 90% confidence level.

Respondents were also read a list of some limitations of eQUEST and given the opportunity to add their own limitations. (Limitations are presented in Table 5A-5.) Although the responses about its limitations are not comparatively as high as the responses about its benefits, nearly half the population of users considered eQUEST to be ‘too generic’ and ‘unable to deal with the specific parameters of their projects.’ Other objections to the software included not providing the information needed (19%), not having enough graphical presentations (17%), not being designed to meet state energy standards (17%), and requiring too much time to learn the program (16%).

One respondent indicated that, “The eQUEST Program does not have the ability to create the multiple zones that are required to analyze a hotel. In addition the program does not properly handle the impact on fans correctly when the temperatures are set back.”

Designers of this tool agree that its greatest strength is that it adapts to a wide range of skill and knowledge in a user—people with a very wide range of knowledge and experience can use it quite readily—and that the learning curve is very short to get started; however, it has a very complete and sophisticated simulation behind it. In addition, if the user is so inclined, they can get into the details of a project. eQUEST offers two modes: the wizard mode and the detail mode. The user can start in the wizard mode and get close to modeling the building that they are working on, and then (for more proficient users) they can switch to the detail mode and specify far more detail. It is not clear, however, that users have the training to understand that they can do this.

eQUEST appears to be able to impact (and therefore, lead to energy savings in) several of the major energy using systems in a building, as shown in Table 5A-6.

Table 5A-6. Systems or Equipment Most Affected by Use of eQUEST (multiple response)

System or Equipment	Total (n=58)
HVAC	95%
Building envelope systems	71%
Electric lighting systems	67%
Daylighting/Skylighting systems	53%

Among users, HVAC was the system most affected by the use of eQUEST. In fact, almost all eQUEST users (95%) cited HVAC systems as being the most impacted by eQUEST. Over two-thirds of respondents claimed that building envelope systems (71%) and electric lighting systems (67%) were also impacted by eQUEST. The fact that this tool is useful for multiple major systems may explain its ability to lead to such high savings.

Comparison to Similar Tools

Most users of eQUEST (n=108) had also used other building energy modeling tools (88%). It appears that there are a multitude of similar tools that these respondents had used including: DOE2, Trace, Visual DOE, Energy+, Power DOE, energy10, Market Manager, EnergyPro, Carrier HAP, Tran System Analyzer TRNSYS, BLAST, ESPRE, ASEAM, Arup software, PEAR, APACHE Ecotect, EzSim, HCCV, and EES. DOE or DOE2 was mentioned the most frequently (40% of respondents mentioned this tool).

Most respondents appear to be satisfied with eQUEST when compared to other similar tools. The majority of eQUEST users who had also used other building energy models said eQUEST was better (57%) than these other tools. (See Table 5A-7.) A quarter of the population said it was about the same as the other tools they have used, and 19% said it was worse.

Table 5A-7. Comparison of eQUEST to Other Tools Respondent Has Used

Rating	Total (n=91)
Much better	24%
Slightly better	33%
Same	24%
Slightly worse	18%
Much worse	1%

Specifically, eQUEST was greatly preferred when compared to DOE/DOE2, Power DOE and Trace, as Table 5A-8 shows. In general, therefore, respondents preferred eQUEST at least as much or more compared to any of the other tools that respondents had previously used.

Almost all respondents who have used eQUEST say they are likely to continue using it. Sixty-eight percent of the 108 users say they are very likely, and another 30% are somewhat likely to use eQUEST again. Only 3% of respondents said continued use was very unlikely. eQUEST appears to be a valuable tool to most users.

Table 5A-8. eQUEST as Compared to Specific Other Tools Used by Respondents

Software Tool	n	% who rated eQUEST better or the same
DOE/DOE2	36	83%
Power DOE	18	83%
Trace	18	83%
Visual DOE	11	78%
Carrier HAP	12	75%
Energy Pro	10	70%
Energy 10	9	56%

Respondents Who Have Downloaded eQUEST but Not Used

Approximately 25% of respondents have downloaded or viewed eQUEST but not actually used it. Reasons for not using eQUEST varied, but the most oft-cited reason was that respondents did not have the time (38%). (See Table 5A-9.)

Table 5A-9. Reasons for not using eQUEST (multiple response)

Reasons	Total (n=102)
Did not have time	38%
Did not need software	27%
Did not have enough instruction or training	24%
Did not have required inputs available	20%
After downloading, realized it wasn't what I needed	7%
Forgot tool was downloaded	5%
Could not download or open program	5%
Not flexible enough	3%
Not in California	2%
Use other tools	1%
Other	2%

Interest of Respondents Who Have Not Downloaded or Used eQUEST

Respondents who were not aware of eQUEST prior to our survey or had not downloaded or viewed eQUEST were provided with a description of the tool and asked to rate their level of interest. As Table 5A-10 shows, an overwhelming majority, more than 90%, responded with some level of interest: 35% were ‘somewhat interested’ and 56%—over one-half—were ‘very interested.’

Table 5A-10. Level of Interest in eQUEST

Rating	Total (n=195)
Very interested	56%
Might be interested	35%
Not interested	9%

Of the small number who were not interested (n=15), most (80%) felt that the tool was irrelevant to their work. One felt that they already had the tools and another did not have time to use the tools.

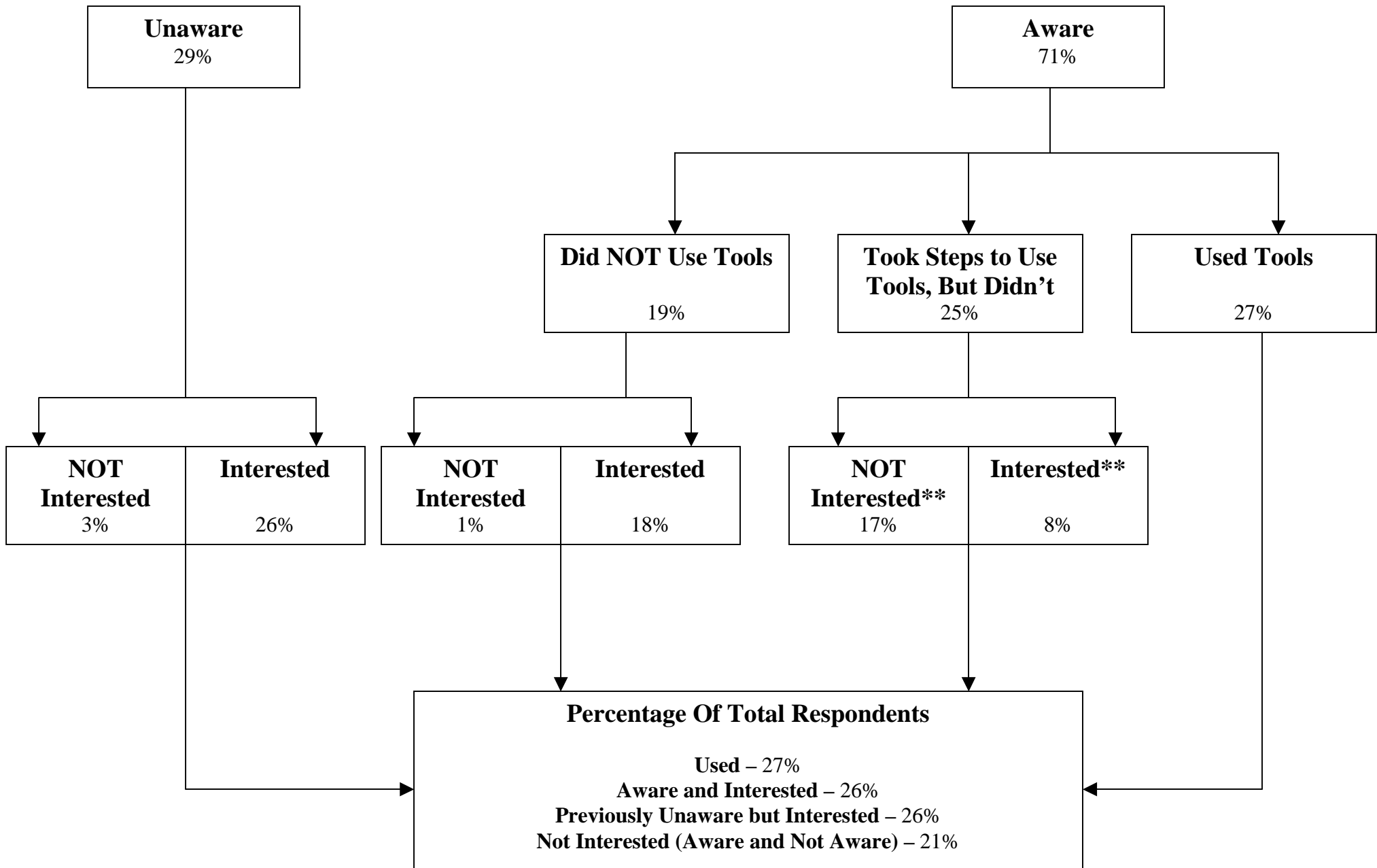
eQUEST Summary

Awareness and use of this tool are higher than for any other software tool. In fact, more EDR respondents were aware of this tool than any other tool (including all software, publications and trainings) and use of the tool was second only to eNews, which is actively sent out to many EDR participants. Moreover, not only is this tool used by a large percentage of respondents, but those respondents that use the tool tend to use it for multiple projects. The repetitive use of this tool and the fact that over 90% of those that have used eQUEST are likely to use the tool again in the future demonstrate that many users find the tool to be valuable to the work that they do. In general this tool appears to be serving its purpose for many users and having an impact on the new construction market.

One primary target of eQUEST is architects; yet this group is not as aware of this tool as are other market actors and is not using the software as much as engineers and energy consultants, the two primary users. Architects that do use this tool, however, are more likely than any other group to use it for educational purposes and 77% of architects that use the tool state that it has led to more energy efficient designs. This is due, perhaps, to the architect’s role in new building projects. Since this tool can be valuable in educating end-users, EDR may want to consider additional outreach efforts to architects in order to increase their use of this tool.

A summary of eQUEST is shown in the following flowchart.

eQUEST (n=405)



eVALUator

eVALUator is an easy-to-use Windows™-based program that calculates the lifecycle benefits of investments that improve building design. It analyzes the financial benefits from buildings that reduce energy cost, raise employee productivity, and enhance tenant satisfaction.

The goal of eVALUator is to provide building owners, developers, tenants, architects, engineers, and facility managers with the financial information necessary to make sound decisions about building improvements. Unlike other EDR software tools, this tool attempts to go beyond designers to draw in developers and facility managers.

eVALUator offers a different and unique aspect of energy-efficiency. While there are other life-cycle costing tools available (such as the Building Life Cycle Cost-BLCC), this one was designed to focus on energy-related issues. It offers two different perspectives: an owners' perspective and a developers' perspective (e.g., whether or not it makes sense for a developer to make energy efficiency improvements on a building or not). Tools competitive with eVALUator appear to be more focused on the owners' perspective – more of a traditional life-cycle cost analysis.

eVALUator, unlike eQUEST and SkyCalc, is only offered through the EDR web page. No training or tutorial is available for this tool.

eVALUator is one of the least used tools, despite the fact that over half of all EDR respondents are aware of this tool. (See Table 5B-1.) Architects are the least aware and the least likely group to use this tool.

Table 5B-1. Respondent's Familiarity with eVALUator

Familiarity	Total (n=405) **	Works in Southern California Market		Occupation				# non-residential projects last year		
		Yes (n=217) **	No (n=181)	Architect (n=118)	Engineer (n=136)	Energy consult. (n=69)	Other (n=82) **	<5 (n=161)	5-10 (n=101) **	>10 (n=78)
Use this tool	5%	5%	6%	1%	7%* ²	9%* ²	4%	2%	7%	10%* ³
Viewed, tried, or downloaded it, but haven't used it	20%	20%	20%	11%	25%* ²	30%* ²	17%	22%	23%	14%
Aware of it, but haven't downloaded or viewed it	29%	29%	30%	26%	35%	25%	29%	27%	26%	35%
Not aware of this tool	45%	47%	44%	62%*	33%	36%	50%* ¹	49%	45%	41%

*Statistically higher percentage of respondents than comparison group at the 90% confidence level.

*¹Statistically higher percentage of respondents than engineers and energy consultants at the 90% confidence level.

*²Statistically higher percentage of respondents than architects at the 90% confidence level.

*³Statistically higher percentage of respondents than those with <5 projects at the 90% confidence level.

**Does not add to 100% due to rounding.

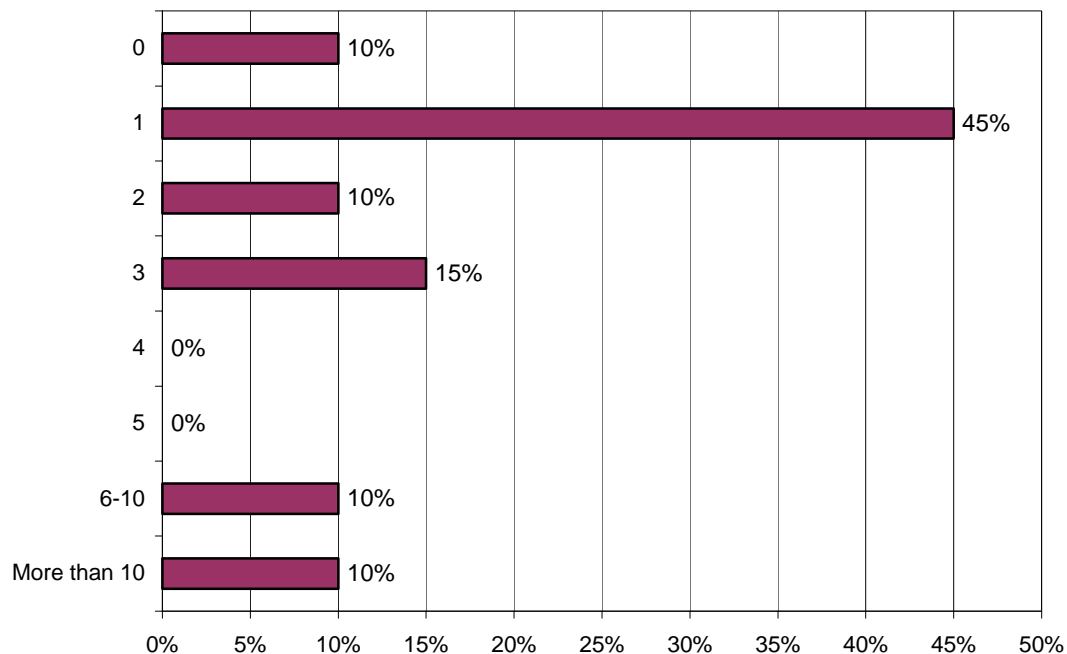
While this tool is geared towards owners, owner’s representatives and developers, these market actors make up only a very small subset (just over one percent) of EDR respondents. (Note that these respondents are represented in the “Other” category.) Of the few owners, owner’s representatives or developers (the primary targets) that we surveyed, only a few indicated that they were aware of the tool and none had used the tool.

Frequency of Use, Usefulness, and Ease of Use

Only a small number of respondents (20) have used eVALUator. While approximately half of these respondents (45%) have used it only once, all of these respondents were either ‘somewhat’ or ‘very likely’ to use the software in the future. (See Figure 5B-1.)

Note that two people who stated that they have used the software tried it out but never actually used it for projects; yet both indicated that they would be willing to use it in the future. One of these respondents stated that he is ‘somewhat likely’ to use the tool in the future and the other respondent stated that he is ‘very likely.’ A large percentage of users (45%) used the tool only once. Of those who have used it eVALUator only once (n=8), all were either ‘somewhat’ or ‘very likely’ to use the software in the future.

Figure 5B-1. Number of Projects For Which Respondent Used eVALUator in the Past Year (n=20)



It does not appear that the difficulty of learning how to use the tool was an impediment to use. Fourteen out of the 20 users found it relatively easy to use. Overall, these 20 users gave it an average rating of 5.0 on the 1 to 7 scale shown in Table 5B-2.

Table 5B-2. Ease of Learning How to Use eVALUator

Rating	Total (n=20)
1 – Not easy	--
2	5%
3	10%
4	15%
5	35%
6	25%
7 – Extremely easy	10%
MEAN	5.0

Of the few users who found it even slightly difficult (n=12), a couple indicated that they did not have the required inputs to use the tool and a few stated that they needed additional training or support.

Primary Uses for eVALUator

Users of eVALUator felt that it was primarily useful for determining a rough estimate of energy savings during the early phase of the project. (See Table 5B-3.)

Table 5B-3. Reasons for Using eVALUator (multiple response)

Reasons	Total (n=20)	Works in Southern California Market		Occupation			
		Yes (n=10)	No (n=10)	Architect (n=1)	Engineer (n=10)	Energy consultant (n=6)	Other (n=3)
As a first rough-cut at determining savings during schematic design phase	65%	60%	70%	100%	80%	50%	33%
For determining appropriate energy efficient measures to install	35%	40%	30%	100%	40%	33%	--
For double checking energy or cost savings calculations done elsewhere	30%	20%	40%	--	30%	33%	33%
Marketing to clients	20%	30%	10%	--	20%	33%	--
Educational purposes	15%	10%	20%	100%	10%	17%	--
As general information	10%	10%	10%	--	--	17%	33%

In general, the major benefits of eVALUator include that it is available free of charge, it is easy to use, and it presents its findings in a simple format. (See Table 5B-4.)

Table 5B-4. Major Benefits of eVALUator (multiple response)

Benefits	Total (n=20)	Works in Southern California Market		Occupation			
		Yes (n=10)	No (n=10)	Architect (n=1)	Engineer (n=10)	Energy consultant (n=6)	Other (n=3)
Available free of charge	65%	60%	70%	100%	90%	33%	33%
Easy to use	55%	50%	60%	100%	70%	50%	--
Presents findings in simple format	50%	20%	80%*	--	60%	67%	--
Does not require great deal of expertise	45%	50%	40%	--	60%	17%	67%
Provides information I can't get elsewhere	15%	10%	20%	--	20%	17%	--

In addition, according to the creators of this tool, some of the tool's strengths over other life-cycle analysis tools include its ability to deal with non-energy benefits such as enhanced productivity and its ability to deal with scenarios other than owner-occupied buildings. It is unclear, however, whether users are aware of these benefits.

The greatest weakness recognized by users was that eVALUator does not offer enough graphical presentations. (See Table 5B-5.) The tool's other major weakness is that eVALUator may not be detailed or flexible enough for some users. Users also pointed this out by stating that the tool is too generic.

Table 5B-5. Limitations of eVALUator (multiple response)

Limitations	Total (n=16)	Works in Southern California Market		Occupation			
		Yes (n=8)	No (n=8)	Architect (n=1)	Engineer (n=8)	Energy consultant (n=4)	Other (n=3)
Not enough graphical presentations	38%	38%	38%	--	38%	75%	--
Tool is too generic and cannot deal with the parameters of my project	38%	38%	38%	100%	25%	25%	67%
Reports do not provide the information I need	12%	25%	--	--	12%	--	33%
Requires too much time to learn	12%	--	25%	--	25%	--	--

Comparison to Similar Tools

Fifty-five percent of the 20 users of the eVALUator tool had experience using other life-cycle costing tools as well. The tools mentioned included BLCC, LCC, Trace, and custom spreadsheets.

Most felt that the eVALUator was neither better nor worse than these other tools, as shown in Table 5B-6. Only a couple of users of custom Excel spreadsheets felt that eVALUator was worse than the tools that they were comparing it to.

Table 5B-6. Comparison of eVALUator to Other Tools Respondent Has Used

Rating	Total (n=11)
Much better	9%
Slightly better	18%
Same	55%
Slightly worse	9%
Much worse	9%

Overall, 85% of users stated that they would probably use the tool again—with 20% ‘very likely’ and 65% ‘somewhat likely’—while only 15% stated that they were ‘not likely’ to use the tool in the future.

Respondents Who Have Downloaded eVALUator but Not Used

Twenty percent of EDR respondents were aware of eVALUator and had downloaded or looked at the tool without using the software. Many of these respondents stated that they ‘did not have time’ or that the tool was ‘not relevant to their job’ or not needed for what they wanted to do. (See Table 5B-7.) Additionally, despite the fact that this tool is relatively easy to use, one in five respondents stated that they needed more training and 15% stated that they did not have the available inputs. These responses indicate that additional support for this tool may be necessary.

Table 5B-7. Reasons for not using eVALUator (multiple response)

Reasons	Total (n=82)
Did not have time	30%
Did not need to use tool for my job	27%
Did not have enough instruction or training	21%
Did not have required inputs available	15%
After downloading the tool, I realized it was not what I needed	7%
Forgot I downloaded the tool	5%
Use other tools	5%
Have not worked on a compatible project	2%
Could not download or open program	1%
Other	1%

Interest of Respondents Who Have Not Downloaded or Used eVALUator

Despite the limited use of this tool, of the respondents who were not aware or had not downloaded eVALUator (n=303), about one-half stated that they were ‘very interested’ in using the tool in the future, and an additional 37% of respondents stated that they ‘might be interested.’ Only 13% were ‘not interested.’

Of those who were not interested (n=36), most stated it was because the tool is not relevant to the work that they do. (See Table 5B-8.)

Table 5B-8. Reasons Why Respondent is Not Interested in eVALUator (multiple response)

Reasons	Total (n=36)
Not relevant to work I do	61%
Already have the tools to do this and do not need additional tools	19%
Do not have enough time to use this type of tool	17%
Do not have clients who place a high priority on energy efficiency	8%
Design budget doesn’t allow for additional analysis	6%
Use Macs	3%

eVALUator Summary

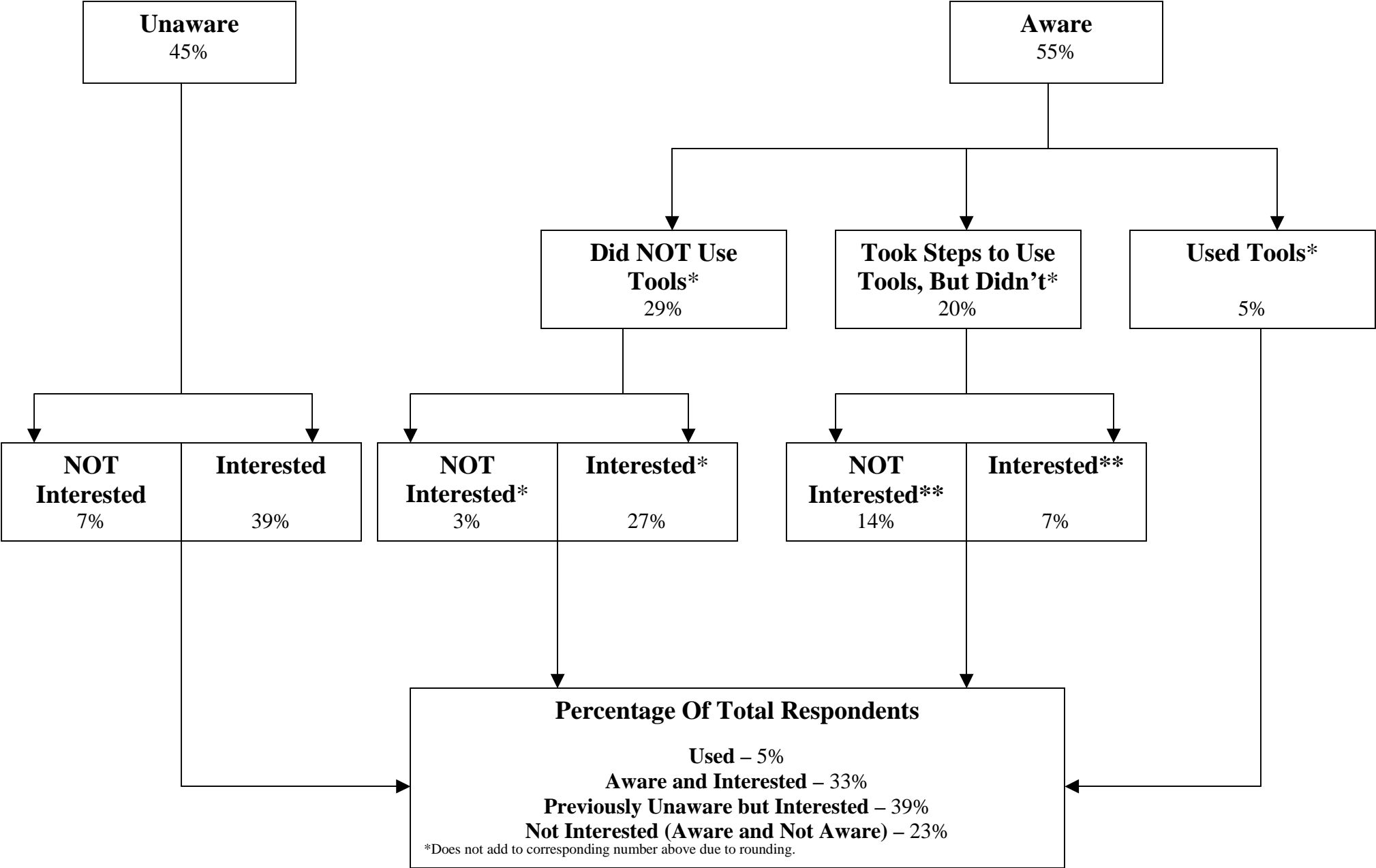
In general, the current EDR audience is not the right audience for eVALUator. eVALUator is primarily geared towards owners, owner's representatives and developers—a targeted audience that makes up only a very small subset (just over 1%) of EDR respondents. No owners, owner's representatives or developers (the primary targets) indicated that they had used the tool, although a few were aware of the tool. The fact that eVALUator is targeted at a different audience than the rest of the EDR tools explains its low use by EDR respondents. Only 5% of respondents had used this tool. (An overall summary of eVALUator is shown in the following flowchart.)

While architects may find this tool useful for demonstrating cost savings to builders and developers, architects are among the least aware of the tool and the least likely to use it.

Many eVALUator users have used other life-cycle costing tools or spreadsheets in the past and most feel that eVALUator was neither better nor worse than these other tools.

While several of the users found value in this tool and several stated that they would probably use the tool again, the EDR audience needs to be widened to include building owners and developers before the value of this tool can be thoroughly realized and evaluated. Furthermore, EDR should seek to include architects as one of the targets of this tool since eVALUator could serve as a valuable educational tool to demonstrate energy savings.

eVALUator (n=405)



SKYCALC

SkyCalc is a simple computer tool that helps building designers determine the optimum skylighting strategy to achieve maximum lighting and HVAC energy savings for a building. The program is a Microsoft Excel™ spreadsheet application that runs on a personal computer. It uses simple data inputs (either common defaults or user-supplied data) to describe a building and analyze possible skylighting strategies. It then calculates the lighting and whole-building energy impacts of each design, and produces graphs and charts that describe annual energy-use patterns.

SkyCalc was designed to appeal primarily to architect and lighting designers, but the creators of this tool also hoped to reach electrical engineers. It was constructed as a tool that could be easily used in the schematic design phase. EDR focused on SkyCalc because skylighting is a big energy saver in Southern California—thus, many buildings can use this technology.

Awareness of SkyCalc is relatively high: 63% of EDR respondents were familiar with this tool. (See Table 5C-1.) However, architects—one of the primary targets—are significantly less aware of SkyCalc than the other groups of respondents.

Table 5C-1. Respondent's Familiarity with SkyCalc

Familiarity	Total (n=405) **	Works in Southern California Market		Occupation				# non-residential projects last year		
		Yes (n=217) **	No (n=181)	Architect (n=118)	Engineer (n=136) **	Energy consultant (n=69)	Other (n=82) **	<5 (n=161) **	5-10 (n=101) **	>10 (n=78) **
Use this tool	11%	11%	11%	9%	7%	20% * ³	15%	6%	18% * ⁴	12%
Viewed, tried, or downloaded it, but haven't used it	20%	17%	24% *	17%	21%	22%	23%	25% *	23% *	12%
Aware of it, but haven't downloaded or viewed it	31%	32%	30%	27%	41% * ²	32%	20%	27%	27%	33%
Not aware of this tool	37%	40%	35%	47% * ¹	32%	26%	43%	41%	33%	44%

*Significantly higher percentage of respondents than comparison group at the 90% confidence level.

*¹Significantly higher percentage of respondents than engineers and energy consultants at the 90% confidence level.

*²Significantly higher percentage of respondents than architects and other at the 90% confidence level.

*³Significantly higher percentage of respondents than architects and engineers at the 90% confidence level.

*⁴Significantly higher percentage of respondents than those with <5 projects at the 90% confidence level.

**Does not add to 100% due to rounding.

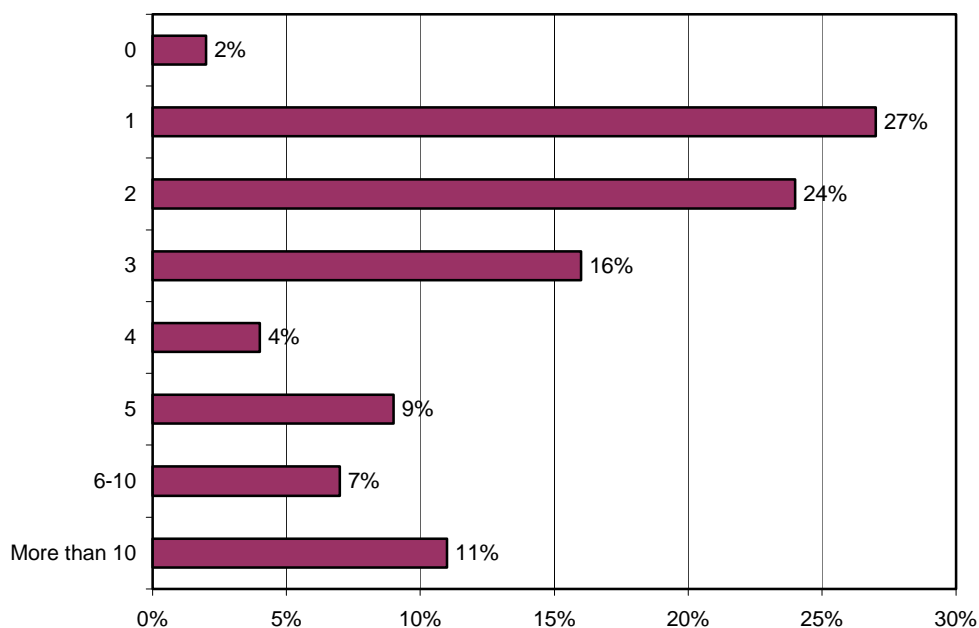
Just over 10% of EDR respondents have used this tool. The use of this tool, therefore, is relatively low. Energy consultants (20%), however, are more likely than any other group to use SkyCalc. Several lighting designers, developers, owners or owners' representatives, and at least one manufacturer also indicated that they have used this tool.

Frequency of Use, Usefulness and Ease of Use

Frequency of use among SkyCalc users is also low, as evidenced by the fact that over half the respondents used SkyCalc for just one or two projects in the past year. (See Figure 5C-1.) Over a quarter of respondents, however, have used the tool five times or more, demonstrating that they feel that this tool is valuable. On average, users used this tool for approximately four or five projects a year.

One person who stated that he had used SkyCalc did not actually use it on any projects but he indicated that he would be ‘somewhat likely’ to use the tool in the future. Of those who have used it only once (n=12), most (seven respondents) were ‘very likely’ to use the tool again. Only one respondent was ‘not at all’ likely to use SkyCalc again.

Figure 5C-1. Number of Projects For Which Respondents Used SkyCalc in the Past Year (n=45)



Most respondents felt that it was relatively easy to learn to use SkyCalc. Table 5C-2 shows that three-quarters rated SkyCalc with a 5, 6, or 7, on a 1 to 7 scale where 7 means it was ‘extremely easy’ to learn. The average response is 5.5, thus indicating respondents found SkyCalc generally easy to learn. Energy consultants (one of the largest groups of users) had the easiest time learning to use this tool and rated its ease of use as a 5.9 on the 7-point scale. Architects that had used the tool, on the other hand, gave it a slightly lower average rating of 5 in terms of ease of learning.

Table 5C-2. Ease of Learning How to Use SkyCalc

Rating	Total (n=46)
1 – Not easy	--
2	--
3	4%
4	20%
5	26%
6	26%
7 – Extremely easy	24%
MEAN	5.5

For those respondents who felt that learning how to use SkyCalc was even slightly difficult (n=22), the major obstacles encountered were difficulties with the required inputs (36%) or a lack of sufficient instruction (23%). However, a good percentage of respondents (23%) reported having no trouble learning SkyCalc.

SkyCalc users (n=46) were asked how likely they would be to continue using SkyCalc, and almost all (98%), save one, responded positively. Sixty-five percent indicate that they are ‘very likely’ and another one-third say they are ‘somewhat likely’ to use SkyCalc again.

Primary Uses for SkyCalc

SkyCalc users reported using the software for an initial estimate of savings and as a guide on whether to install skylights and/or lighting controls. (See Table 5C-3.) Other uses of SkyCalc are: ‘educational purposes’ (31%), ‘marketing to clients’ (20%), ‘for general information’ (20%), and ‘to double check energy or cost savings calculations’ (18%).

SkyCalc users were also asked what they see as the major benefits of the software. Respondents indicated they appreciated the easy access to the software--because it is free (78%) and/or because it is easy to use (67%). (Results are shown in Table 5C-4 below.) This latter result is consistent with the previous finding indicating that respondents generally found learning SkyCalc to be somewhat easy.

Energy consultants, lighting designers, and building owners and developers appreciated SkyCalc for its unique application. A significantly higher percentage of these respondents (who represent the main users of this software) felt that SkyCalc provides them with information not obtainable elsewhere. Architects and engineers were more likely to feel that this information was already accessible to them.

Table 5C-3. Reasons for Using SkyCalc (multiple response)

Reasons	Total (n=45)	Works in Southern California Market		Occupation			
		Yes (n=23)	No (n=20)	Architect (n=11)	Engineer (n=9)	Energy consultant (n=14)	Other (n=11)
As a first rough-cut at determining savings during schematic design phase	60%	65%	55%	64%	56%	50%	73%
For determining appropriate energy efficient measures to install [i.e., skylights and lighting controls]	56%	48%	65%	64%	56%	57%	45%
Educational purposes	31%	30%	30%	36%	11%	29%	45%* ¹
Marketing to clients	20%	35%*	5%	9%	--	36%* ²	27%
As general information	20%	30%*	10%	27%	11%	14%	27%
For double checking energy or cost savings calculations done	18%	26%*	5%	18%	22%	14%	18%

*Significantly higher percentage of respondents than comparison group at the 90% confidence level.

*¹ Significantly higher percentage of respondents than engineers at the 90% confidence level.

*² Significantly higher percentage of respondents than architects at the 90% confidence level.

**Does not add to 100% due to rounding.

Table 5C-4. Major Benefits of SkyCalc (multiple response)

Benefits	Total (n=45)	Works in Southern California Market		Occupation			
		Yes (n=23)	No (n=20)	Architect (n=11)	Engineer (n=9)	Energy consultant (n=14)	Other (n=11)
Available free of charge	78%	83%	75%	82%	89%	64%	82%
Easy to use	67%	61%	80%	55%	78%	64%	73%
Presents findings in simple format	60%	57%	65%	55%	78%	57%	55%
Does not require great deal of expertise	44%	48%	45%	45%	56%	43%	36%
Provides information I can't get elsewhere	42%	39%	45%	9%	11%	71%*	64%*

*Significantly higher percentage of respondents than architects and engineers at the 90% confidence level.

SkyCalc users also offered their criticisms of the tool, with the most oft-cited complaints being that SkyCalc is too generic for their projects (44%) and that it does not offer enough graphical presentations (31%). (See Table 5C-5 for limitations of the tool.)

Respondents who work on buildings in Southern California agreed strongly (compared to those who work outside of the region) with this sentiment. They pointed to the same limitations of SkyCalc—it could not handle their projects’ specific parameters or create the graphical presentations they needed.

Table 5C-5. Limitations of SkyCalc (multiple response)

Limitations	Total (n=33)	Works in Southern California Market		Occupation			
		Yes (n=17)	No (n=14)	Architect (n=9)	Engineer (n=7)	Energy consultant (n=10)	Other (n=7)
Too generic and cannot deal with parameters of my project	55%	76%*	36%	44%	71%	50%	57%
Not enough graphical presentations	33%	41%*	14%	22%	43%	50%	14%
Only for California	15%	6%	29%*	33%	--	10%	14%
Reports do not provide the information I need	12%	18%	7%	22%	--	10%	14%
Not designed to meet state energy standards	12%	12%	14%	33%	--	10%	--
Requires too much time to use	3%	6%	--	--	14%	--	--

*Significantly higher than architects and engineers at the 90% confidence level.

Several SkyCalc users requested additional US weather data. Another user stated that he “would like to see reference to tubular skylights within [the] material, as [he] believe[s] they are the only daylighting system qualified for the California energy rebate program, and also on display in CTAC.”

Respondents Who Have Downloaded SkyCalc but Not Used

The most oft-cited reason for not using SkyCalc was that respondents did not need it (38%); similarly respondents were not interested in SkyCalc because it is irrelevant to the work they do. Time also appears to be an issue, ranking second (with 27% of respondents) in reasons why respondents do not use SkyCalc. (These reasons are presented in Table 5C-6, on the following page.)

Table 5C-6. Reasons for not using SkyCalc (multiple response)

Reasons	Total (n=82)
Did not need to use the tool for my job	38%
Did not have time	27%
Did not have the required inputs available	21%
Did not have enough instruction or training	18%
Have not worked on a compatible project	11%
After downloading the tool, I realized it was not what I needed	10%
I forgot I downloaded the tool	2%
Not in California	2%
Use other tools	1%
Other	1%

Interest of Respondents Who Have Not Downloaded or Used Software

Of those who are not aware or have not downloaded or viewed SkyCalc, respondents were asked to rate their level of interest after having read a brief description in the survey. While respondents were not as likely to be interested in SkyCalc compared to eQUEST, a strong majority (77%) still reported some level of interest. Thirty-two percent were very interested and the other 45% indicated they might be interested. Sixty-three respondents, or 23%, indicated they are not interested in using this tool.

As shown in Table 5C-7, respondents who reported they were not interested in SkyCalc said their disinterest was mostly because of its irrelevance. While users of the software generally find SkyCalc a useful tool, 82% of non-users believe SkyCalc is not pertinent to their work.

Table 5C-7. Reasons Why Respondent is Not Interested in SkyCalc (multiple response)

Reasons	Total (n=62)
Not relevant to work I do	82%
Not in California	10%
Design budget does not allow for additional analysis	5%
Already have the tools to do this and do not need additional tools	3%
Do not have enough time to use this type of tool	2%
Do not have enough time to learn how to use this type of tool	2%

SkyCalc Summary

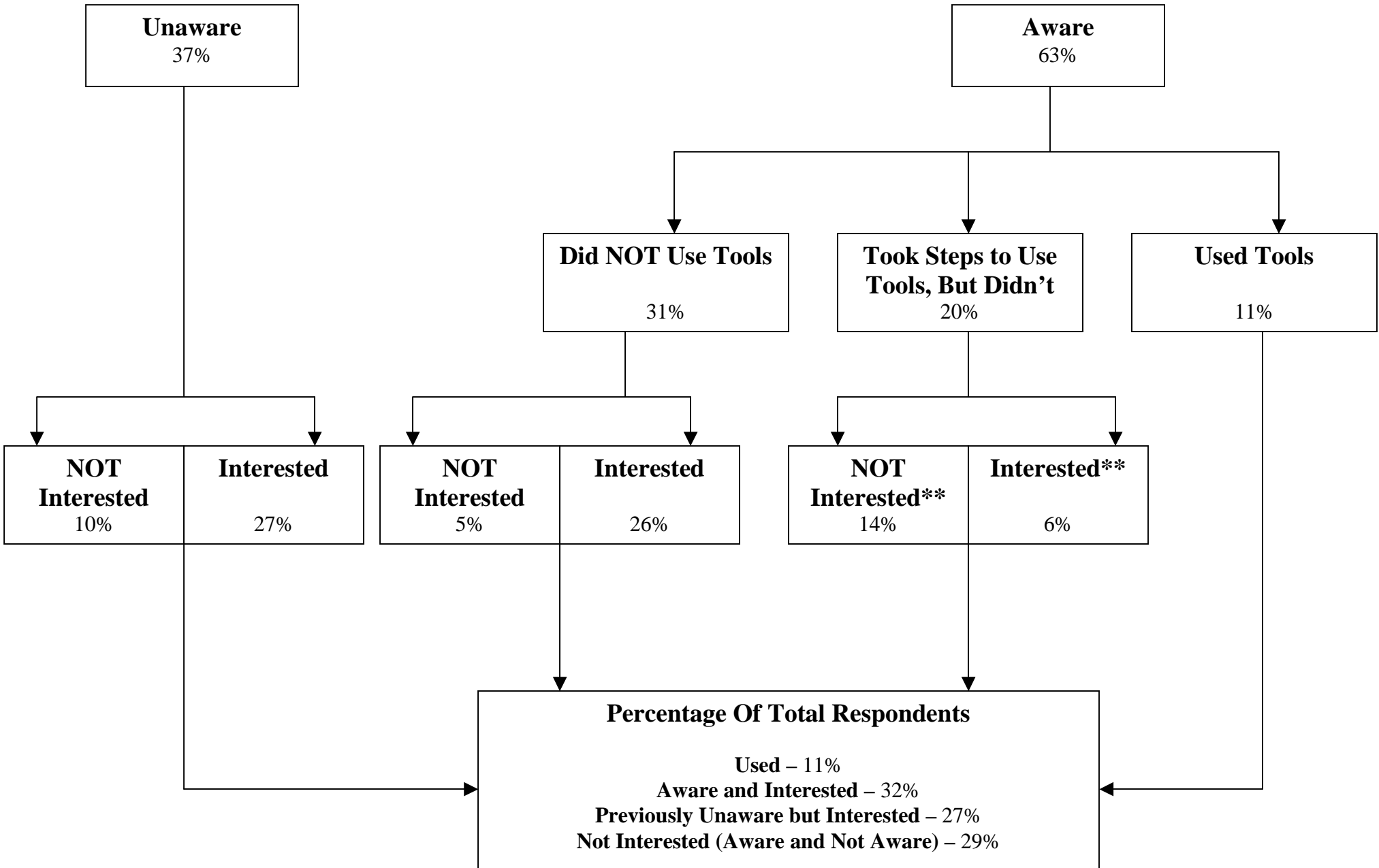
Awareness of this tool is high: 63% of EDR respondents were familiar with SkyCalc. (See the flowchart following this section for an overall summary of SkyCalc.) Notably, however, awareness among architects—one of the primary targets—is much lower than awareness among other groups of users.

While awareness is high, only 11% of EDR respondents have used this tool. Primary users of this tool are energy consultants, who feel, more than any other group, that SkyCalc provides information that they can not get any other place. Architects are less likely to use this tool.

The tool is generally effective in assisting users to determine the number of skylights to install per area and the spacing of these skylights. Over 90% of users feel that it gave them a better understanding of skylighting systems, and 63% feel that it led to a more efficient design. Furthermore, users of this tool generally feel that the tool is easy to use, and almost all stated that they are likely to use this tool again.

While there are several EDR respondents who are not interested in this tool, (29%, mostly because they do not work on daylighting), interest is generally high: some 59% of all respondents are interested in learning more and perhaps using SkyCalc. EDR should, therefore, search for ways to encourage the use of SkyCalc among interested parties. Providing additional training or providing frequent updates about how this tool can be used may help to increase its use.

SkyCalc (n=405)



EDR CHARETTE

According to the creators of this tool, “Charette” is a term used to describe the act of brainstorming or a “quick sketch” of a situation. The EDR Charette was designed to allow a user to brainstorm and get a quick sketch of the energy use (or energy savings) in a new building.

As the tool’s designer stated, the EDR Charette is “kind of a quick way to say ‘well is that a reasonable sales claim that that person who came through just made?’ It provides something graphical when new building professionals are talking to clients.”

While it is designed to be used by anyone, very few EDR respondents—only 2% (seven people)—have used the tool. (See Table 5D-1.) An additional 33% of respondents are aware of the tool but have not used it. The majority of respondents, however, are unaware that the EDR website offers this tool. Architects, in particular, are the EDR respondents that are the least aware.

Table 5D-1. Respondent’s Familiarity with the EDR Charette

Familiarity	Total (n=405)	Works in Southern California Market		Occupation			
		Yes (n=217)	No (n=181)	Architect (n=118) **	Engineer (n=136)	Energy consult. (n=69) **	Other (n=82) **
Use this tool	2%	2%	1%	--	3%	3%	1%
Viewed, tried, or downloaded it, but haven’t used it	9%	8%	11%	8%	12%	9%	7%
Aware of it, but haven’t downloaded or viewed it	24%	22%	27%	19%	24%	35% ^{*2}	24%
Not aware of this tool	65%	68%	61%	74% ^{*1}	61%	54%	67%

^{*1} Significantly higher percentage of respondents than engineers and energy consultants at the 90% confidence level.

^{*2} Significantly higher percentage of respondents than architects and engineers at the 90% confidence level.

**Does not add to 100% due to rounding.

There is little variation in the overall result by number of projects completed last year by respondents. These results, therefore, are not reported in the table above.

Findings Among Users of the EDR Charette

Of those who have used the tool (n=7), most stated that they used the tool ‘for general information’ or ‘as a rough cut for determining savings,’ which is consistent with the objectives of the tool.

Five of the seven users stated that the EDR Charette gave them a better understanding of the relationship between design options and energy use, and five also stated that their use of the EDR Charette motivated them to investigate other building simulation tools.

Almost all users (86%) agreed that the major benefit of the Charette is that it does not require a great deal of expertise. Additional benefits mentioned included that ‘it is easy to use,’ ‘it is available free of charge,’ and ‘it presents the findings in a simple format.’ According to the tool’s creators, one of its strengths is that it does a good job at looking at the impacts of other envelope issues and making location comparisons—users can choose any zip code in the state and know the impacts in relative terms, which is useful for chain stores and users that are considering multiple locations for their building. The EDR Charette is also easier to use than the other tools because it does not have to be downloaded from the website. This might be particularly useful for users with slow internet connection speeds.

Four of the seven users of this tool, however, felt that the tool is too generic and is unable to deal with the specific parameters of certain projects. This is understandable given that the tool, in fact, is designed to be somewhat generic.

The seven EDR Charette users generally felt that this tool was easy to use. All seven gave it a rating of 5 or higher on a scale of 1 to 7 where 1 was ‘not easy’ to use, and 7 was ‘extremely easy’ to use. However, most users of the EDR Charette have used this tool only once. Only one user stated that he used the tool multiple times, but six of the seven users stated that they were at least ‘somewhat likely’ to use the EDR Charette again.

Respondents Who Have Looked at the Charette but Have Not Used

Of the respondents who stated that they had seen the tool but had not used it, most felt that they did not need the EDR Charette for the work that they do. (See Table 5D-2.)

Table 5D-2. Reasons for not using EDR Charette (multiple response)

	Total (n=38)	Works in Southern California Market		Occupation			
		Yes (n=17)	No (n=20)	Architect (n=9)	Engineer (n=17)	Energy consult. (n=6)	Other (n=6)
Did not need to use the tool for my job	45%	59%*	30%	44%	41%	50%	50%
Did not have time	29%	18%	40%	33%	41%	17%	--
Did not have enough instruction or training	16%	18%	15%	22%	12%	17%	17%
Did not have required inputs available	8%	--	15%	--	6%	--	33%
After downloading [or viewing] the tool, I realized it was not what I needed	5%	6%	5%	11%	--	--	17%
Forgot I downloaded [or viewed] the tool	5%	--	10%	--	6%	17%	--
Other	3%	--	5%	11%	--	--	--

*Significantly higher percentage of respondents at the 90% confidence level

Interest of Respondents Who Have Not Viewed or Used Charette

Most respondents were either not aware of the EDR Charette or were aware of it but had not used the tool (n=360). A significant majority (89%) of these respondents reported some level of interest. Forty-seven percent were ‘very interested,’ and 42% thought they ‘might be interested.’ Thirty-nine respondents, or 11%, stated that they were ‘not interested’ in using the EDR Charette.

Of respondents who were not interested in the EDR Charette, most stated that their lack of interest is due to the fact that the EDR Charette is not relevant to the work that they do. (See Table 5D-3.)

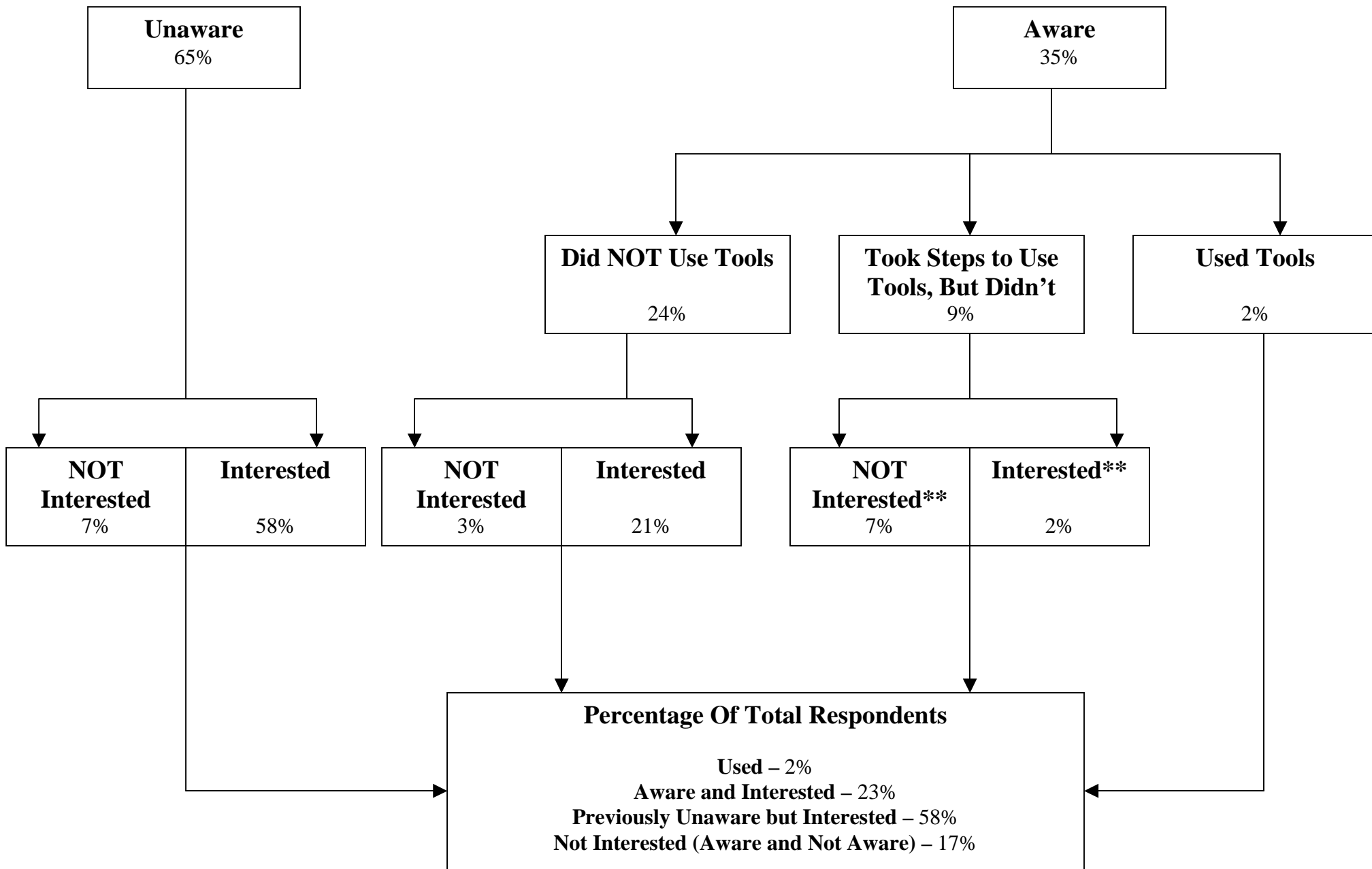
Table 5D-3. Reasons Why Respondent is Not Interested in EDR Charette (multiple response)

Reasons	Total (n=37)
Not relevant to work I do	59%
Already have the tools to do this and do not need additional tools	19%
Do not have enough time to learn how to use this type of tool	11%
Do not have enough time to use this type of tool	11%
Design budget doesn't allow for additional analysis	5%
Do not have training to use this tool	3%
Do not have clients who place a high priority on energy efficiency	3%
Other	3%

EDR Charette Summary

There are very few users of this tool (2% of respondents). (See the flowchart following this section for an overall summary of the EDR Charette.) One reason is because awareness is extremely low (35%), but even among those that are aware, many have not used the tool because it is not relevant to their job. The tool is relatively simplistic. Given the skill set, knowledge, and expertise of EDR users, this tool may not be all that useful. However, there is a wide range of knowledge among respondents and most EDR respondents did indicate an interest in the tool. For this reason, it may be worth publicizing this tool more. Additional use of this tool may also help encourage people to use other more detailed tools such as eQUEST, eVALUator, or SkyCalc.

EDR Charette (n=405)



ENERGY SAVINGS FROM SOFTWARE TOOLS

(eQUEST, eVALUator, SKYCALC)

ENERGY SAVINGS FROM SOFTWARE TOOLS

As a secondary objective, this evaluation also attempted to quantify energy savings resulting from three EDR software tools: eQUEST, eVALUator and SkyCalc. Our findings from this analysis are presented in this section. Note that because this study was never envisioned as a formal impact study—due to the limitations of both the scope and budget—the estimates of savings are only approximate.

Energy savings calculations are computed based on respondent-provided information on the use of the tools and the types of buildings that they worked on. The survey collected data along these two lines.

First, the survey collected data according to the type of tool used: SkyCalc, eQUEST, and eVALUator. Questions included an inquiry about the number of projects completed in the past year for each software tool (see question S5 in Appendix B), and a request for an estimate of the average energy savings (in percent savings of total building energy use) generally achieved on projects as a result of using each tool (see survey question S27).

Second, the survey collected data about the type of buildings that the respondent worked on: retail, office, school, public or other. Survey questions included requests for the percentage of projects performed on each type of building (see question F5 in the survey provided in Appendix B), and the average square footage for each type of building (see survey question F6).

Data from these two lines of questioning, as well as the energy use intensity (EUI) constant for the specific building type,²⁴ were combined to come up with energy savings estimates.

The calculations to compute the savings attributable to each tool (by building type), therefore, are as follows:

[# of projects by tool (S5)] * [% of total projects by bldg type (F5)] = # of projects by bldg type.

[# of projects by bldg type]*[% savings by tool (S27)] * [average project square feet. by bldg type (F6)] * [EUI by bldg type] = energy savings by bldg type by tool.

For the percent of projects for each building type, the assumption was made that the proportion of projects completed overall for each building type was the same as the proportion of projects using each software tool for each building type. In other words, if the respondents projects overall broke down as 30% office, 40% retail, and 30% other, we assumed that their projects using each tool broke down using the same proportions.

Means replacement was used for survey respondents who did not provide average square footage and percent of work for each building type. The values shown in Table 5E-1 were used as means replacement for each building type. This table also shows the energy use per square foot, or EUI, constants.

²⁴ EUI or Energy Use Intensity (EUI) is a measure of total energy use normalized for floor area. This is used to compare the energy use of different buildings and is expressed as kilowatt-hours per square feet (kWh/ft²).

Table 5E-1. Values Used in Means Replacement

	Office	Retail	School	Public	Other ²⁵
Square footage	103,549	104,828	106,028	73,639	41,392
% of projects*	41%	35%	45%	26%	48%
kWh use/ft ² ²⁶	16.40	25.96	10.96	15.77	29.74

* Does not total 100% because not all respondents indicate working in each building type.

Means replacement was done to ensure that we were able to include as many respondents as possible in the energy savings calculations. Note that even using means replacement, only about half of the users (i.e., eQUEST—52 of 108, eVALUator—10 of 20, and SkyCalc—22 of 46) were able to provide enough information for us to calculate rough energy savings estimates.

These variables provided data for a series of calculations to estimate the energy savings for each respondent (by tool). The energy savings estimates showed a great deal of variability across respondents because of the wide range of average building size estimates and the projected energy savings attributed to the tool. Because there was so much variability in estimates at the respondent level, we present ranges and median values at both the respondent level and at the project level. We do not present an overall tool sum because of the limited number of users that provided all of the necessary information to calculate savings.

Of all of the tools offered, eQUEST seems to result in the largest savings. In addition to being used by a large percentage of people, users of eQUEST tend to use it more frequently and on more projects. They also indicate that this tool is useful for a variety of systems, which can help increase possible energy savings.

The exploration of our energy saving analysis, as well as some of the parameters that went into our calculations, are detailed below.

eQUEST

Overall, most respondents used this tool for 6 or 7 projects a year. (See Table 5E-2.) This is more than the average for other tools, and a quite large number of projects when compared to the typical number of projects started by a respondent in a year (77% of respondents started 1-10 projects last year, as shown in Table 3-4, with the median number of projects per respondent being between 4 and 5 a year).

²⁵ In the survey instrument, respondents were instructed to use the “other category” for their work that did not fit into retail, office, school or public. While this encompasses a range of building types, it is important to include since it is based on survey responses and includes a large proportion of all projects.

²⁶ Market Actors Study

Table 5E-2. Number of Times Using eQUEST in the Past Year

Number of Projects	Total (n=108)
0	3%
1	21%
2-5	49%
6-10	14%
More than 10	13%
Average number of projects where eQUEST was used	6.6 ²⁷

For fifty-five percent of users, use of eQUEST resulted in incorporating an energy efficient design option that would not have otherwise been used. Architects, however, were much more likely than other respondents to include energy efficient design options because of eQUEST—77% of architects responded that eQUEST led to more energy efficient designs. Engineers and energy consultants were less likely than architects to feel that eQUEST resulted in more energy efficient design even though engineers and energy consultants are the largest users of this tool (refer to Table 5-2). This may be due to the stage at which engineers and architects come into a new building project. As stated in an earlier section of this report, architects are more likely than engineers to influence the design of a project since they have more interaction with the building owners who are the ultimate decision makers.²⁸

When eQUEST is used, respondents indicate that it generally yields relatively high energy savings. More than half (52%) of the respondents said use of eQUEST yielded more than 20% savings. (See Table 5E-3.) There was no trend in estimated average energy savings achieved when we looked at this data by occupational group. On average, energy savings for all groups of users was between 18% and 26%.

²⁷ Responses (categorized here) were open-end and respondents' actual answers were used to calculate the mean.

²⁸ NRNC MA&E

Table 5E-3. Estimated Average Energy Savings Achieved on Projects as a Result of Using eQUEST

Estimated Energy Savings	Total (n=54)
0	2%
1-5%	4%
6-10%	13%
11-20%	30%
21-30%	43%
More than 30%	9%

Data on the type of projects (by building type) that respondents who used eQUEST worked on are shown in Table 5E-4 below. These were asked as firmographic/demographic questions, and were assumed to hold true for the projects where eQUEST was used. The figures in the table, therefore, show only the data for the eQUEST users; however, they assume that the proportion of projects completed *overall* is the same as for the projects where eQUEST was used. Respondents gave their answers about square footage in the form of a range, which we then approximated.

Table 5E-4. Characteristics of an Average Building for eQUEST users (n=52)

Building type	Average % of projects spent on building type (n=52)	Approximate square feet of projects			Approximate average energy savings (in MWh)
		Mean (rounded)	Min.	Max.	
Office	31%	98,000 (n=44)	2,000	600,000	1,276 (n=44)
Retail	8%	53,000 (n=16)	500	120,000	595 (n=16)
Public Assembly	10%	87,000 (n=20)	5,000	500,000	361 (n=20)
Schools	23%	112,000 (n=31)	1,000	300,000	978 (n=31)
Other	26%	37,000 (n=35)	0	300,000	6,991 (n=13)
Total	100%**				

** Does not add to 100% due to rounding.

Savings *per project* ranged from approximately 3.3 MWh to 2.6 GWh with a median of approximately 268 MWh.²⁹

Annual savings *per user* ranged from 6.9 MWh to over 78 GWh³⁰ with a median of approximately 1.25 GWh. This large range is partly due to the fact that some respondents used

²⁹ Because of the large range among users, we rely on medians throughout this section rather than means.

eQUEST more frequently. In fact, the user with the greatest savings stated that he used this tool for over 30 projects in the past year. In addition, this respondent also estimated that the use of eQUEST could save 35% of the typical energy use and he worked primarily on large non-commercial buildings of approximately 250,000 square feet.

eVALUator

eVALUator users stated that on average, they used this tool for approximately 4 projects a year. (See Table 5E-5.)

Table 5E-5. Number of Times Using eVALUator in the Past Year

Number of Projects	Total (n=20)
0	10%
1	45%
2-5	25%
6-10	10%
More than 10	10%
Average number of projects where eVALUator was used	4

Note that two people who stated that they have used the software tried it out but never actually used it for projects and a large number of these respondents (45%) used the tool only once.

Of the 20 users of this tool, 12 (or 60%) felt that it led to the incorporation of energy efficient designs that would not have been used without the use of this tool. These 12 respondents felt that it was most useful for determining the appropriate HVAC systems (83%), followed by building envelope (50%), daylighting/skylighting (33%) and electrical lighting systems (25%).

Ten of these respondents estimated the average energy savings achieved on a project due to the use of eVALUator. All of these respondents felt that the tool led to some savings. As shown in Table 5E-6, responses ranged from just a little (1-5%) to more than 30% savings.

³⁰ Note that the largest value is over 5 times greater than the next largest response.

Table 5E-6. Estimated Average Energy Savings Achieved on Projects as a Result of Using eVALUator

Estimated Energy Savings	Total (n=10)
0	--
1-5%	20%
6-10%	10%
11-20%	40%
21-30%	20%
More than 30%	10%

When we looked at this data by occupational group, on average, engineers (n=7) estimated their energy savings to be approximately 16%, while energy consultants (n=2) estimated their savings from eVALUator to be 35%. The average for all 10 respondents was 20%.

Data on the type of projects and buildings where eVALUator is used are shown in Table 5E-7 below. These were originally intended as firmographic/demographic questions, and the figures in the table were calculated assuming that the proportion of projects completed overall for each building type was the same as the proportion of projects using each software tool for each building type. Also, respondents gave their answers about square footage in the form of a range, which we then approximated. For these reasons, as well as the low number of responses, the data should be noted with discretion.

Table 5E-7. Characteristics of an Average Building for eVALUator users (n=10)

Building type	Average % of work on building type (n=10)	Approximate Square feet of projects			Approximate average energy savings (in MWh)
		Mean (rounded)	Min.	Max.	
Office	34%	101,000 (n=8)	7,000	300,000	665 (n=8)
Retail	7%	67,000 (n=3)	50,000	100,000	385 (n=3)
Public Assembly	14%	187,000 (n=3)	20,000	500,000	340 (n=3)
Schools	12%	104,000 (n=5)	50,000	200,000	195 (n=5)
Other	35%	30,000 (n=7)	0	100,000	629 (n=3)
Total	100%**				

** Does not add to 100% due to rounding.

Savings *per project* ranged from 3.3 MWh to 1.7 GWh with a median of approximately 240 MWh.

Annual savings *per user* ranged from 3.3 MWh to over 3.8 GWh³¹ with a median of approximately 720 MWh. This large range is partly due to the fact that some respondents used eVALUator more frequently. The respondent who saw the largest savings stated that he used this tool for 10 projects in the past year. In addition, this respondent also estimated that the use of eVALUator could save 30% of the typical energy use. He worked on projects for offices, retail space and schools that range from 50,000 square feet to 100,000 square feet.

SkyCalc

SkyCalc users stated that on average, they used this tool for approximately 5 projects a year. (See Table 5E-8.)

Table 5E-8. Number of Times Using SkyCalc in the Past Year

Number of Projects	Total** (n=45)
0	2%
1	27%
2-5	53%
6-10	6%
More than 10	11%
Average number of projects where SkyCalc was used	4.8

** Does not add to 100% due to rounding.

One person who stated that he had used SkyCalc did not actually use it on any projects and 12 other respondents used the tool only once.

Despite some limitations, an overwhelming majority (91%) of users (n=45) said that using SkyCalc helped them understand skylighting system design better. These SkyCalc users were also asked if their use of SkyCalc led to a change in *design*, resulting in the inclusion of energy efficient options. Sixty-three percent said they would not have included these changes had it not been for SkyCalc, showing that the tool has some degree of importance in lighting design. The other 37% said SkyCalc had no impact on the ultimate design.

Those who indicated that changes to the design had been made as a result of SkyCalc further explained what types of changes had been made. As shown in Table 5E-9, more than half the respondents altered the number of skylights per area (61%) and/or changed the spacing or placement of skylights (54%) because of SkyCalc. Other changes cited were changes to the glazing selection (36%), convincing others in the design decision making process to use skylights (29%), or adding skylights to the design (21%).

³¹ Note that the largest response was 2.2 times greater than the next largest response.

Table 5E-9. How Use of SkyCalc Resulted in Changes to Skylighting Design

Changes	Total (n=28)	Works in Southern California Market		Occupation				# non-residential projects last year		
		Yes (n=13)	No (n=13)	Architect (n=7)	Engineer (n=7)	Energy consultant (n=9)	Other (n=5)	<5 (n=7)	5-10 (n=11)	>10 (n=6)
Convinced me to use more or fewer skylights than originally planned (by area)	61%	62%	62%	100%*	43%	44%	60%	43%	55%	83%*
Convinced me to change the configuration (e.g., spacing, placement)	54%	69%	46%	57%	71%	33%	60%	29%	36%	83%*
Convinced me to change the glazing selection	36%	38%	31%	29%	57%	22%	40%	29%	45%	33%
Helped me to convince the owner or other design team members to use skylights	29%	38%	23%	--	29%	44%	40%	43%	36%	--
Convinced me to use skylights where none were originally planned	21%	15%	31%	14%	57%*	11%	--	43%	18%	17%

These respondents were also asked about the effects on *lighting controls*. Twenty-eight percent said that ‘it resulted in the use of controls where they weren’t originally planned’. Roughly another one-third (31%) said SkyCalc led to the use of alternative, more efficient, controls. The remaining 41% said SkyCalc did not result in any changes to the lighting controls.

Respondents whose use of SkyCalc led to changes in energy efficient design options also reported the level of energy savings. (See Table 5E-10.) More than one-half estimated a ten percent or greater energy savings because they used SkyCalc. Another 42% attributed the use of SkyCalc to a smaller amount of energy savings, between one and 10%. Four percent indicated that it did not lead to savings.

Table 5E-10. Estimated Average Energy Savings Achieved on Projects as a Result of Using SkyCalc

Estimated Energy Savings	Total (n=24)
0%	4%
1-5%	21%
6-10%	21%
11-20%	33%
21-30%	4%
More than 30%	17%

When we looked at this data by occupational group, on average, architects (n=5) estimated their energy savings to be approximately 8%; engineers (n=7) were closer to 14%; and energy consultants (n=7) estimated savings from SkyCalc to be close to 23%. The average for all 24 respondents was 18%.

Data on the type of projects and buildings where SkyCalc is used are shown in Table 5E-11 below. These were originally intended as firmographic/demographic questions, and the figures in the table were calculated assuming that the proportion of projects completed overall for each building type was the same as the proportion of projects using each software tool for each building type. Also, respondents gave their answers about square footage in the form of a range, which we then approximated. For these reasons, as well as the low number of responses, the data should be noted with discretion.

Table 5E-11. Characteristics of an Average Building for SkyCalc users (n=22)

Building type	Average % of work on building type (n=22)	Approximate Square feet of projects			Approximate average energy savings (in MWh)
		Mean (rounded)	Min.	Max.	
Office	27%	44,000 (n=18)	2,000	120,000	224 (n=18)
Retail	10%	98,000 (n=8)	1,100	400,000	1,205 (n=8)
Public Assembly	8%	44,000 (n=8)	6,000	73,639	567 (n=8)
Schools	18%	56,000 (n=12)	1,000	106,028	161 (n=12)
Other	37%	23,000 (n=16)	0	125,000	6,163 (n=8)
Total	100%				

Over 90% of SkyCalc users feel that this tools gave them a better understanding of skylighting systems and 63% feel that it led to a more efficient design.

Savings *per project* ranged from approximately 3.2 MWh to 1.9 GWh with a median of approximately 61 MWh.

Annual savings per user ranged from 3.9 MWh to over 47 GWh³² with a median of approximately 120 MWh. The respondent who saw the largest savings stated that he used this tool for 25 projects in the past year.³³

³² Note that the largest response was nearly six times greater than the second largest response.

³³ Note also that this respondent also estimated that the use of SkyCalc could save 70% of the typical buildings energy use, which is an extremely high percentage. Despite our repeated efforts to have respondents state percentage savings in terms of total building savings, (i.e., after the respondent entered the savings, a new web page popped up to remind the respondent that we are asking for savings in terms of total building savings rather than percentage of lighting energy saved), it is possible that the respondent misunderstood the question. For this reason, these ranges are less meaningful than the median savings reported.

CHAPTER 6: TRAINING

EDR offers both on-site and virtual trainings including virtual workshops (online sessions that combine multi-media with the internet to provide 24-hour access so that participants are able to complete courses at their own pace) and EDR Lights (an online course that provides education about lighting issues, technologies, and applications, with special consideration given to California energy codes and efficiency programs). In addition, trainings are also offered through the utilities' Energy Centers, such as Southern California Edison's Customer Technology Application Center, or CTAC. This section examines the four types of EDR trainings—on-site presentations, Virtual Workshops, EDR Lights, and Energy Center trainings—to better understand who is participating in these trainings and how much these trainings are being used.

The on-site trainings typically target architectural firms. EDR representatives go to their location to conduct the training. While EDR software may be mentioned during the training, the sessions are focused more generally on energy efficiency techniques for design teams. For example, the training sessions try to focus on what design teams would need to do to incorporate daylighting into a building or actually sell the concept of energy efficiency to a building owner through a financial approach. For the online trainings, Architectural Energy Corp. put together six main modules covering various energy efficiency topics. All trainings are accredited by the American Institute of Architects.

As shown in Table 6-1, less than one-fifth of all respondents have participated in at least one of the forms of training offered by EDR.

Table 6-1. Respondents Who Have Participated in at Least One Training (n=405)

Tools	All Respondents (n=405)	Work in Southern California Market (n=217)
Training Only	8%	14%
Training and Publication	5%	8%
Training and Software	1%	1%
Training, Software, and Publication	5%	7%
Have Not Used Any Training	81%	70%

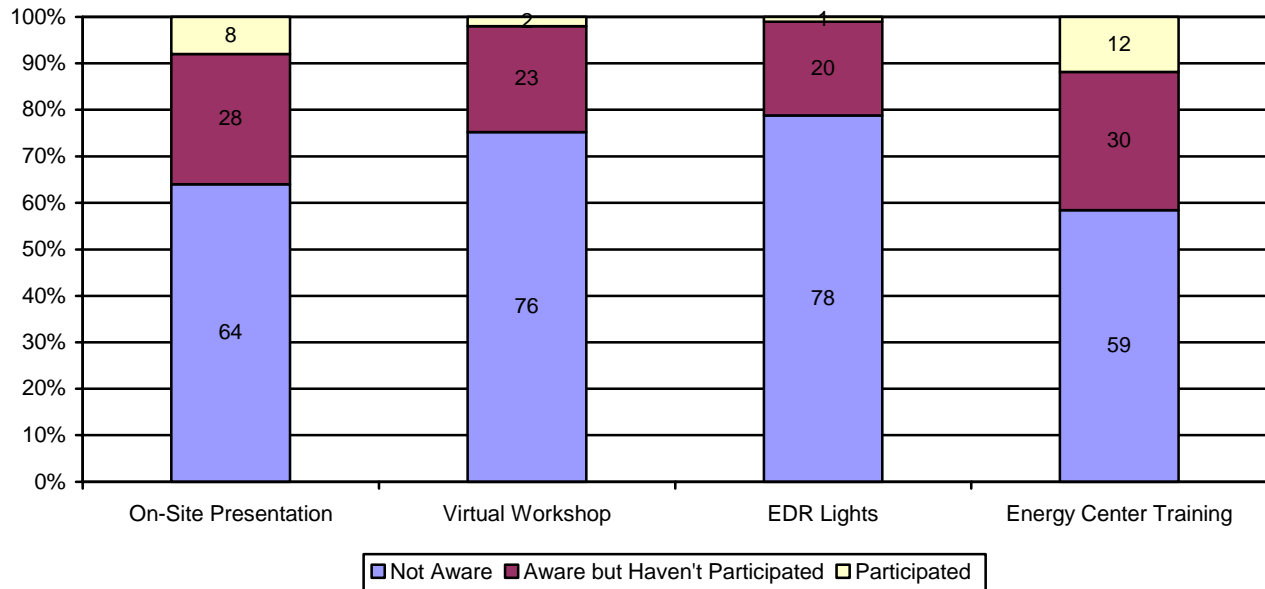
This is consistent with available training statistics. Generally, on-site training is limited. EDR seeks to put on approximately 10 to 12 on-site trainings each year. Overall, EDR has a list of over 640 people who have been trained since January 2000. Many fewer people have utilized the virtual trainings. According to program developers, there have been approximately 30 participants in the virtual workshops since 2000.³⁴ The fact that awareness is low (as is use,

³⁴ Note that these virtual workshops were started later than many of the other EDR components.

particularly for virtual workshops and EDR Lights) may be indicative of the need to market these trainings more.

Awareness of the trainings offered through EDR is relatively low, although respondents are much more aware of the Energy Center Trainings than any of the online or on-site trainings. (See Figure 6-1.)

Figure 6-1. Familiarity with Training (n=405)



Due to the limited number of participants, brief findings on the four types of trainings—on-site presentations, Virtual Workshops, EDR Lights, and Energy Center trainings—are presented below.

On-Site Presentations

Only 8% of respondents (34 people) have participated in on-site trainings. These respondents tend to be architects, which is consistent with the fact that the EDR representatives generally target this group of professionals. Motivations for participating included: ‘to keep up with the technology,’ to ‘to gain additional knowledge,’ to ‘to gain CEU credits.’

Nearly three-quarters (74%) of respondents who participated in the training (n=34) stated that the presentation helped to influence their design practices. Respondents generally stated that the on-site presentations made them more aware of options and provided them with additional ideas. Specific responses about the influence of design practices include: “helped to allow use of eQUEST;” “guided design team on the effective use of daylighting systems;” and, gave “...us a relatively simple tool for comparing unlike mechanical systems in a building.”

Nine of the thirty-four participants also stated that the on-site presentation ultimately led them to use the EDR software tools, which is consistent with responses in the software section of this report.

Respondents who participated in this type of training gave the presentations an average rating of 5.4 on a scale of 1 to 7 where 1 meant ‘not very useful’ and 7 meant ‘extremely useful.’ Participants in the training, therefore, generally felt that these presentations were useful.

Most EDR respondents (64%), however, are not aware of the on-site trainings offered through EDR. The remaining 28% of respondents are aware of the trainings but have not participated.

Virtual Workshops

Only 2% of respondents (7 people) participated in Virtual Workshops. Motivations for participating included: “for continuing education credit,” “surfing the web for specific training,” “self-improvement,” and “convenience.”

Six of the seven respondents who participated in the training stated that the presentation helped to influence their design practices. One respondent specifically mentioned that the Virtual Workshop made him “more aware of technologies with good examples and resource references.”

Two of the seven participants also stated that their participation in the Virtual Workshop ultimately led them to use one of the EDR software tools.

Respondents who participated in this type of training gave the workshops a rating of either 5 or 6 on a scale of 1 to 7 where 7 meant ‘extremely useful.’ Participants in the Virtual Workshop, therefore, felt that these presentations were useful.

Over three quarters of respondents (76%) are not aware of the Virtual Workshops offered through EDR. The remaining 23% of respondents are aware of the trainings but have not participated.

EDR Lights

Even fewer respondents, 1% (5 people), participated in EDR Lights. A couple of these participants mentioned that they participated for self-improvement and another offered that he participated “to learn more about daylighting concepts.”

Three of the five respondents who participated in the training stated that the presentation helped to influence their design practices. One respondent specifically stated that he “applied the designs into the final drawing.”

Only one of the five participants also stated that their participation in the EDR Lights training ultimately led to the use one of the EDR software tools.

Respondents who participated in this type of training gave the presentations a rating of either 4, 5 or 6 on the same 1 to 7 scale mentioned above, for an average rating of 4.8. Participants in the

EDR Lights training, therefore, felt that it was neutral (meaning that they neither felt that it was useful nor useless) to ‘somewhat useful.’

Seventy-eight percent of respondents are not aware of the EDR Lights training offered through the EDR website. The remaining 20% of respondents are aware of the trainings but have not participated.

Energy Center Training

Many more respondents are both aware of the Energy Center Trainings and have participated in these trainings. Forty-two percent of respondents are aware that trainings are offered through the Energy Center, and 12% of respondents have participated in one of these trainings. Energy Center Trainings on lighting and eQUEST appear to be the most popular, followed by trainings on HVAC systems.

Respondents mentioned that their motivations for participating included wanting to: learn more about HVAC systems, understand the tools such as eQUEST, get assistance with building commissioning, help clients reduce energy costs, network “to keep abreast of industry requirements,” receive AIA credits, and to generally expand their knowledge.

Almost 80% of respondents who participated in the training (n=47) stated that the presentation helped to influence their design practices. Respondents specifically mentioned that the trainings: offered them new alternatives, made them aware of photovoltaic rebate options and lighting options and/or illumination, gave them a good overview of technologies such as efficient motors, improved the use of energy modeling in their design processes, or helped them to provide energy-efficient options to developers and builders of industrial and commercial projects.

Nine of the 47 responding participants, or 19%, also stated that their participation in the EDR Lights training ultimately led to the use one of the EDR software tools.

Respondents who participated in this type of training gave the presentations a rating of three or higher on a scale of 1 to 7 where 7 meant ‘extremely useful.’ Over 60% of participants felt that the training was either ‘very useful’ or ‘extremely useful’, (i.e., gave a rating of 6 or 7). The average rating was a 5.7, indicating that these trainings are generally very valuable to participants. Not all respondents found it useful, however. One respondent mentioned that the information that he received was too basic given his current skills and knowledge.

Fifty-nine percent of respondents are not aware of the trainings offered through Energy Center. The remaining 30% of respondents are aware of the trainings but have not participated.

Training Summary

The in-person trainings (either on-site or at one of the Energy Centers) appear to be much more frequently used than the online trainings. This is in general agreement with some of the comments made by survey respondents, which indicate that they would rather learn in-person. Clearly, however, many professionals do not have time to attend trainings and could benefit from

on-line offerings. Raising awareness of these online trainings (or offering more options) may help to increase participation.

The in-person trainings were generally viewed as useful and in many cases led to participants downloading EDR software tools. Some of the trainings, however, do not currently focus on or promote the EDR software. Additional recognition of the available tools and their uses may also help to increase the number of users, and therefore the effect of these tools.

Overall, the trainings appear to be valuable, and given that architects represent one of the most important groups of professionals, on-site and other trainings should continue to be targeted at this group of new construction market actors.

CHAPTER 7: MARKETING EDR

Energy Design Resources is not actively promoted. As part of Savings by Design, some SCE staff visit select architects or engineers to deliver binders and CD-ROMs, or encourage these market actors to check out the EDR training opportunities, but most marketing of EDR is passive. The website is the primary vehicle used for marketing EDR resources.

Familiarity with the EDR name is relatively strong among respondents—particularly among respondents who have read a publication, attended a training session, or used a software tool (i.e., EDR users). (See Table 7-1.) It is somewhat surprising, however, that 10% of EDR respondents stated that they have never heard of Energy Design Resources, and that 29% have heard of EDR but could not describe it.

Table 7-1. Familiarity with Energy Design Resources and Savings by Design

Level of Respondent's Familiarity (n=405)	with EDR**	with SBD**
Never heard of it	10%	31%
Heard of it but can't describe	29%	23%
Somewhat familiar	42%	33%
Very familiar	18%	14%

**Does not add to 100% due to rounding.

Name recognition among respondents who have **not** used an EDR tool is even lower. A large majority of these respondents (69%) have either 'never heard of EDR' or they have 'heard of EDR but cannot describe it'. Even among those respondents who have come in contact with EDR, awareness is relatively low. This indicates that, in general, familiarity amongst the target populations is rather weak.

There is a demonstrated need to raise awareness of the resources offered by SCE in general. Through our survey we found that, of those respondents who work in the Southern California market (n=217), 63% were aware that SCE offers new construction services and assistance to professionals involved in the construction of non-residential buildings. Among these, architects and energy consultants appear to be more aware of SCE services than engineers. The remaining 37% percent of respondents, however, represent a large percentage of the target market but are unaware of SCE's offerings (despite the fact that they have come into contact with SCE-sponsored EDR tools). Based on depth interviews with SCE staff, utilities seldom use EDR as a way to gain recognition—in fact, a user must scroll halfway down EDR's "about us" web page to know that EDR is sponsored by utilities such as SCE.

Awareness of EDR and its tools is clearly an issue, as shown in the preceding chapters. Given the various levels of knowledge and skills among EDR users, EDR should consider utilizing all interactions with market actors to promote the resources available through the program.

While promotion of EDR is not active, our findings indicate that EDR is recognized as more than just a component of the SBD program. Among respondents, familiarity with EDR was higher than familiarity with the Savings by Design (SBD) program. (Again, refer to Table 7-1.) Furthermore, as shown in Table 7-2, only 12% of respondents first heard about EDR through the SBD program or website. Thus, while EDR and SBD do complement each other and contribute to each other's success, EDR also appears to be reaching professionals involved in new building design through other ways.

Table 7-2. How Respondents First Heard about Energy Design Resources

Of respondents who are familiar with EDR	Percentage of Respondents ** (n=361)	Works in Southern California Market	
		Yes (n=200)	No (n=154)
From a web search	29%	12%	48%*
From a friend or colleague	20%	24%	17%
From the Savings By Design program or website	12%	16%*	8%
From an SCE representative	10%	18%	--
From a class or training provided by SCE	7%	10%*	4%
From the SCE.com website	6%	6%	5%
From a press release or informational update	4%	4%	5%
From another web page	2%	2%	3%
From a class	2%	2%	1%
PG&E Energy Center	1%	2%	1%
PG&E (gen)	1%	1%	2%
Other/Don't know	5%	2%	5%

*Indicates statistically higher percentage of respondents than comparison group at a 90% confidence level.

**Does not add to 100% due to rounding.

While EDR is making headway on its own, it also appears to be reaching a large number of the SBD participants. Approximately 15% of EDR respondents stated that they have received an incentive payment from the Savings by Design program, (24% of those who work in the Southern California market have received an incentive payment³⁵). Applying this 15% to the total population would suggest that up to 345 EDR participants have been involved in the SBD program. This represents a large percentage of the Savings By Design Participants, which numbered 882 in the 2001 MCPAT report.

Respondents outside of Southern California are most likely to hear about EDR from a web search, while respondents who do work on buildings in Southern California are most likely to find out about EDR from a friend or colleague, an SCE representative, or the Savings By Design Program or website. The EDR website, however, is EDR's primary tool for reaching out to new construction market actors and providing them with tools to encourage energy efficient designs.

The EDR website received over 20,000 hits each month.³⁶ In general, most respondents stated that the EDR links are only slightly helpful in helping them find other resources. On average,

³⁵ Others who received payments through this program work on buildings in other parts of California.

³⁶ Website statistics provided by Chris Geltz of Geltz Communications, September 2002.

respondents rated the usefulness of these links as a 4.4 on a scale from 1 ‘not helpful,’ to 7 ‘extremely helpful,’ with 75% of respondents rating the links as a 3, 4 or 5. Twenty percent of respondents, however, did indicate that the links are helpful, giving a rating of a 6 or 7. Note that those who felt that the links were extremely helpful tended to be people who work outside of the Southern California market. Respondents who had used the EDR tools felt that the links were more useful, giving an average rating of 4.5 on the same 7-point scale.

Respondents were slightly more satisfied with the overall EDR website than with the usefulness of the links. When asked to rate their overall satisfaction with the EDR website, the average rating was a 4.7 among all EDR respondents, and slightly higher—a 4.8—among users of the EDR tools.

The website itself includes software, documentation, comparative studies, online trainings, and a wealth of other information. While the website is logically organized, it is not dynamic and may be difficult for some EDR users to navigate. An architect that wants to find out about building commissioning, for example, would have to look in several different places on the website. For many users, organizing the website by topic, rather than by tool type, may enable them to more easily tap into the resources that interest them the most.

In open-ended responses, respondents also requested additional support for online tools, in particular online tools such as eQUEST. Several mentioned that training for the tools is difficult to get and support is not available. One user suggested a FAQ or sharing forum for sharing questions and answers, so that even when SCE or EDR cannot answer his questions, other users can. Others suggested adding: information on how to subscribe to the online seminars, case studies of productivity benefits from energy efficiency initiatives, updates with all new or relevant data placed on the website, benchmarking figures for best practice in building energy use by building type, and information about (or links to) all rebate/incentive/grant programs offered for energy efficiency. Additional suggestions included adding: a “Home Link” to the page³⁷, an email hotline to retrieve member password, notices about new materials, and a way to deal with more industrial topics.

Notably, several respondents also mentioned things that EDR already offered such as handbooks, detailed case studies, and software on a CD-ROM. Again, these comments suggest that additional promotion of the resources that are available through EDR would be useful.

Knowing The Target Market

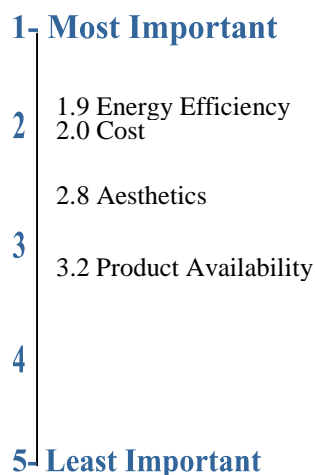
EDR appeals to and attracts a variety of users ranging from those who request more advanced versions of tools such as eQUEST to others who state that they want more default values where possible because “the software is practically impossible to use if you do not yet know the specific inputs for the project,” and “the tools are too complex and engineering oriented and intended for large buildings.” Appealing to market actors with all levels of knowledge and skills, therefore, is valuable and something that EDR does well; however, there may be a need for a more detailed description on the website about exactly what the tool is, what it does well, and how it could be of use to a user.

³⁷ Since we were soliciting information about the EDR website, we believe that this comment refers to adding a “HOME” button on each EDR web page; however, this was not explicitly stated in the responses.

It is important to understand the importance of energy efficiency and the barriers associated with improving the energy efficiency of new building design. To get at this, respondents were asked to rank the importance of four factors (aesthetics, energy efficiency, cost and availability of products) when addressing critical decisions for a new building project. Note that for this question, respondents were asked to rank the four factors using 1 for the most important factors down to 5 for the least important factors. The scale, therefore, was not the same as the in earlier questions. In the case where a respondent ranked a couple of the factors, but did not rank the other factors, we assumed that they would give these unranked factors the lowest rating of 5.

Overall, EDR respondents stated that energy efficiency was the most important factor, followed closely by cost. (See Figure 7-1.) Aesthetics was ranked as a distant third most important factor, and availability of products was ranked as the least important factor.

Figure 7-1. Importance of Key Factors When Addressing Critical Decisions for a New Construction Project (n=382)



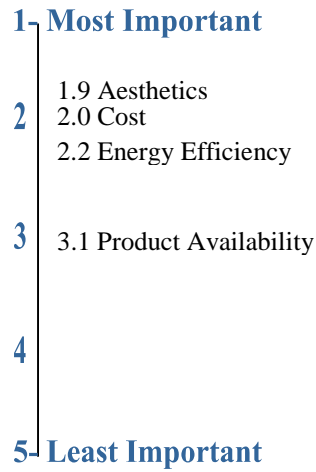
Compared to respondents that work outside of the Southern California market, respondents that work in Southern California felt that aesthetics were more important (2.6 among Southern California respondents versus 3.0 outside of this area) and that energy efficiency was less important (2.0 versus 1.8) to their new construction decisionmaking process.

It is interesting to note that architects—one of the primary targets—gave energy efficiency a significantly lower rating than other groups of users (2.2 versus 1.6 to 1.7). (See Figure 7-2.) Among architects, both aesthetics and cost are viewed as more important factors than energy efficiency. Based on responses, the barriers to increasing the energy efficiency of new building design, therefore, may be higher among architects than among other groups of respondents. A rating of 2.2, however, is not that low and may show that architects, although not as much as other groups, consider energy efficiency to be important.

Nineteen respondents mentioned that they felt that other factors were more important to their new building design than any of the four factors listed in the graphic above (i.e., energy

efficiency, product availability, cost or aesthetics). These responses included: client or owner requests, feasibility and functionality, and life cycle costs.

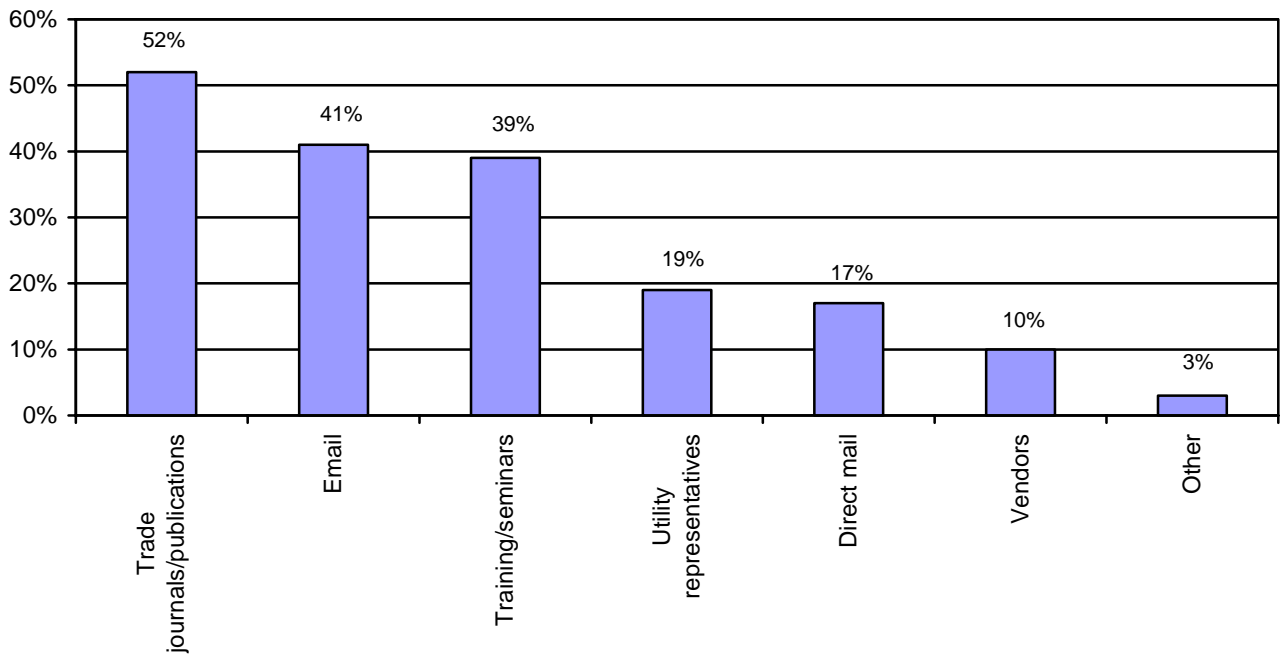
Figure 7-2. Importance of Key Factors Among Architects (n=116)



Marketing to Targets

As shown in Figure 7-3, according to respondents, the top three ways to let professionals involved in new construction know about EDR is through trade journals or other publications, email marketing, and training or seminars.

Figure 7-3. Best Ways to Market To Design Professionals (multiple response, n=399)



This is slightly different for those within the Southern California market (n=212): training and/or seminars (50%, which is significantly higher than for those outside of this region) is first, followed by email (41%), and then trade journals (40%). Respondents outside of this market (n=180) followed the overall trend of trade journals (67%, which is significantly higher than respondents working in the Southern California market), email marketing (42%), and training and/or seminars (26%).

Since EDR is not actively promoted, current “users” have to participate voluntarily. One suggestion from an EDR tool designer is to “come up with some kind of a marketing tool that designers and architects could take to their clients to help them understand the benefits of energy efficient and sustainable design in terms of dollars and sense, and then the other less quantifiable benefits.”

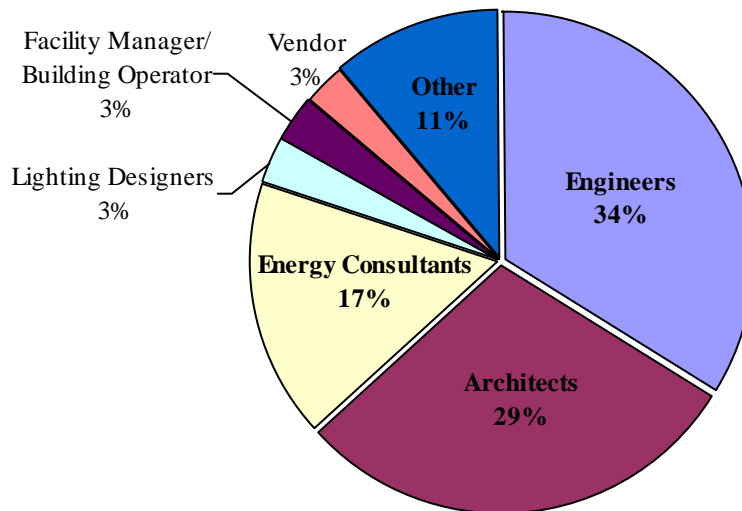
In addition, EDR may want to consider pursuing key organizations such as the American Institute of the Architects of California Council (AIACC) in order to bring market actors to the EDR website. SBD has a page in the AIACC quarterly newsletter that could co-promote EDR. Furthermore, getting other professional organizations such as AIA, ASHRAE, or AEE to include a feature link to the EDR website would be useful for drawing additional professionals to the resources offered through EDR.

CHAPTER 8: MAJOR FINDINGS AND RECOMMENDATIONS

Who is EDR Reaching?

EDR is primarily reaching engineers (34%), architects (29%), and energy consultants (17%), (see Figure 8-1).

Figure 8-1. EDR Respondents (n=405)

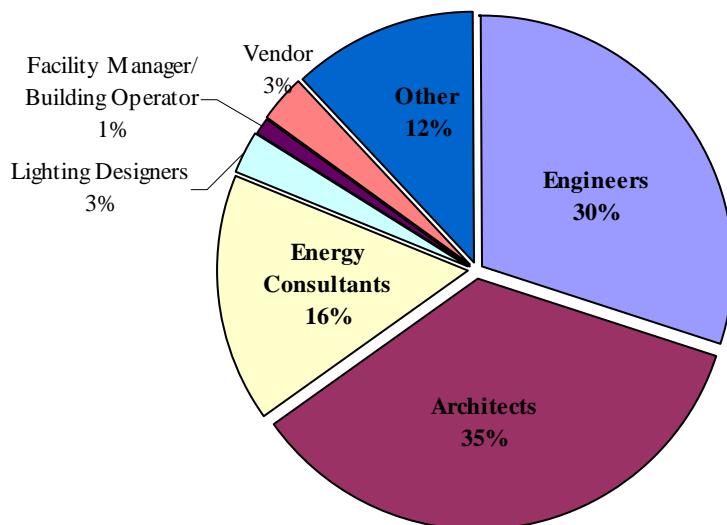


Although architects and engineers are both frequently thought of as design professionals, based on prior research, architects tend to have more influence over the design process because they are the primary contact for the end-user, while engineers play a secondary role. Since architects have the most influence over the design process and since they can impact the end-user (the ultimate decision maker) thereby creating the demand for energy efficient design and implicitly the demand for EDR resources, architects may be the most important group of market actors for EDR to target.

Among all respondents, a large percentage (54%) work in the Southern California new construction market.³⁸ Figure 8-1a shows the breakdown (by profession) of the EDR respondents who work in the Southern California Market.

³⁸ The percentage of engineers, architects, and energy consultants who work in Southern California out of the three primary groups proportionately reflect that of all EDR respondents (54%).

Figure 8-1a. EDR Respondents Who Work in the Southern California Market (n=217)



While architects make up 29% of all users, within Southern California, architects represent a larger percentage. Over a third (35%) of respondents who work in Southern California are architects; engineers are slightly more prominent outside of this region. This means that EDR has reached over 400 architects that work in this market.³⁹ Given that there were approximately 1,400 non-residential projects started in SCE's territory last year and that most architects in this area work on approximately three projects a year,⁴⁰ this would seem to represent a large number of the architects that work in Southern California.

Among all respondents (both inside and outside of the Southern California market), energy consultants represent another large group of EDR respondents. Because little information on this group was gathered through preliminary research, further exploration about the role of an energy consultant might be warranted in future research.

Notably, EDR is not reaching lighting designers, developers, buildings owners, or facility managers in great number, despite the fact that EDR offers at least one tool and one publication that would prove useful to these groups. (Note that the publication for developers, buildings owners, or facility managers—the Newsletter—has been discontinued but electronic files of past Newsletters are available on the EDR web site.)

While market actors who are not directly responsible for building designs (such as developers, buildings owners, and facility managers) are not currently the *primary* focus of EDR, there is value in reaching out to these groups. Educating end-users, in particular, about new design

³⁹ This is based on the fact that 35% of all EDR participants that work in the Southern California market are architects. To calculate the number of EDR participants in this market, we multiplied the total number of EDR participants (2,300) by the 54% that work in this market. Note that this value is extrapolated from our respondent data. There is some possibility that a self-selection bias for a particular type of respondent may have occurred.

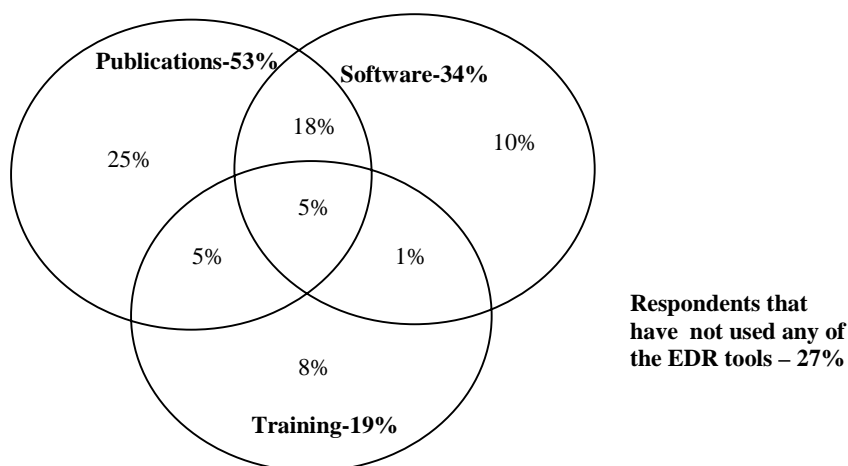
⁴⁰ This is the median number of non-residential projects started by architects in the Southern California market last year based on respondent data from our survey. Note, for comparison purposes, the mean number for this group was slightly over 6 projects.

practices and energy savings can help to further move architects and engineers towards more efficient designs.

Which Tools are Most Utilized?

In the aggregate, more respondents (53%) have used the EDR publications than the software tools (34%) or trainings (19%). (See Figure 8-2.)

Figure 8-2. EDR Tools Used By Respondents (n=405)**



**Does not add to 100% due to rounding.

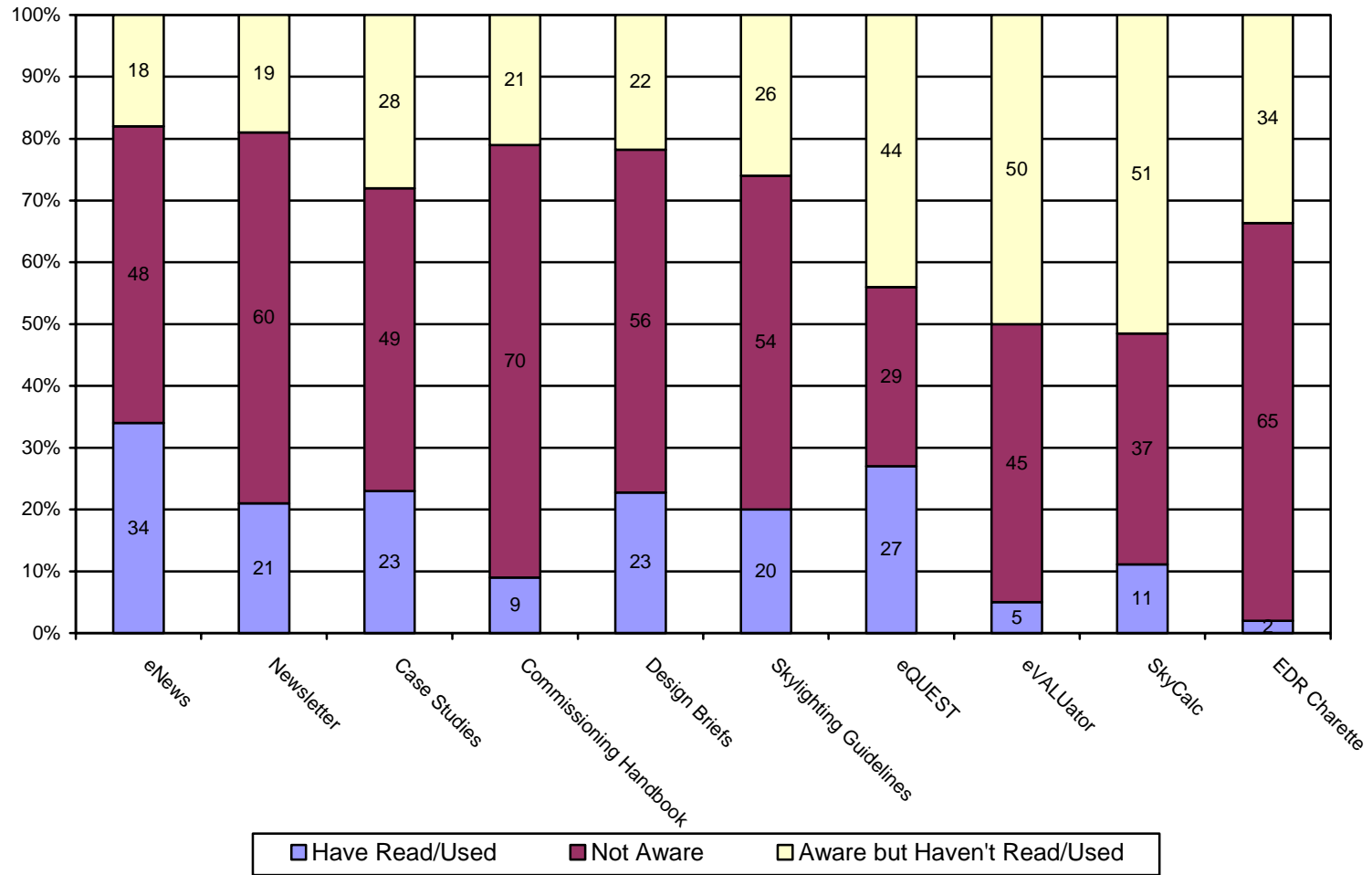
Actual use of each of the individual tools varies, with the largest percentage of respondents using eNews (34%) followed by eQUEST (27%). (See Figure 8-3.) The other three software tools (EDR Charette-2%, eVALUator-5%, and SkyCalc-11%), as well as the Commissioning Handbook (9%), are used by the least number of respondents.

Over one-third of all respondents have read eNews. The other EDR publications—Case Studies, Skylighting Guidelines, Design Briefs, and the Newsletter—have been read by just over one-fifth of all respondents. The fact that eNews is the only tool that is actively sent out may contribute to the higher number of eNews readers, as well as the fact that readers refer to this publication frequently. (While respondents had to first voluntarily sign up for eNews, once they had signed up, they periodically received new versions of eNews.) Since eNews received the lowest average rating for its usefulness, it does not appear that respondents refer to this publication more often because they find it more useful than other publications.

The fact that 66% of respondents (and 69% of respondents who work on buildings in Southern California, see Figure 8-4) have not used any of the software tools demonstrates that even among those already reached by EDR, there is a significant opportunity to increase the use of these software tools.

The trainings offered through EDR and the Energy Centers are much less used than the other types of tools. In-person training sessions (on-site-8% or at an Energy Center-12%), while infrequently used, have higher rates of participation than online training (1 to 2%). Low

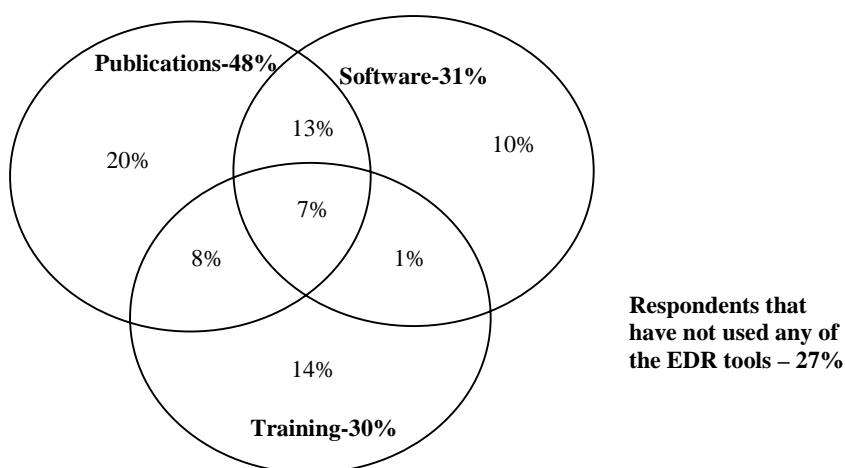
Figure 8-3. Comparison of All Publications and Software Tools



participation rates for Energy Center Training may perhaps be attributed in part to the fact that the links on the EDR website navigate outside of the EDR domain to an individual utility's own website. Overall, compared to rates of use of software (34%) or readership of the EDR publications (53%), very few respondents—only 19% of all respondents—have participated in any of the trainings.

Significantly more respondents in the Southern California market (30% of these respondents) had participated in at least one training. (See Figure 8-4.) When the results from respondents who work in Southern California are analyzed and compared against responses from all EDR respondents, participation in EDR training sessions becomes much more prevalent. This is consistent with the fact that we asked about on-site and in-person trainings, which participants outside of California would not have participated in.

Figure 8-4. EDR Tools Used By Respondents Who Work in Southern California (n=217)



Are Respondents Aware of the Tools?

Low awareness is one of the major reasons why some of these tools are not being used. Over 70% of respondents, for example, are aware of eQUEST—one of the most frequently used tools, while awareness of the Commissioning Handbook—one of the least used tools—is only 30%. Awareness is not the only reason, however, since awareness of SkyCalc is relatively high, but use of this tool is still quite low. Most likely, the low usage of SkyCalc is due to the fact that this tool is very specialized and it not being targeted to the right market actors.

In general, respondents appear to be much more aware of the software tools (with the exception of EDR Charette), than of EDR publications, despite the fact that software tools are used less.

Respondents are least aware of the trainings offered by EDR: only 21% to 42% of respondents are aware of each of the four trainings.

As mentioned above, even among those already reached by EDR, there is a significant opportunity to increase use of software tools, readership of publications, and participation in training, thereby increasing the potential influence of EDR on the new construction market.

Who is Using the Tools?

While EDR has reached over 2,300 market actors in the new construction market (and more than 1,200 in the Southern California market), unfortunately, more than a quarter of the people reached by EDR are not using the tools provided to them. Although some respondents are not using the tools because the tools are not applicable to the work that they do, others represent missed opportunities to affect the new construction market.

As shown in Figures 8-5 and 8-6, engineers and energy consultant appear to be the primary users of many of the EDR tools such as the publications and software.

It is also interesting to note that awareness and use of several of the tools, in particular the publications—such as the Case Studies, the Design Briefs, and Skylighting Guidelines—tend to be higher outside of Southern California.

Architects have a relatively low level of awareness, despite the fact that they are one of the primary targets of the EDR tools. They are also less likely to use the tools. In trying to increase awareness and use among this group, it is important to recognize that for many architects, energy efficiency is of lower importance in their new construction decisionmaking than aesthetics and cost. A wider range of aesthetically pleasing energy efficient design options, as well as continuing efforts to educate architects that efficiency is tied to costs for the end-user, may help to effectively address this issue.

What is the Impact of these Tools?

In general, publications—which are able to provide users with information about a variety of different issues—appear to have the most impact of all the tools available through EDR. Levels of readership typically surpass the numbers of respondents who use the software or the rates of participation in training sessions.

One measure of the impact of each publication is to see how readers rated the usefulness of the publication. From this perspective, the Commissioning Handbook, which is ranked the highest, appears to have a large impact with readers even though readership is the lowest of all publications. Thus while not many respondents read this publication (either because they are unaware or it is not pertinent to the work that they do), those that do read this publication find it particularly useful.

Interestingly and inversely, eNews is the most widely read publication, even though its readers gave it a usefulness rating that ranked below all other publications. However, this finding about usefulness is tempered by another indicator: how often respondents refer to the information in eNews. The frequency with which they do is among the highest of all publications, thus lending support, along with high readership, that eNews is an important publication. We can attribute the

Figure 8-5. Respondents Who Read Publications

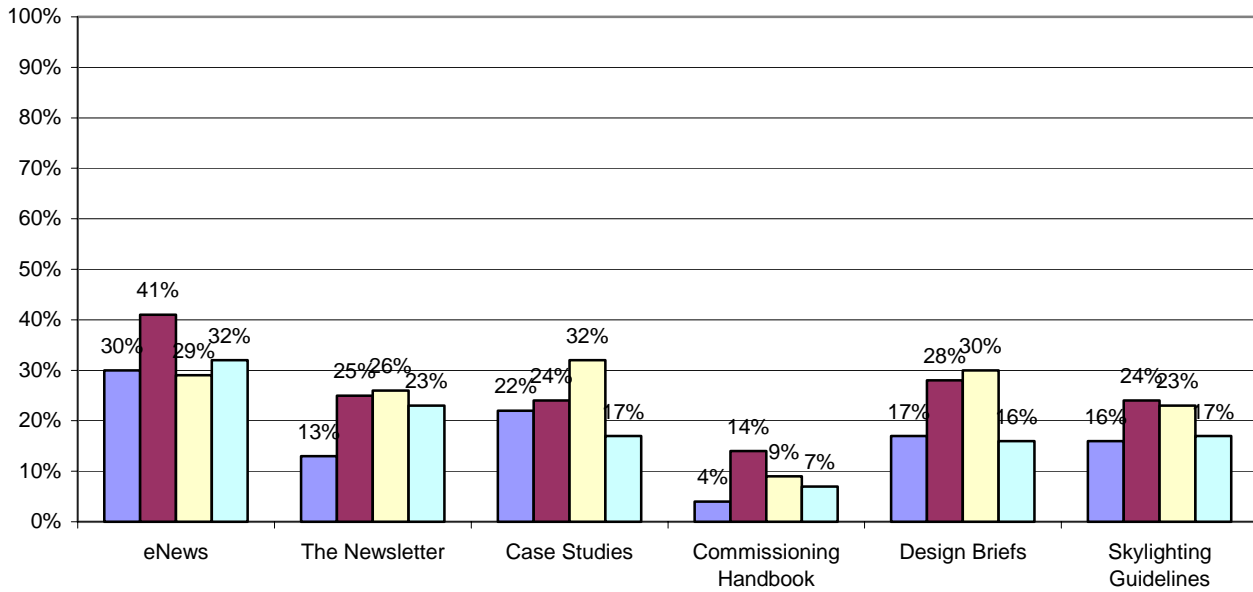
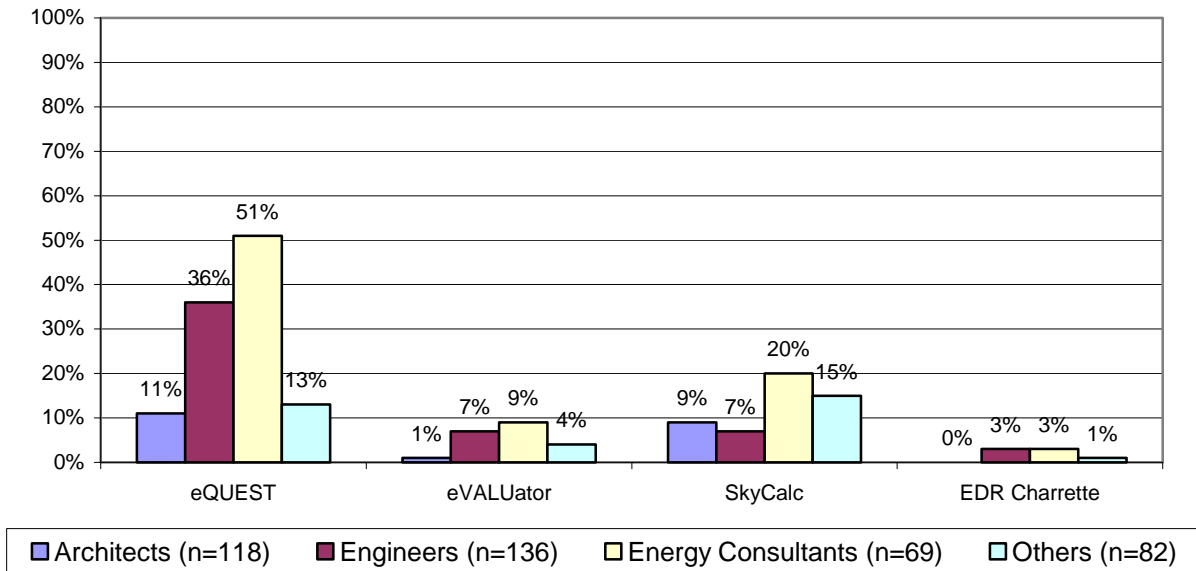


Figure 8-6. Respondents Who Use Software



large readership and frequent consultation of eNews to its frequent dissemination among EDR participants.

The specialty-type publications, like the Newsletter and the Commissioning Handbook, also appear to be very useful but need to be targeted to the appropriate audience. For some of the EDR tools, such as the Newsletter, the low levels of awareness, readership, and interest are due almost entirely to the fact that there are very few building owners and developers—the market actor groups at which the Newsletter is targeted—among the EDR participants.

Even though participation levels in the training courses offered by EDR were very low, these sessions also impacted participants' standard practices. Most of the participants stated that the training helped to influence their design practices.

In general, the software tools appear to be used primarily as a rough-cut estimate of energy savings in the schematic phase of the design process.

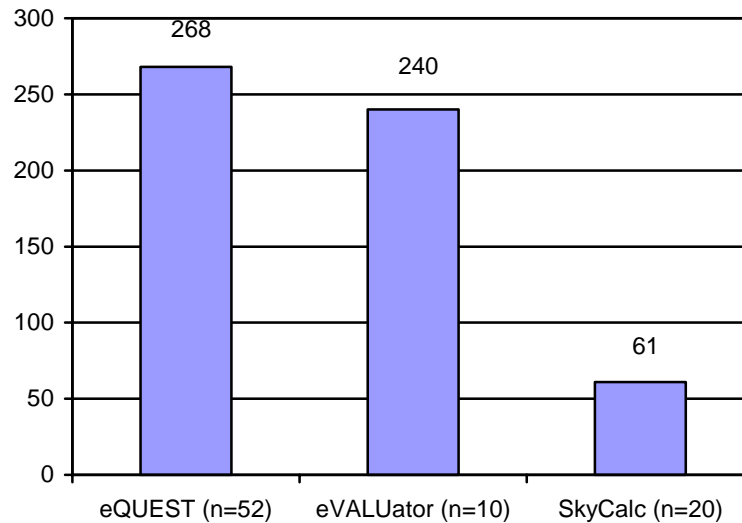
For SkyCalc, almost all users found that the software helped them to understand skylighting system design better, and two-thirds said that use of the tools led to the incorporation of some energy-efficient change. Even though savings from SkyCalc appear to be low, the tool has influenced lighting design for many SkyCalc users.

Of all of the tools offered, eQUEST is used more than any other tool and seems to lead to the largest savings. In addition to being used by a large percentage of people, users of eQUEST tend to use it more frequently and on more projects. They also indicate that this tool is useful for a variety of systems and can lead to greater energy savings. According to an overwhelming percentage of eQUEST users who identified savings, it had a strong impact on HVAC systems and to a lesser extent building envelope, electric lighting, and daylighting/skylighting systems.

We attempted to quantify the energy savings impacts of these tools for this evaluation based on survey responses; however, because this study was never envisioned as a formal impact study, it must be recognized that these are rough estimates of the potential savings of these tools. With this in mind, eQUEST appears to be the source of the greatest savings. eQUEST, based on approximations, saved a median of 268 MWh per project. In comparison, users indicated that eVALUator led to a median savings of 240 MWh per project; while SkyCalc yielded much lower savings, with an estimated median savings per project of 61 MWh. (See Figure 8-7.)

These numbers, again, are just rough approximations based on limited data.

Figure 8-7. Estimated Average Savings Per Project by Tool (in MWh)*



*Note that these values are rough approximations based on limited data.

What Can Be Done to Increase the Used of the EDR Tools?

The professionals reached through EDR have various skills and knowledge levels, as evidenced by respondents' comments on the tools and their ratings of the ease of use of the available software. Users of the tools range from those who request more advanced versions of tools such as eQUEST, to others who state that they want more default values because "the tools are too complex and engineering oriented."

EDR is designed to meet the needs of all levels of users through a multitude of tools available on the EDR website and the in-person trainings. Software tools such as eQUEST, for example, can be useful to both the novice and the expert. Users can rely on relatively simple wizards or get into the more complex modeling if they are so inclined. And for those who find eQUEST too difficult, EDR offers simpler tools such as the EDR Charette.

Approximately 75% of those that have come into contact with the program (more than 1,700 people) have read at least one publication, used at least one software tool, or participated in at least one training offered by EDR. Very few, however, seem to have used multiple types of tools (such as publications *and* tools *and* training) despite the fact that these different types of tools complement each other.

Based on this finding and the various levels of skill, knowledge, and interest, there is a need to "cross promote" the tools. If one user comes to the website and tries out eQUEST but finds it too difficult, EDR should somehow let him know that other, more basic tools such as EDR Charette may better meet his needs. Alternatively, if an architect attends an on-site training, the instructor should let the architect know that there are several tools available on the website that she might also find useful. Leveraging the contacts that occur through one tool, to disseminate

information about the other available tools, will help to increase the use of all EDR tools and will help guide professionals to the tools that best serve their purposes.

Additional support and training for software tools may also help to increase usage of some tools. Furthermore, EDR should consider revising the website to better inform website users about what they tools are best used for, and what value they offer.

In addition to using the one or two points of contact with a user to promote other tools, it appears that awareness of the tools is one of the major barriers to their use. Thus, actively promoting the website, trainings, and individual resources through trade journals and publications and other methods would be very valuable. EDR should also use the in-person trainings as a vehicle to promote EDR tools to architects and other professionals.

To actively promote the program, EDR should target trade journals and publications (both hard copy and online). EDR administrators may also want to consider pursuing key organizations such as the American Institute of the Architects of California Council (AIACC). SBD has a page in the quarterly AIACC newsletter, which it could use to co-promote EDR. Furthermore, getting other professional organizations such as AIA, ASHRAE or AEE to include a feature link to EDR's website would be useful for drawing additional professionals to the resources offered through EDR.

Finally, additional research is needed to better understand the needs of the market in relation to the existing tools. This will help to determine how to increase the usage of these tools.

Where Should EDR Focus Future Efforts?

This evaluation of EDR focused on understanding which market actors are being reached and which tools are being used most frequently. Future EDR efforts should be targeted at getting those who have been reached to further utilize the tools provided and at expanding EDR's reach. One way to do this is to focus on the needs of the target markets and to explore specific marketing messages that may appeal to these groups. EDR should explore these issues among market actors who have not had contact with EDR in the past. However, given that a large portion of those reached through this effort do not work in Southern California (or even in California), EDR should target future efforts towards the California market in order to increase use among the key market actors and to specifically meet their goal of increasing energy efficiency in California's new construction market.

EDR may also want to conduct a process-oriented evaluation to determine what promotion or marketing has worked in the past. Further exploration should be done to determine whether eQUEST is used significantly more than any other tool due to the merits of the tools or because of past or present promotional efforts (such as trainings or other outreach). Given the high level of awareness of eQUEST, it is possible that EDR is reaching out primarily to market actors that are interested in this type of tool. This type of analysis will give insights into how to expand marketing efforts, and usage, in the future.

EDR should also explore the current program theory and consider the value of drawing in developers and building owners. If deemed relevant, determining how to better attract downstream market actors may also merit additional exploration.

APPENDIX A: SOURCES

NRNC Market Characterization and Program Activities Tracking Report (PY2001), prepared for Southern California Edison, March 2002. (MCPAT)

Pacific Gas & Electric Company, Market Actors Study, Final Report, prepared for Pacific Gas & Electric by RLW Analytics, Inc. July 28, 1999. (Market Actors Study)

Nonresidential New Construction Market Assessment & Evaluation: Market Transformation Barriers and Strategies Study, prepared for Southern California Edison by the Heschong Mahone Group. February 29, 2000. (NRNC MA&E)

APPENDIX B:

SURVEY INSTRUMENT

2002 Energy Design Resources (EDR) Survey sponsored by Southern California Edison

You are receiving this e-mail because you are either a recipient of the EDR newsletter, you have downloaded EDR software tools, or you have participated in an EDR training session (see www.energydesignresources.com). Southern California Edison (SCE) developed the EDR program and is looking for your input to help make the program as useful as possible. By completing this survey, your opinions will help to shape future program enhancements. It is important for SCE to hear from you whether you use the information and tools frequently, know very little about the EDR program, or never use the information and tools.

Please be assured that your comments are strictly confidential - your name will never be attached to any of your responses.

To ensure confidentiality, we have hired an outside research firm, Opinion Dynamics, (www.opiniondynamics.com), to tabulate the results. The data we receive will be only aggregate responses, not individual answers.

Your participation is very important and greatly appreciated.

Please click on the link below to participate in the web-based survey:

<http://ws3.voxco.com/intweb.dll/online/odc/6100/pin=250278>

If you have any technical difficulties in completing this survey, please contact EDR-evaluation@opiniondynamics.com.

Thank you in advance for your valuable input.

Janith Johnson, AIA
Manager, New Construction Services
Southern California Edison

FRONT PAGE OF SURVEY

Thank you for agreeing to participate in our online survey. Please note the following before you begin:

1. If you are interrupted while doing this survey, you can quit and come back to it later by clicking on the URL in the email invitation.
2. If you have any problems or questions, please email EDR-evaluation@opiniondynamics.com.

With appreciation and thanks for your participation,

Janith Johnson, AIA
Manager, New Construction Services
Southern California Edison

I1. Which of the following best describes your profession?

- a. an Architect
- b. a Mechanical Engineer
- c. an Electrical Engineer
- d. a Developer
- e. a Lighting Designer
- f. an Energy Consultant
- g. an Owner/Owner's Representative
- h. a Contractor/Construction Manager
- i. a Facility Manager/Building Operator
- i. Equipment or Materials Vendor
- j. Other (please specify)

I2. Does your company work on buildings that are located in Southern California?

- a. Yes (CONTINUE)
- b. No (SKIP TO A2)
- c. Don't know (SKIP TO A2)

[IF 'WORK IN SOUTHERN CALIFORNIA', OR Q12=a]

A1. Are you aware that Southern California Edison offers new construction services and assistance to [INSERT TITLE FROM Q01] like yourself that work on non-residential buildings in SCE's territory?

- a. Yes
- b. No

A2. One of the services offered by SCE is Energy Design Resources. How would you describe your familiarity with Energy Design Resources? (Please check the correct response.)

- a. I have never heard of Energy Design Resources
- b. I have heard of Energy Design Resources, but can't describe it
- c. I am somewhat familiar with Energy Design Resources
- d. I am very familiar with the information and tools provided through Energy Design Resources

[THIS WILL BE HIDDEN UNTIL AFTER RESPONDENT ANSWERS A2...PUT THIS WITH Q3] Energy Design Resources offers energy design tools and resources that make it easier to design and build energy-efficient commercial and industrial buildings in California.

A3. SCE also offers several other energy efficiency opportunities for people who work on non-residential new construction projects, such as their Savings By Design program. How would you describe your familiarity with the Savings By Design program? (Please check the correct response.)

- a. I have never heard of the Savings By Design program (SKIP TO A5)
- b. I have heard of the Savings By Design program, but can't describe it
- c. I am somewhat familiar with the Savings By Design program
- d. I am very familiar with the Savings By Design program

[THIS WILL BE HIDDEN UNTIL AFTER RESPONDENT ANSWERS A3] Savings By Design is a statewide program that offers design assistance and financial incentives to help decision makers raise energy performance to a top priority. Energy Design Resources works in tandem with the Savings By Design program.

A4. [IF A3=b, c, or d] Have you, or any of the building owners you've worked with, ever received an incentive payment through the Savings By Design program?

- a. Yes
- b. No

[SKIP IF QA2=a, “They have not heard of EDR”]

A5. [IF QA2=b, c, or d] How did you first hear about Energy Design Resources? (Please check one.)

- a. From the Savings By Design program or web site
- b. From an SCE representative
- c. From a friend or colleague
- d. From a web search
- e. From the SCE web site (SCE.com)
- f. From a class or training provided by SCE
- g. From a press release or informational update
- h. From another web page (please specify which web site)
- i. Other (please specify)

The survey is set up to ask you a few questions about each of the following four areas:

- Publications
- Software
- Training
- and the EDR Web Site.

Each question should be easy to answer—just click on the appropriate box.

Click ‘Next’ to continue.

PUBLICATIONS

P1. Energy Design Resources (EDR) offers several publications to help design energy-efficient buildings. Please indicate your familiarity with the following materials by checking one box for each of the six publications listed below.

EDR Publication	Familiarity with EDR Publications		
	Not aware of publication	Aware but haven't read	Have read publication
eNews An electronic newsletter for designers			
The Newsletter A quarterly publication targeted at building owners (pdf or hard copy)			
Case Studies Projects in Southern California that successfully use skylighting or integrated design techniques.			
Commissioning Handbook An in-depth source book that introduces building owners to the benefits and procedures of commissioning, and gives design professionals the tools to incorporate commissioning into their projects.			
Design Briefs A series of publications discussing energy efficient technologies and design techniques.			
Skylighting Guidelines An in-depth document written to help architects and engineers use skylights to maximum advantage in commercial and industrial buildings.			

[FOR EACH PUBLICATION RESPONDENT HAS 'READ'...GO THROUGH WHOLE SERIES==P1 and P2 FOR ONE PUBLICATION, THEN WHOLE SERIES FOR THE SECOND PUBLICATION, ETC.]

P2. How frequently do you read or refer to information in [INSERT PUBLICATION]?

- a. Never [SKIP TO P4]
- b. Infrequently
- c. Frequently
- d. Always

P3. On a scale of 1 to 7 where 1 is not very useful and 7 is extremely useful, how useful do you find the [INSERT PUBLICATION]?

[FOR eNEWS READERS, CASE STUDY READERS AND DESIGN BRIEF READERS ONLY—ASK ONLY ONCE]

P4. What additional information would you like to see in eNews, the Case Studies or the Design Briefs? Please choose all the topics you would like additional information on.

- a. Energy Efficient Lighting Design
- b. Daylighting Systems
- c. Energy Efficient Heating, Ventilation, and Air Conditioning Systems
- d. Building Envelope Issues
- e. Integrated Design Process
- f. Process Systems
- g. Sustainable Building Design, in general
- h. None of the above
- i. Other (please specify)

[FOR EACH PUBLICATION ‘AWARE BUT HAVEN’T READ’, AND FOR EACH ‘NOT AWARE’ PUBLICATION]

P5. Please indicate how you would characterize your interest in:

[PROGRAMMING WILL ENSURE THAT ONLY RELEVANT PUBLICATIONS WILL POP UP IN TABLE]

EDR Publication	Not interested	Might be interested	Very interested
eNews An electronic newsletter for designers			
The Newsletter A quarterly publication targeted at building owners (pdf or hard copy)			
Case Studies Projects in Southern California that successfully use skylighting or integrated design techniques.			
Commissioning Handbook An in-depth source book that introduces building owners to the benefits and procedures of commissioning, and gives design professionals the tools to incorporate commissioning into their projects.			
Design Briefs A series of publications discussing energy efficient technologies and design techniques.			
Skylighting Guidelines An in-depth document written to help architects and engineers use skylights to maximum advantage in commercial and industrial buildings.			

[IF 'NOT INTERESTED' ...ASK FOR EACH 'NOT INTERESTED' PUBLICATION]

P6. Which best describes why you are not interested in [INSERT PUBLICATION]?

- a. It is not relevant to the work that I do
- b. I already have information on this and do not need additional information
- c. I do not have time
- d. I do not read these types of publications
- e. Other (please specify)

SOFTWARE TOOLS

S1. EDR also offers four online or software-based tools. Please indicate your familiarity with the following tools:

EDR Software Tool	Not aware of this tool	Aware of it, but haven't downloaded or viewed	Viewed, tried, or downloaded it, but haven't used it	Use this tool
<p>SkyCalc™ Skylighting Tool for California: A Microsoft Excel™ spreadsheet application that helps building designers determine the optimum skylighting strategy to achieve maximum lighting and HVAC energy savings for a building.</p>				
<p>eQUEST® Energy Analysis Software: An easy-to-use building energy use analysis tool that can quickly and accurately estimate the impact of various building design options.</p>				
<p>eVALUator Financial Analysis Software: This program calculates the life-cycle benefits of investments in improved building design. It analyzes the financial benefits from building improvements that reduce energy cost, raise employee productivity, and enhance tenant satisfaction.</p>				
<p>EDR Charette Online Tool: An online tool that allows the user to investigate energy impacts on a typical building and that presents the analysis graphically in an easy to understand web-based format.</p>				

[FOR EACH 'NOT AWARE' and 'AWARE BUT HAVEN'T DOWNLOADED' TOOL]

S2. Please indicate how you would characterize your interest in each of the following tools:
[PROGRAMMING WILL ENSURE THAT ONLY RELEVANT PUBLICATIONS WILL POP UP IN TABLE]

	Not interested	Might be interested	Very interested
SkyCalc™ Skylighting Tool for California: A Microsoft Excel™ spreadsheet application that helps building designers determine the optimum skylighting strategy to achieve maximum lighting and HVAC energy savings for a building.			
eQUEST® Energy Analysis Software: An easy-to-use building energy use analysis tool that can quickly and accurately estimate the impact of various building design options.			
eVALUator Financial Analysis Software: This program calculates the life-cycle benefits of investments in improved building design. It analyzes the financial benefits from building improvements that reduce energy cost, raise employee productivity, and enhance tenant satisfaction.			
EDR Charette Online Tool: An online tool that allows the user to investigate energy impacts on a typical building and that presents the analysis graphically in an easy to understand web-based format.			

[ONLY ASK IF 'NOT INTERESTED' ...ASK FOR EACH 'NOT INTERESTED' TOOL]

S3. Which statements best describe why you are not interested in the [INSERT TOOL]? (Please choose all that apply.)

- a. It is not relevant to the work that I do
- b. I already have the tools to do this and do not need additional tools
- c. I don't have enough time **to learn how to use** this type of tool
- d. I don't have enough time **to use** this type of tool
- e. I don't have the training to use this tool
- f. The design budget doesn't allow for additional analysis
- g. The construction budget doesn't allow for energy efficiency upgrades
- h. I don't have clients who place a high priority on energy efficiency
- i. Other (please specify)

[ONLY ASK FOR EACH 'VIEWED, TRIED OR DOWNLOADED BUT HAVEN'T USED' TOOL, INCLUDE DESCRIPTION OF TOOL AT TOP OF PAGE]

- S4. Please check all of the reasons why you haven't used the [INSERT TOOL]?
- I couldn't download or open the program [DO NOT INCLUDE FOR CHARETTE SEQUENCE]
 - I did not have enough instruction or training
 - I did not have the required inputs available
 - I did not need to use the tool for my job
 - I did not have time
 - After downloading the tool, I realized it wasn't what I needed
 - I forgot I downloaded the tool
 - Other (please specify)

[ONLY ASK IF 'USE TOOLS,' ASK S5-S11 FOR EACH TOOL THAT THEY USE FOLLOWED BY THE APPROPRIATE SERIES FOR EACH TOOL. FOR EXAMPLE, FOR SKYCALC ASK S5-S13, THEN IF THEY'VE USED EQUEST ASK S5-S11 and S20-S24, ETC.]

S5. You indicated that you've used the [INSERT TOOL]. Approximately how many projects have you used this tool for over the past year? (A rough estimate is fine.)

S6. On a scale of 1 to 7 where 1 is not easy and 7 is extremely easy, how easy was it to learn how to use [INSERT TOOL]?

[SKIP S7 IF S6=6 or 7, "EASY"]

- S7. What difficulties did you encounter with the [INSERT TOOL]? Please choose all that apply.
- I couldn't download or open the program
 - I didn't have enough instruction or training
 - I didn't have the required inputs available
 - Don't remember
 - None
 - Other (please specify)

- S8. What do you use [INSERT TOOL] for? Please choose all that apply.
- As a first rough-cut at determining energy or cost savings during the schematic design phase of a project
 - For double checking energy or cost savings calculations done elsewhere
 - For determining the appropriate energy efficient design
 - For marketing to clients
 - For educational purposes
 - As general information
 - Other (please specify)

S9. What are the major benefits of the [INSERT TOOL]? Please choose all that apply.

- a. The tool does not require a great deal of expertise
- b. The tool is easy to use
- c. The tool is available free of charge
- d. The tool presents its findings in a simple format
- e. The tool provides information I can't get elsewhere
- f. Other (please specify)

S10. What do you see as the limitations of [INSERT TOOL]? Please choose all that apply.

- a. The tool is too generic and cannot deal with the parameters of my project
- b. The reports don't provide the information that I need
- c. Not enough graphical presentations
- d. Requires too much expertise
- e. Requires too much time to learn
- f. Requires too much time to use
- g. The tool is not designed to meet state energy standards [DO NOT INCLUDE OPTION "G" FOR eVALUATOR or CHARETTE SEQUENCE]
- h. Other (please specify)

[ONLY ASK IF THEY'VE USED SKYCALC]

S11. Did the use of SkyCalc give you a better understanding of skylighting system design?

- a. Yes
- b. No

[ONLY ASK IF THEY'VE USED SKYCALC]

S12. Did the use of SkyCalc result in incorporation of energy efficient design options that would not otherwise have been included?

- a. Yes
- b. No [SKIP TO S27 UNLESS ALSO A USER OF EQUEST, EVALUATOR, OR THE CHARETTE]

[ONLY ASK IF THEY'VE USED SKYCALC] and [IF S12=a]

S13. Did the use of SkyCalc result in changes to your skylighting design? If so, how? Please choose all that apply.

- a. It helped me to convince the owner or other design team members to use skylights
- b. It convinced me to use skylights where none were originally planned.
- c. It convinced me to use more or fewer skylights than originally planned (by area).
- d. It convinced me to change the configuration (e.g., spacing, placement, and use of light wells).
- e. It convinced me to change the glazing selection (e.g., glazing color, single vs. double, diffusing vs. non-diffusing).

[SKYCALC]

S14. Did the use of SkyCalc result in changes to the lighting controls? If so, which changes?

- a. Yes, it resulted in the use of controls where they weren't originally planned.
- b. Yes, it resulted in the use of alternative controls.
- c. No, it did not result in changes to controls
- d. Other (please specify)

[SKIP TO S27 UNLESS ALSO A USER OF EQUEST, EVALUATOR, OR THE CHARETTE]

[ONLY ASK IF THEY'VE USED EVALUATOR]

S15. Did the use of eVALUator result in incorporation of energy efficient design options that would not otherwise have been included?

- a. Yes
- b. No

[FOR SCE CONSIDERATION. WE MAY REMOVE THIS QUESTION]

[ONLY ASK IF THEY'VE USED EVALUATOR] [IF S15=a, YES]

S16. eVALUator is a financial analysis tool that calculates life-cycle benefits of investments. While it is not designed specifically to tell you which equipment to purchase, the use of eVALUator may have had an impact on some of your system or equipment choices. For the projects where you've used eVALUator, which of the following systems or equipment has this tool impacted? Please choose all that apply.

- a. HVAC systems
- b. Daylighting/Skylighting systems
- c. Building envelope systems
- d. Electric lighting systems
- e. None of the above
- f. Don't know
- g. Other (please specify)

[ONLY ASK IF THEY'VE USED EVALUATOR]

S17. Have you ever used other financial analysis tools?

- a. Yes
- b. No, I haven't used any other financial analysis tools [SKIP TO S27 UNLESS ALSO A USER OF THE CHARETTE]

[ONLY ASK IF THEY'VE USED EVALUATOR] [IF S17=a]

S18. Which other financial analysis tools have you used?

Enter your response in the box below.

[ONLY ASK IF THEY'VE USED EVALUATOR] [IF S17=a]

S19. In general, how does eVALUator compare to this other tool? (In the case of multiple tools, how does eVALUator compare to the best of these tools?)

- a. Much better
- b. Slightly better
- c. Same
- d. Slightly worse
- e. Much worse

[SKIP TO S27 UNLESS ALSO A USER OF THE CHARETTE]

[ONLY ASK IF THEY'VE USED EQUEST]

S20. Did the use of eQUEST result in the incorporation of energy efficient design options that would not otherwise have been included?

- a. Yes
- b. No [SKIP TO S27 UNLESS ALSO A USER OF EVALUATOR OR THE CHARETTE]

[ONLY ASK IF THEY'VE USED EQUEST] [IF S20=a, YES]

S21. Which systems were affected by the use of eQUEST? (Check all that apply.)

- a. HVAC systems
- b. Daylighting/Skylighting systems
- c. Building envelope systems
- d. Electric lighting systems
- e. None of the above
- f. Don't know
- g. Other (please specify)

[ONLY ASK IF THEY'VE USED EQUEST]

S22. Have you ever used other building energy modeling tools?

- a. Yes
- b. No, I've never used any other tool [SKIP TO S27 UNLESS ALSO A USER OF EVALUATOR OR THE CHARETTE]

[ONLY ASK IF THEY'VE USED EQUEST] [SKIP IF S22=b]

S23. Which building energy modeling tools have you used?

Please enter the tools you have used in the box below.

[ONLY ASK IF THEY'VE USED EQUEST] [IF S22=a] [SKIP IF S22=b]

S24. How does eQUEST compare to the other tools that you've used? (In the case of multiple tools, how does eQUEST compare to the best of these tools?)

- a. Much better
- b. Slightly better
- c. Same
- d. Slightly worse
- e. Much worse

[SKIP TO S27 UNLESS ALSO A USER OF EVALUATOR OR THE CHARETTE]

[ONLY ASK IF THEY'VE USED EDR CHARETTE]

S25. Did the use of EDR Charette give you a basic understanding of the relationship of design options and energy use?

- a. Yes
- b. No

[ONLY ASK IF THEY'VE USED EDR CHARETTE]

S26. Did the use of EDR Charette motivate you to investigate more in-depth building simulation tools such as eQUEST or DOE-2?

- a. Yes
- b. No

[IF S12, S15 or S20=a, ASK FOR EACH RELEVANT TOOL, PROGRAMMING WILL MAKE SURE THAT ONLY RELEVANT TOOLS SHOW UP IN THE TABLE]

S27. Although not all of the tools indicate a percentage energy savings, we are interested in getting a rough idea of the amount of energy that can be saved by using these tools. Please indicate your estimate of the average energy savings (in percent savings of total building energy use) that you generally achieve on your projects as a result of using these tools? (Rough estimates are fine.)

EDR Tool	%
SkyCalc™ Skylighting Tool for California: A Microsoft Excel™ spreadsheet application that helps building designers determine the optimum skylighting strategy to achieve maximum lighting and HVAC energy savings for a building.	—
eQUEST® Energy Analysis Software: An easy-to-use building energy use analysis tool that can quickly and accurately estimate the impact of various building design options.	—
eVALUator Financial Analysis Software: This program calculates the life-cycle benefits of investments in improved building design. It analyzes the financial benefits from building improvements that reduce energy cost, raise employee productivity, and enhance tenant satisfaction.	—

For the previous question, please be sure that you indicated the average energy savings of **total building** energy use. If you need to double check, please hit the 'back' button. To continue, please hit the 'next' button. Thank you!

[FOR EACH TOOL USED IN S1]

S28. How likely are you to continue using [INSERT TOOL TYPE]?

- a. Very likely
- b. Somewhat likely
- c. Not likely at all

S29. What additional tools would you like the EDR program to provide? (Please specify, otherwise leave blank and continue)

Enter your response in the box below.

TRAINING

T1. EDR provides both on-site and online training and seminars. Please indicate whether you have participated in any of the following trainings or seminars listed below.

	Not aware	Aware, but haven't participated	Participated
On-Site Presentations: Technical seminars for your staff given at your location			
Virtual Workshops: Sessions that combine multi-media with the Internet to provide 24-hour access for participants to complete courses at their own pace.			
EDR Lights: An online course that provides useful professional level education on high performance lighting for the workplace — especially offices, retail, and industrial buildings.			
Energy Center Training Seminars and workshops provided by the Customer Technology Application Center (CTAC) in Irwindale.			

[ASK ONLY IF “PARTICIPATED” FOR ENERGY CENTER TRAINING]

T2. Which Energy Center Trainings have you attended? (A general description is fine.)
Enter your response in the box below.

[ASK REMAINING QUESTIONS AS A SERIES FOR ALL “PARTICIPATED” RESPONSES IN T1]

T3. On a scale of 1 to 7 where 1 is not very useful and 7 is extremely useful, how useful did you find the [INSERT TRAINING TYPE]?

T4. Did the [INSERT TRAINING TYPE] help to influence design practices?

- a. Yes
- b. No

[IF T4=a]

T5. How did the [INSERT TRAINING TYPE] help to influence design practices?
Enter your response in the box below.

[IF ALSO SOFTWARE TOOL USER]

T6. Did the [INSERT TRAINING TYPE] lead you to use EDR software tools?

- a. Yes
- b. No

T7. Why did you decide to participate in the [INSERT TRAINING TYPE]?

Enter your response in the box below.

EDR WEB SITE

U2. On a scale of 1 to 7 where 1 is not helpful and 7 is extremely helpful, how helpful are the **EDR links** in helping you find other resources?

U1. On a scale of 1 to 7 where 1 is not satisfied and 7 is extremely satisfied, please rate your overall satisfaction with the **EDR web site**.

Thank you so much for answering these questions about our Publications, Software Tools, Training and Web Site. We're also interested in the importance that you place on the following factors.

O1. How do you rate the level of importance of the following factors when addressing critical decisions for a new building project? Please rank the following using "1" for the most important factor(s).

Aesthetics: _____
 Energy Efficiency: _____
 Cost: _____
 Availability of Products: _____
 Other: _____

Please specify "Other" mentioned on the previous screen in the text box provided below:

O2. What are the best ways to let other people like you know about EDR? Please choose up to two.

- a. Trade journals, magazines and/or other publications
- b. Email marketing
- c. Direct mailing
- d. Through utility representative contact
- e. Training and/or seminars
- f. Through vendors
- g. Other (please specify)

C1. What additional information would you like EDR to provide? Please type any comments in the box below. If you do not have any suggestions, just leave the box blank.

C2. What changes could be made to the tools and information provided through EDR to make them more useful to you? Please type any comments in the box below. If you do not have any suggestions, just leave the box blank.

C3. We are interested in your suggestions for the web site. Please type any comments in the box below. If you do not have any suggestions, just leave the box blank.

Finally, we have just a few firmographic questions to help us group responses. None of this information will be used to identify you, it is only to help us better understand the information that you provided.

F1. Approximately how many employees work for your company?

F2. Approximately how many non-residential projects did **you** start last year? (Rough estimates are fine.)

F3. Approximately how many non-residential projects did **your company** start last year? (Rough estimates are fine.)

F4. Which types of buildings do you most frequently work on? Please check up to three building types.

- a. Office buildings
- b. Retail buildings
- c. Public Assembly buildings
- d. Schools
- e. Other

F5. Approximately how much of your work is on:
Please ensure that your percentages add up to 100%

[INSERT Building Type 1 from F4]	_____
[INSERT Building Type 2 from F4]	_____
[INSERT Building Type 3 from F4]	_____
Other building types	_____

[IF PERCENTAGES DO NOT ADD 100%]

Your percentages do not add up to 100%. Please click on the BACK button to correct.

[PROGRAMMING WILL ENSURE THAT RELEVANT AND THE PROPER NUMBER OF BUILDING TYPES WILL APPEAR]

F6.

	Square Feet
Approximately, what is the average size of the [INSERT BUILDING TYPE 1] that you work on, in terms of square feet ?	<input type="text"/>
Approximately, what is the average size of the [INSERT BUILDING TYPE 2] that you work on, in terms of square feet ?	<input type="text"/>
Approximately, what is the average size of the [INSERT BUILDING TYPE 3] that you work on, in terms of square feet ?	<input type="text"/>

[IF PRESS 'SUBMIT']

Thank you so much for you time and participation in our survey.

[IF PRESS 'QUIT']

On behalf of Southern California Edison, thank you very much for completing part of this survey. You may return later by following the hyperlink provided by the original invitation email you received.

Please click the SUBMIT button below to submit your responses and quit the survey. If you'd rather not quit now, please click the BACK button below to continue filling out your survey.

APPENDIX C:
DATA TABLES

(Included as a separate attachment)