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ENERGY DESIGN RESOURCES (EDR) 2003 EVALUATION

Submitted to:
Southern California Edison

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A NOTE ON THE STRUCTURE AND USE OF THIS REPORT

In July of 2002, Opinion Dynamics Corp. (ODC) was selected to conduct an evaluation of Energy Design Resources (EDR) for Southern California Edison (Phase I). Our Phase I evaluation efforts were funded as a *utility-specific* evaluation for Southern California Edison (SCE). However, through this effort ODC was able to collect *statewide* quantitative data from approximately 18% of the total statewide sample. This was possible for two reasons: relative cost of including market actors from other regions was minimal and it was likely that some market actors with physical office locations outside of Southern California were actually doing work inside SCE's territory.

Following this preliminary research for SCE, ODC was selected in April of 2003 as the statewide evaluation contractor for EDR. Since much of the quantitative data had been collected through Phase I, ODC conducted additional qualitative research (Phase II) to provide context to earlier findings.

This report, *The 2003 Energy Design Resources (EDR) Evaluation*, presents the integrated findings of both phases of our evaluation work. Following the Executive Summary and Integrated Findings, we present several chapters that capture the detailed findings from our Phase I and Phase II efforts.

It should be noted that Energy Design Resources is a statewide energy efficiency offering that is housed under the Savings By Design program. While EDR is not a stand-alone program, our evaluation efforts were targeted only at EDR and not the larger Savings By Design Program. Thus the findings in this report reflect only the EDR component of the program.

Furthermore, our research was conducted to assist the utility staff with the design and implementation of EDR efforts. Following the completion of each Phase II task, a memo of the findings was shared with the implementation staff so that they could make any necessary adjustments. Thus, at the time of final publication of this report, the statewide utility staff had made several changes in response to preliminary findings from our Phase II evaluation. These changes included:

1. Actively marketing both SBD and its educational component EDR,
2. Partnering with USGBC's Leadership in Energy & Environmental Design (LEED) to hand out EDR materials at LEED courses,
3. Working with Utility Account Services to educate account representatives about EDR so that they can market EDR more effectively,
4. Creating an EDR brochure to be included with the SBD brochure and to be handed out at 2004 events,
5. Working with the energy centers to hand out EDR binders and CDs to architects and engineers attending energy center courses, and

6. Developing an EDR workstation at some of the energy center libraries.

Implementation staff have worked hard to adapt EDR so that they can more effectively deliver resources to design professionals.

EXECUTIVE SUMMARY

Background

Energy Design Resources (EDR) 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.

Approach

The evaluation of EDR took place in two phases. The first phase of the evaluation, which took place in mid-2002 through early 2003, included secondary research, depth interviews with the designers of the EDR tools, and an online quantitative survey with over 400 participating market actors. The purpose of the first phase of the evaluation was to describe who is being reached by EDR, 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.

The second phase of the evaluation, which occurred between May 2003 and July 2003, included more qualitative follow-up work with specific market actors to gather additional details on how to deliver these tools more effectively. Specifically, Phase II tasks included:

1. A detailed analysis of the non-user data from the prior Internet survey;
2. In-depth interviews with program implementers;
3. In-depth interviews with Savings By Design field staff;
4. In-depth interviews with Savings By Design and non-Savings By Design architects;
5. A focus group discussion with engineers, energy consultants, and architects;
6. A short follow-up e-mail questionnaire to prior-respondents of our Internet survey; and
7. The development of a list of tracking indicators.

Results

Select results from the quantitative and qualitative research tasks are highlighted below:

➢ **Who is EDR Reaching?** EDR is primarily reaching engineers (34%), architects (29%), and energy consultants (17%). 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%).

- ➢ **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, unfortunately, more than a quarter of the people reached by EDR are not using the tools provided to them. 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 end-users, such as the building owner or manager.

- ➢ **What are the Largest Barriers To Use of EDR?** The largest barriers to achieving the goals of EDR are the limited amount of active promotion[1] resulting in the low levels of awareness of EDR, the overwhelming amount of competing information that inundates design professionals, the fact that EDR is not currently thought of as 'the virtual education center for energy efficient integrated design,' and the hesitancy of design professionals to change current practices.

Conclusions

The marketplace needs an organization that is identified as the energy efficiency design hub for commercial buildings. Using continuous education and messaging to make EDR the virtual energy center that brings together the current EDR tools, as well as other tools (from other sources) currently available to design professionals, is the most effective way to meet the needs of the market. Our research and understanding of the marketplace suggest that one way to raise awareness of the EDR tools is work to promote it in conjunction with SBD or an already established organization such as the utility energy centers.

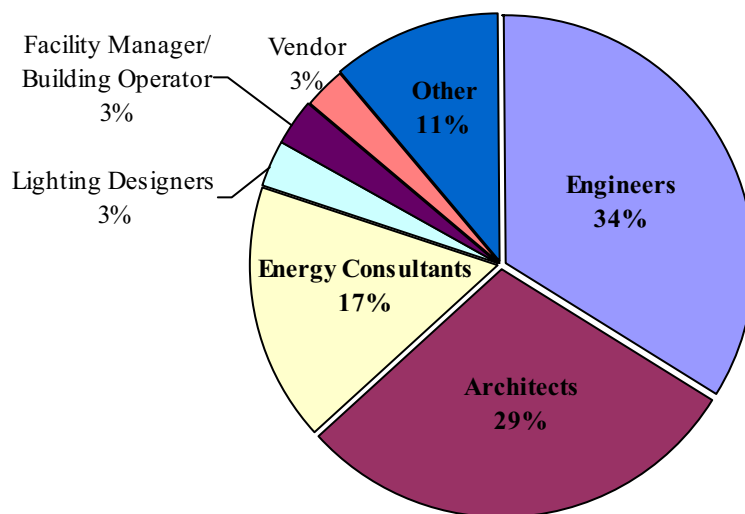Specific recommendations are provided in the Integrated Findings chapter.

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[1] Note that since the time of this evaluation, utility staff have worked to actively promote EDR.

INTEGRATED FINDINGS

Who is EDR Reaching?

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

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

Since engineers and energy consultants are well versed in energy modeling and the energy use of buildings, they are integral to the energy efficient design process. Professionals who have used modeling software (such as eQUEST) understand that software is needed to look at energy efficient options, particularly to move beyond compliance. However, while engineers play this important role, they have less control over the final design since they typically deal with the owner through the architect.[2] The engineer (and/or eQUEST) alone, therefore, is not successful in encouraging energy efficiency throughout the design process.

In encouraging energy efficient design, architects are often the focal point since they are the ones interacting with the client. Architects are clearly pivotal players in the design of a building given their interactions with both the client and the various members of the design team. However, although architects feel that they are in charge of many aspects of the design, they believe other members of the design team—engineers, consultants—need to be more energy conscious before the architect can incorporate energy efficient design options. Architects often rely on engineers and consultants to do the energy efficiency calculations and architects' absence from the task makes them feel somewhat powerless to affect energy-related decisions in the building.

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[2] This is supported by both our findings and by Heschong Mahone Group, Non-Residential New Construction Market Assessment and Evaluation, February 29, 2000. (NRNC MA&E)

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) architects may be the most important group of market actors for EDR to target.

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

Who is Using the Tools the Most?

While EDR has reached over 2,300 market actors in the new construction market, 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 2 and 3, engineers and energy consultant appear to be the primary users of many of the EDR tools such as the publications and software.

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 decision making 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.

The professionals who use the EDR tools 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 web site 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. The fact that it is designed to reach out to people with various roles, needs, and levels of understanding is further supported by the fact that there is no particular group that stands out as a non-user; EDR appears to offer something for everyone.

Figure 2. Respondents Who Read Publications

Figure 3. Respondents Who Use Software

publications (53%), very few respondents—only 19% of all respondents—have participated in any of the trainings.

Because awareness of EDR trainings is low among the design community, greater marketing of its offerings needs to occur. Furthermore, greater differentiation could be made between EDR trainings at the energy centers and other energy center trainings. Email and mail announcements could be sent out notifying design professionals of the schedules of EDR-specific trainings, and with descriptions of its other, non-scheduled trainings.

Why are Some Tools Underutilized?

Without a doubt, there is an interest in the types of tools offered by EDR; even non-users (77%) reported a 'strong interest' in at least one of the tools that EDR offers with an additional 23% of respondents expressing a 'possible interest'.

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 l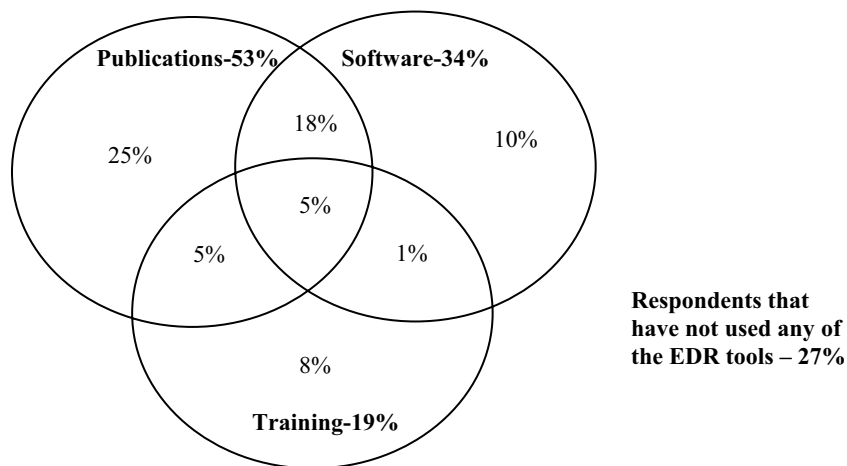ow usage of SkyCalc is due to the fact that this tool is very specialized and it may not be marketed to the right market actors.

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.

Given the limited promotion of EDR at the time of this research, it is no surprise that awareness of Energy Design Resources remains somewhat low throughout the design community. Even among those who are aware, most are either vaguely familiar with it but don't know what resources are offered, or they only know about one or two relevant tools but are not aware that there is a whole suite of resources available. Furthermore, even among those who have used EDR tools, many do not associate the tools with the 'Energy Design Resources' name.

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.

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Figure 5. Comparison of All Publications and Software Tools

Legend:
- Have Read/Used
- Not Aware
- Aware but Haven't Read/Used

Publication/Tool	Have Read/Used	Not Aware	Aware but Haven't Read/Used
EDR Charette	2	65	34
eVALUator	5	45	50
Commissioning Handbook	9	70	21
SkyCalc	11	37	51
Skylighting Guidelines	20	54	26
Newsletter	21	60	19
Design Briefs	23	56	22
Case Studies	23	49	28
eQUEST	27	29	44
eNews	34	48	18
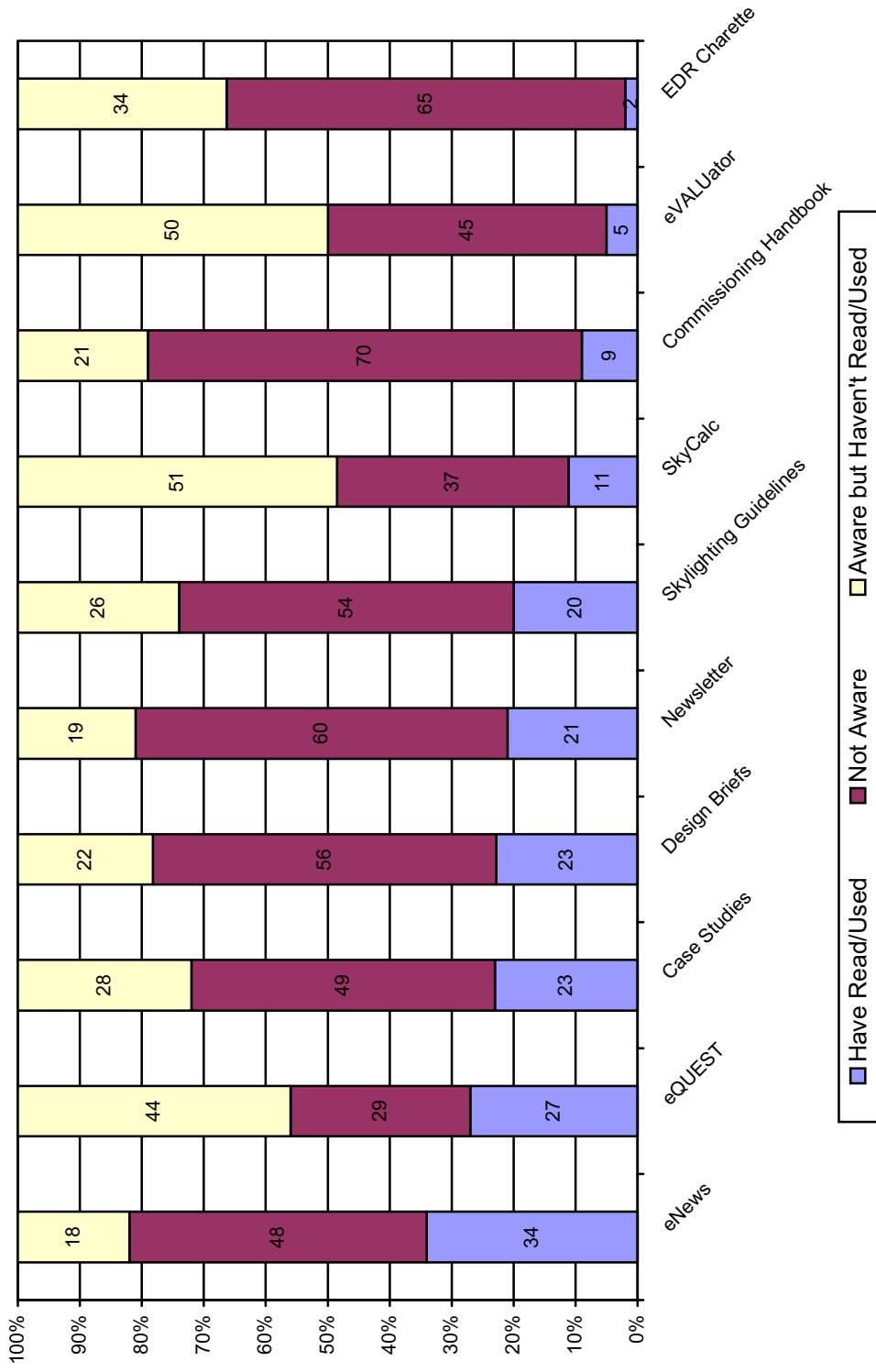
What Can Be Done to Increase the Use of the EDR Tools?

There are several steps that can be taken (and have already been taken) to increase the use of the EDR tools, including:

➢ **More closely associate "efficient design" and the EDR tools:** The implicit goal of EDR is to make energy efficient integrated design (and EDR tools that encourage this type of design) a dynamic part of the design process. In addition to not presently being thought of as a one-stop source of information, EDR is also not widely promoted.[3] Currently, design professionals may come across EDR tools through a web search, or through a visit from a Savings-By-Design field staff member or other utility contact. Efforts to actively promote the EDR tools, however, are limited. EDR needs to strengthen its message and work to become <u>the</u> virtual educational center for energy efficient design. As it stands, some design professionals viewed EDR as competing with the other resources that are available. The information gathered through the statewide study of EDR seems to support the fact that branding the EDR name (either on its own, through SBD, or through another outlet that is already known) may help in the efforts to disseminate valuable educational information and tools; branding the name may encourage design professionals to go to EDR when they are in need of information or tools.

➢ **Provide additional formal training to SBD field staff[4]:** While all SBD field staff are aware of EDR and mention it to the design professionals that they visit—thereby starting to raise awareness of EDR—field staff members are not really using EDR to leverage awareness and participation in the Savings By Design program. Based on comments from field staff[5], they are likely to mention the EDR tools in passing as a useful resource but not get into the details due to time constraints. Based on respondents' comments, it appears that the field staff is increasing design professionals' *awareness* of EDR tools; however, it is unclear as to whether they are increasing *knowledge* and *usage* since the EDR tools are only given a cursory mention in their presentations.[6] Field staff knowledge of EDR tools, time constraints on-site, and design professional interest are the greatest barriers to discussing EDR tools in detail during visits with designers. Since EDR is not a priority in meetings and time is limited, its resources are not emphasized. EDR needs to provide formal training to SBD field staff so that they can inform the design community about the resources available through EDR. Continued training on the EDR tools, especially related to updates, is critical for successful dissemination of information.

➢ **"Cross promote" EDR 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. 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. If one

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[3] Note that since the time of this evaluation, utility staff have worked to actively promote EDR.
[4] Note that the field representatives have received more training since the time of this evaluation.
[5] Field staff were interviewed in June 2003.
[6] Awareness includes recognition of the name or tool, while knowledge refers to a more in depth understanding of where to get the tools and how to use the tools.

user comes to the web site and tries out eQUEST but finds it too difficult, EDR should somehow let him/her know that other, more basic tools such as EDR Charette may better meet his/her 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 web site that s/he 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.

➢ **Actively promote EDR through established communications to design professionals:** Awareness of the tools is one of the major barriers to their use. Thus, actively promoting the web site, 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 EDR, the utilities 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 web site would be useful for drawing additional professionals to the resources offered through EDR.

➢ **Create an EDR summary sheet:** Developing a summary sheet that compares various energy design tools, their capabilities, and their limitations would also be useful in organizing and disseminating tools. This would help design professionals find the best tools to meet their needs. Architects and engineers also mentioned that testimonials of people who actually use the tools and what they use them for would be helpful. Utility staff and others who are promoting EDR may also find summary sheets useful in easily identifying the most useful resources for the audience they are addressing.

➢ **Provide additional support and training for users:** Additional support and training for software tools may also help to increase usage of some tools. Furthermore, EDR should consider revising the web site to better inform web site users about what the tools are best used for, and what value they offer.[7]

➢ **Encourage collaborative design:** The disconnect between the roles of architects and engineers is one of the largest barriers to energy efficient integrated design. Because of the importance of each of these players there is a need for a more collaborative process between the design team. The utilities should continue to encourage collaborative design through Savings By Design, and by trying to offer information and tools to all relevant players (for example, eQUEST for engineers, case studies for architects, and eVALUator for developers).

➢ **Integrate and leverage existing information:** There are multiple web sites and sources offering an overwhelming amount of information. Rather than duplicating efforts or trying to fill gaps in resources, many design professions feel that the most valuable role for EDR would be to leverage existing resources, partner with organizations or web sites that offer valuable information, and integrate information that is already available into the EDR web

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[7] Note that the web site has been revised since this research was conducted.

site.[8]   Pulling existing information together in a manner that is easily accessible with searchable parameters (e.g., by type of sector, region, resources, building use) may be the best way to encourage energy efficient, integrated designs. For example, a virtual education center could be designed so that users could easily access information that is pertinent to a particular region, building end-use, or design professionals' role.[9]

> **Leverage existing organizations to raise awareness of EDR:** EDR should consider partnering with other well-established organizations to leverage their resources. Energy centers represent one opportunity since many respondents are already aware of the utilities' energy. The energy centers, therefore, can be used to maximize exposure to the design community.   Alternatively, EDR may want to partner with the better-established organizations such as LEED (Leadership in Energy & Environmental Design) and use these already established organizations to increase awareness of EDR.

The detailed findings, which support these recommendations, are provided in the chapters that follow.

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[8] One of the added benefits of partnering with others is that it provides a first step to encouraging compatibility between the resources, such as software programs that collate information into the correct one-page submittal forms for LEED or to meet the Title 24 requirements and submittals, which was also identified as extremely valuable by both architects and engineers.

[9] As noted earlier, modifications have been made to the web site since this research was conducted.

PHASE I RESEARCH: UTILITY-SPECIFIC EVALUATION

CHAPTER 1:
INTRODUCTION TO EDR

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 (PHASE I)

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).[10]

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.

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[10] Note that the Commissioning Handbook was done by a project manager at PECI 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.

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 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,[11]" 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.[12] 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.[13]" 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.[14]

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.[15]" 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.[16] This group, however, is believed to have less knowledge about equipment and material costs.[17]

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.

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[11] RLW Analytics Inc., Pacific Gas & Electric Company Market Actors Study, July 28, 1999. (Market Actors Study)
[12] 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.
[13] The Heschong Mahone Group, Non-Residential New Construction Market Assessment and Evaluation, February 29, 2000. (NRNC MA&E)
[14] NRNC MA&E
[15] Market Actors Study
[16] NRNC MA&E
[17] 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.[18] Approximately 1,400 of these projects were in Southern California Edison's (SCE) territory.[19] 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.[20] 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.[21]

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.

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

[19] MCPAT

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

[21] 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.[22] (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

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[22] 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,[23] 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)
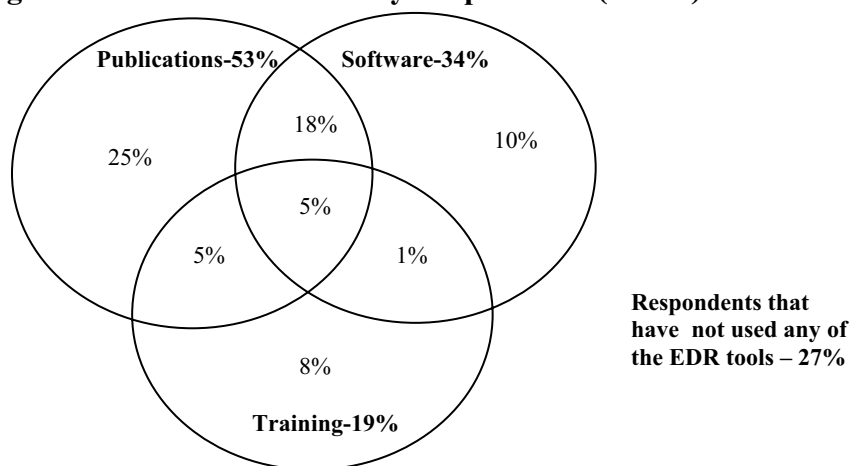
Using Table 3-6, we can see that many (nearly a third) of the architects that responded did not end up using any of the EDR tools. One-half of the architects (50%), however, have read at least

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[23] "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.[24] 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 that 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.

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[24] 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)
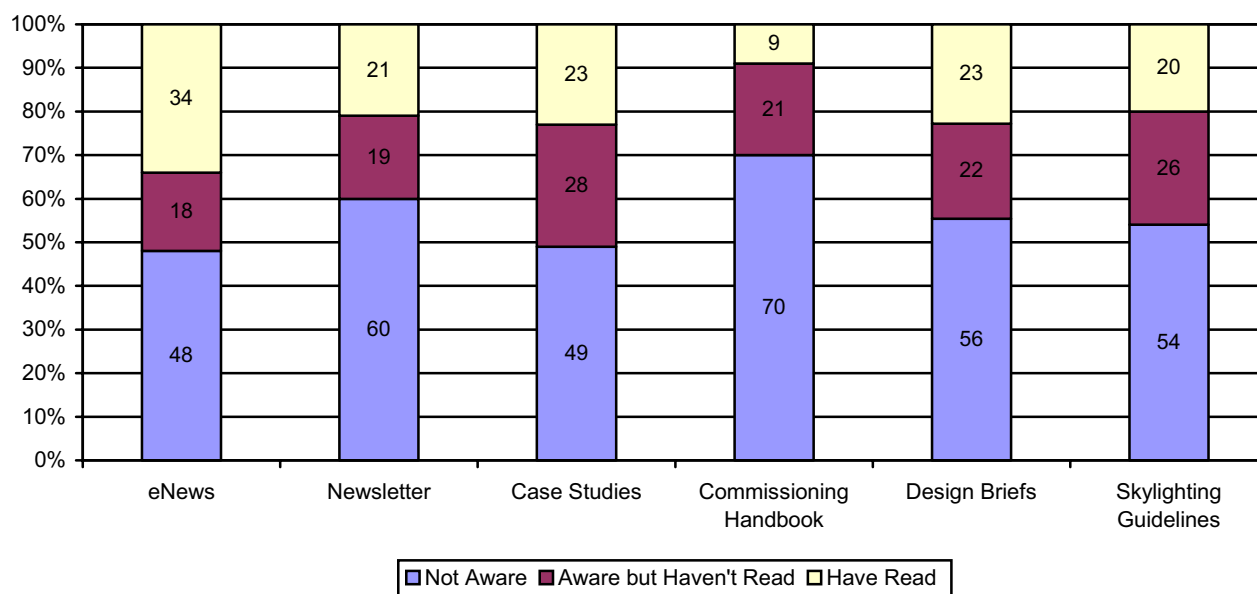
Among the specific occupational groups, 58% of energy consultants, 57% of engineers and 50% of architects have read at least one publication. (See Table 3-6).

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 l4% 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 Handbook[25] 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.

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[25] 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'.[26] (See Table 4A-2.) Opinions about the usefulness of eNews vary. Over one-half (57%) say eNews is

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[26] 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'.[27] 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.

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[27] 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.

eNews (n=405)

Aware
52%

Reads eNews
34%

Does NOT Read eNews
18%

Interested
16%

NOT Interested
2%

Unaware
48%

Interested
41%

NOT Interested
7%

Percentage Of Total Respondents

Read Publication – 34%
Aware and Interested – 16%
Previously Unaware but Interested – 41%
Not Interested (Aware and Unaware) – 9%
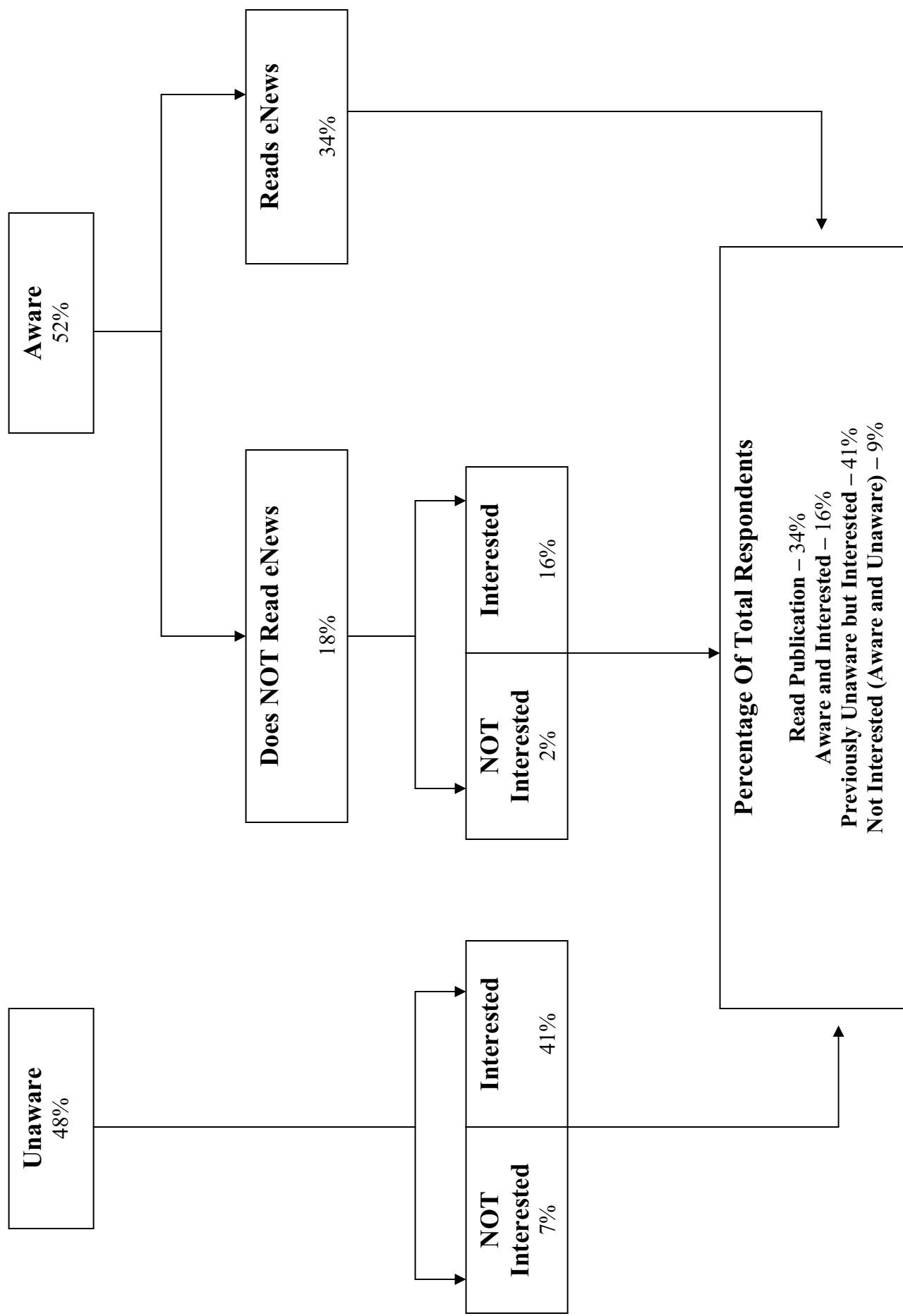
THE NEWSLETTER

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.[28] 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.

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[28] Note that building owners and developers are not currently targeted by EDR.

Newsletter (n=405)

44

Aware
40%

Reads Newsletter

21%

Does NOT Read Newsletter

19%

Interested

17%

NOT Interested
2%

Unaware
60%

Interested

41%

NOT Interested
19%

Percentage Of Total Respondents

Read publication – 21%
Aware and Interested – 17%
Previously Unaware but Interested – 41%
Not Interested (Aware and Unaware) – 21%
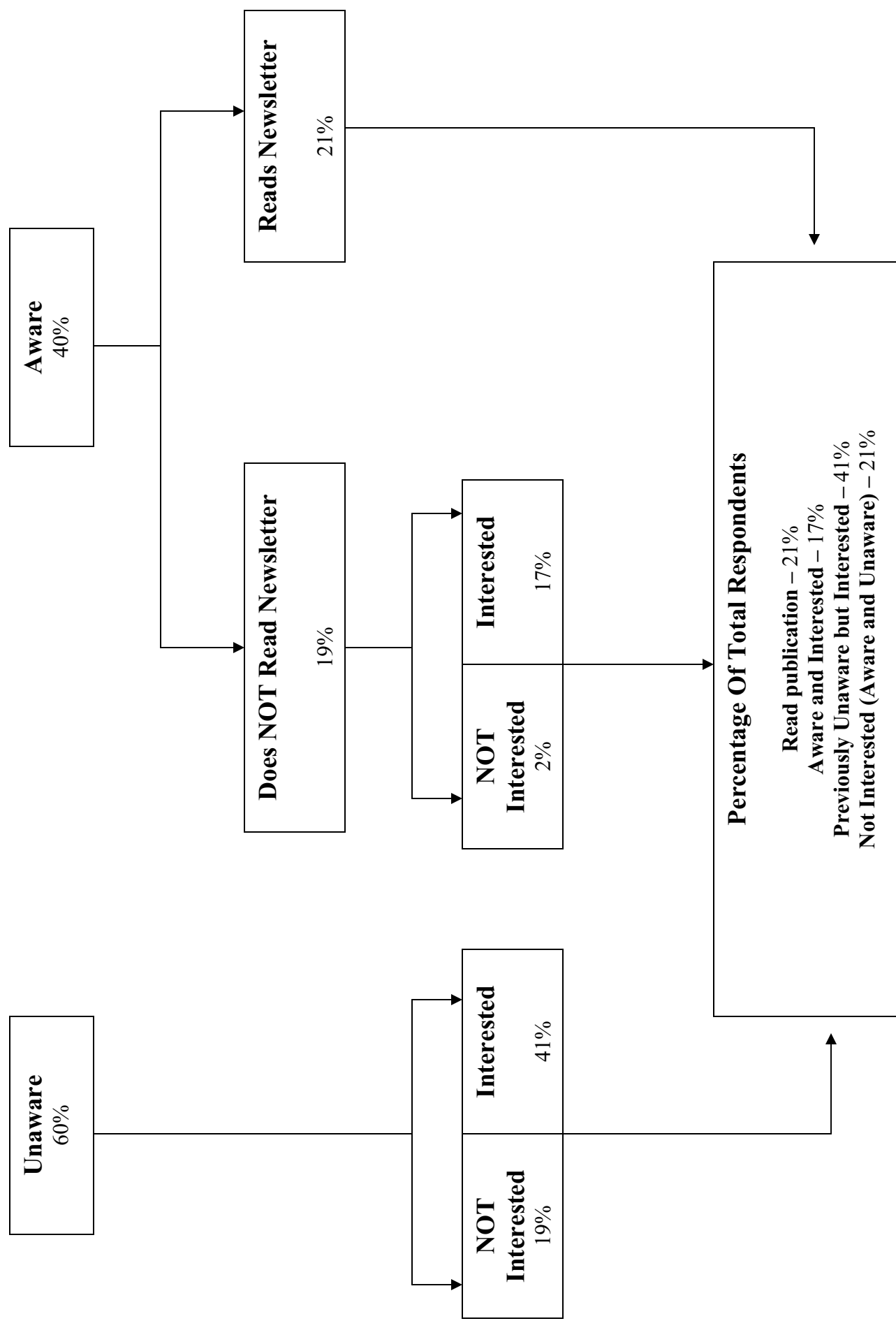
CASE STUDIES

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.

Case Studies (n=405)

Aware
51%

Reads Case Studies
23%

Does NOT Read Case Studies
28%

Interested
26%

NOT Interested
2%

Unaware
49%

Interested
41% **

NOT Interested
7% **

Percentage Of Total Respondents

Read Publication – 23%
Aware and Interested – 26%
Previously Unaware but Interested – 41%
Not Interested (Aware and Unaware) – 9%

**Does not add to 49% due to rounding.
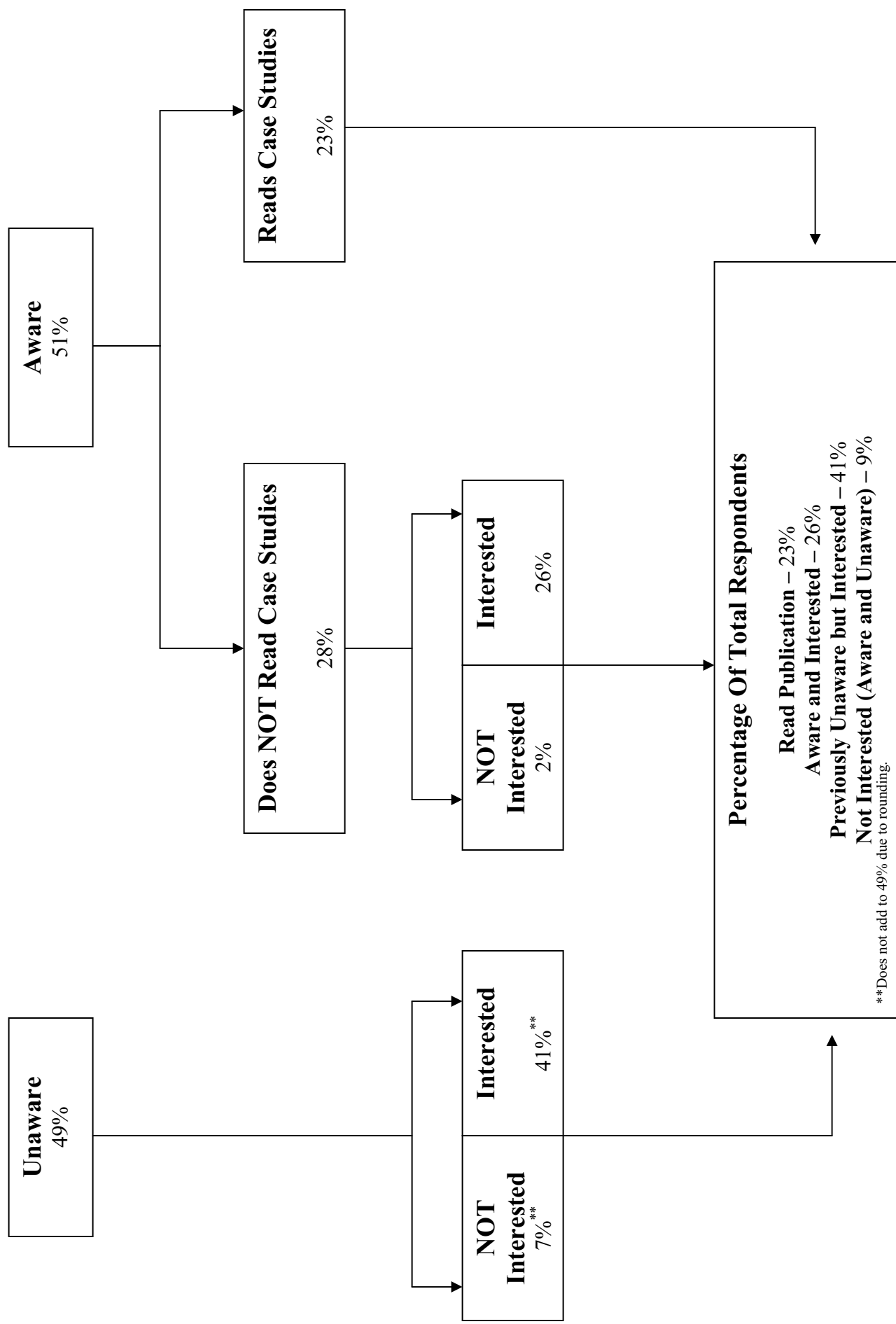
COMMISSIONING HANDBOOK

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.
*[1]Significantly 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

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	--

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

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)

Unaware
70%

Aware
30%

Reads Handbook
9%

Does NOT Read Handbook
21%

Interested
59%

NOT Interested
11%

Interested
20%**

NOT Interested
2%**

Percentage Of Total Respondents

Read Publication – 9%
Aware and Interested – 20%
Previously Unaware but Interested – 59%
Not Interested (Aware and Not Aware) – 13%

**Does not add to 21% due to rounding.
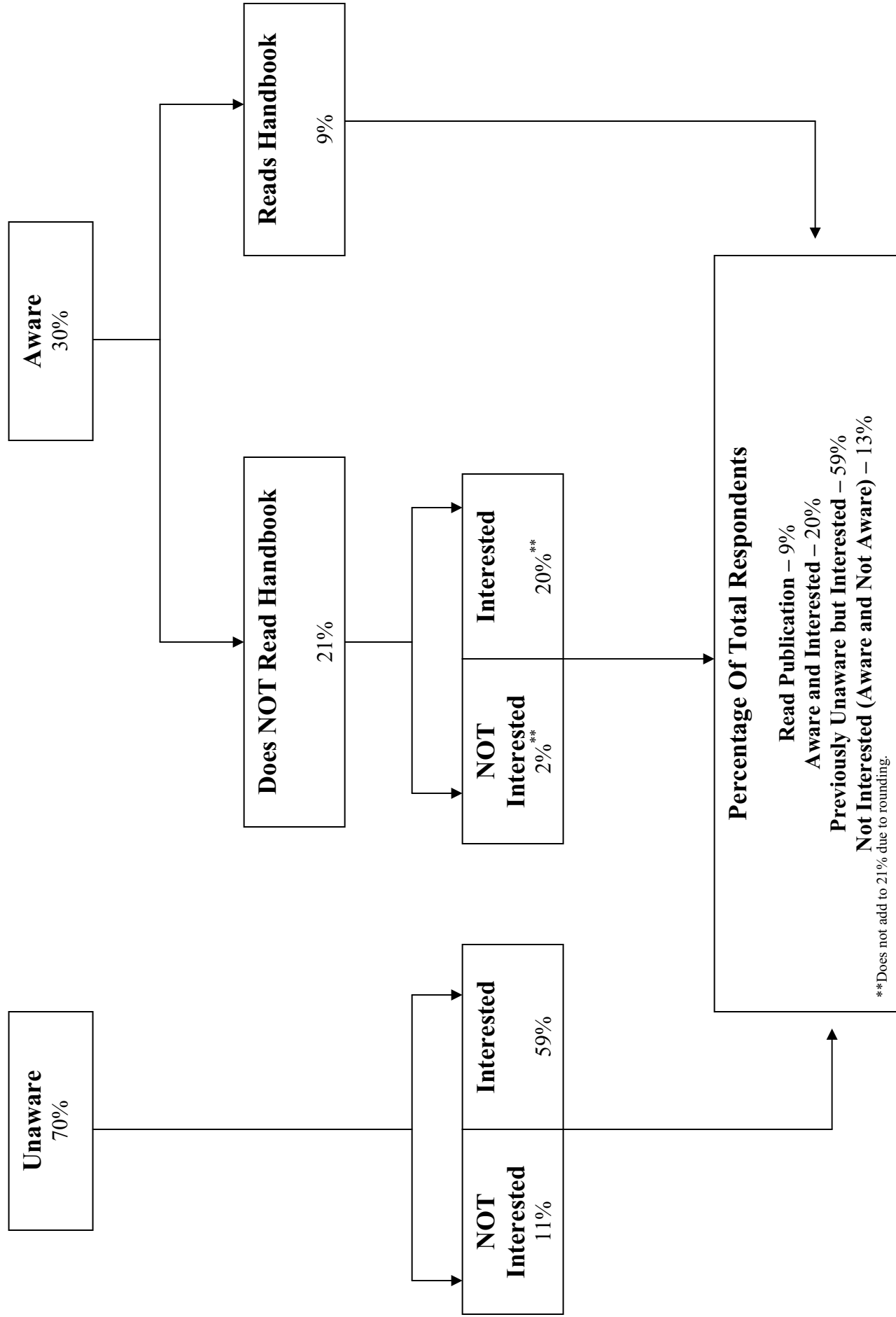
DESIGN BRIEFS

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]

*[1]Significantly 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.

Design Briefs (n=405)

Aware
44%

Unaware
56%

Reads Design Briefs
23%**

Does NOT Read Design Briefs
22%**

Interested
22%

NOT Interested
0%

Interested
53%

NOT Interested
3%

Percentage Of Total Respondents

Read Publication – 23%
Aware and Interested – 22%
Previously Unaware but Interested – 53%
Not Interested (Aware and Unaware) – 3%

**Does not add to 44% due to rounding.
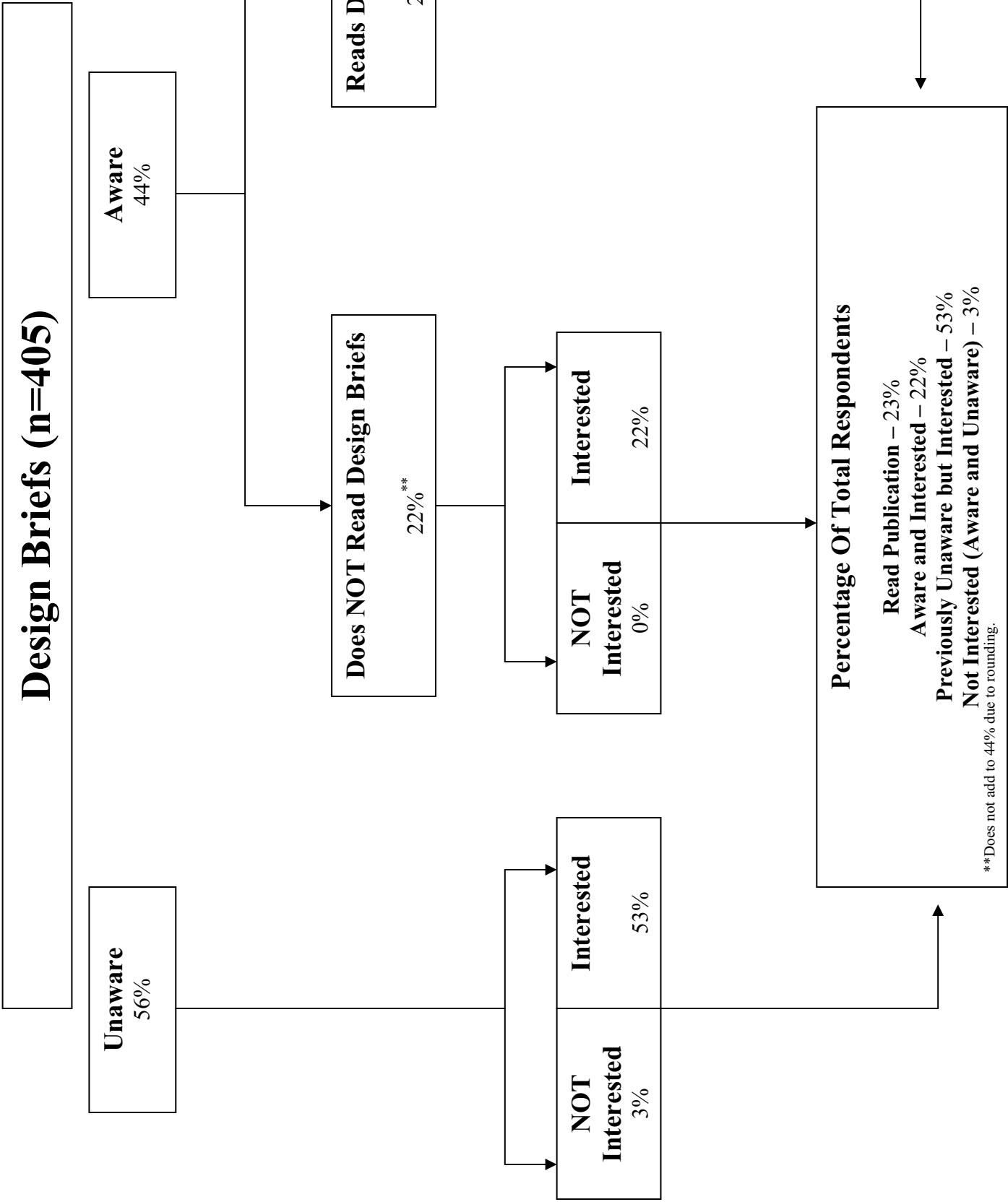
SKYLIGHTING GUIDELINES

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).[29]

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.

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[29] 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)

Rating	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

Rating	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.
[*1]Significantly 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%	--	--	--

*[1]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.

Skylighting Guidelines (n=405)

Aware
46%

Reads Guidelines
20%

Unaware
54%

Does NOT Read Guidelines
26%

Interested
24%

NOT Interested
2%

Interested
43%

NOT Interested
11%

Percentage Of Total Respondents

Read Publication – 20%
Aware and Interested – 24%
Previously Unaware but Interested – 43%
Not Interested (Aware and Not Aware) – 13%
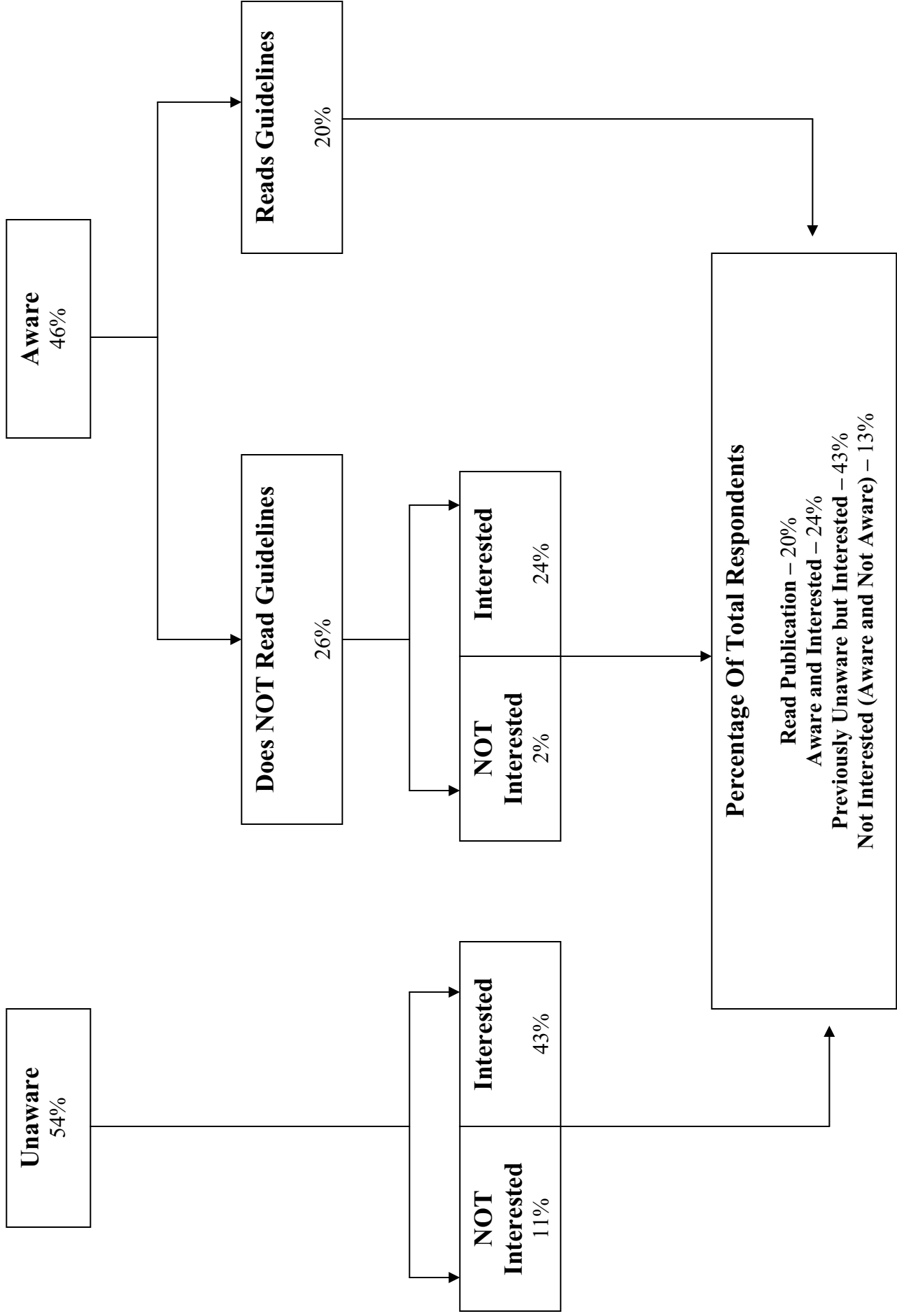
CHAPTER 5:
SOFTWARE TOOLS

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)
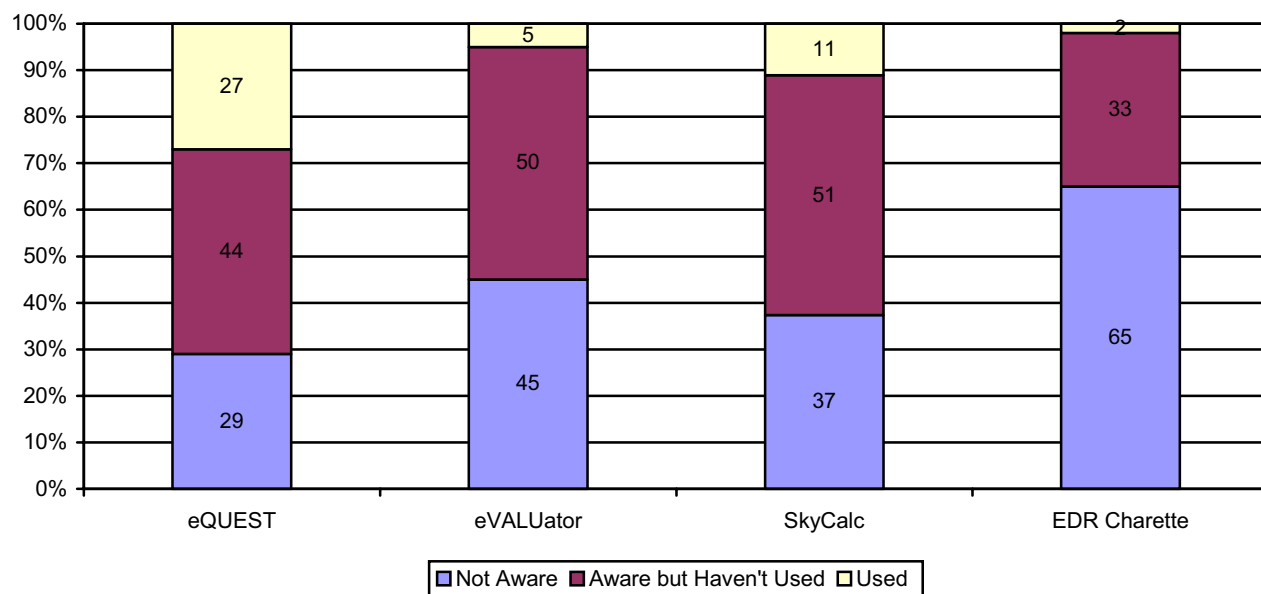
Furthermore, in focus groups conducted by the Heschong Mahone Group prior to this study, participants in the focus group noted that they are hesitant to use *any* new software because of the initial time necessary to learn how to use the tool and because of the worry that the software will change and there will not be support in the future.[30] 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.

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[30] 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)[31]

	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.'

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[31] 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.
*[1]Significantly higher percentage of respondents than architects and other at the 90% confidence level.
[2]Significantly higher percentage of respondents than engineers and energy consultants at the 90% confidence level.[3]Significantly higher percentage of respondents than those with 5-10 projects at the 90% confidence level.
*[4]Significantly 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)
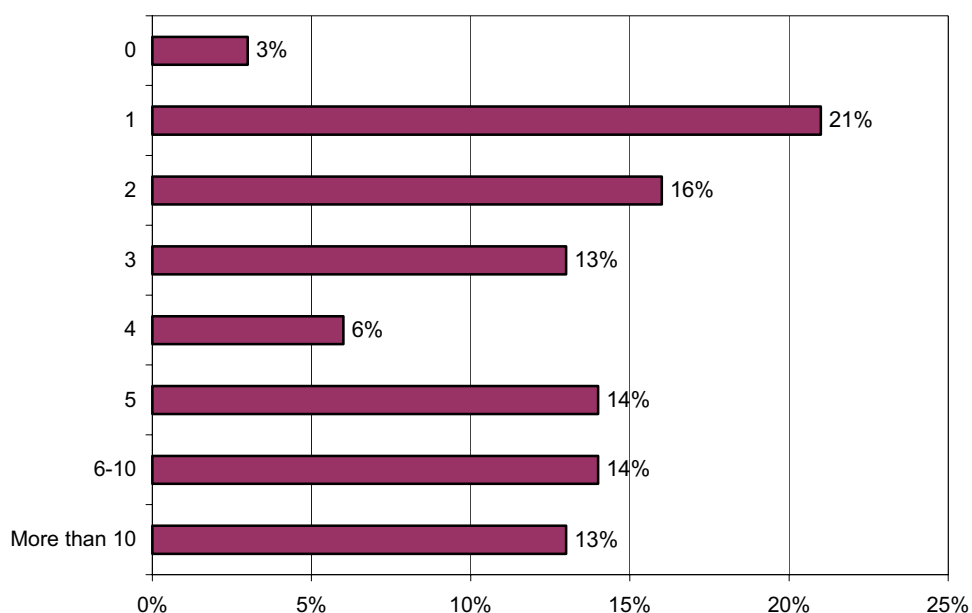
Note that three people who 'used the software' never actually used it for projects. Two of these respondents stated they are 'somewhat likely' to use the tool in the future, and the other

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.[32]

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[32] 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.
*[1]Significantly 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.

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

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

*[3]Significantly 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%

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

*[2]Significantly 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.
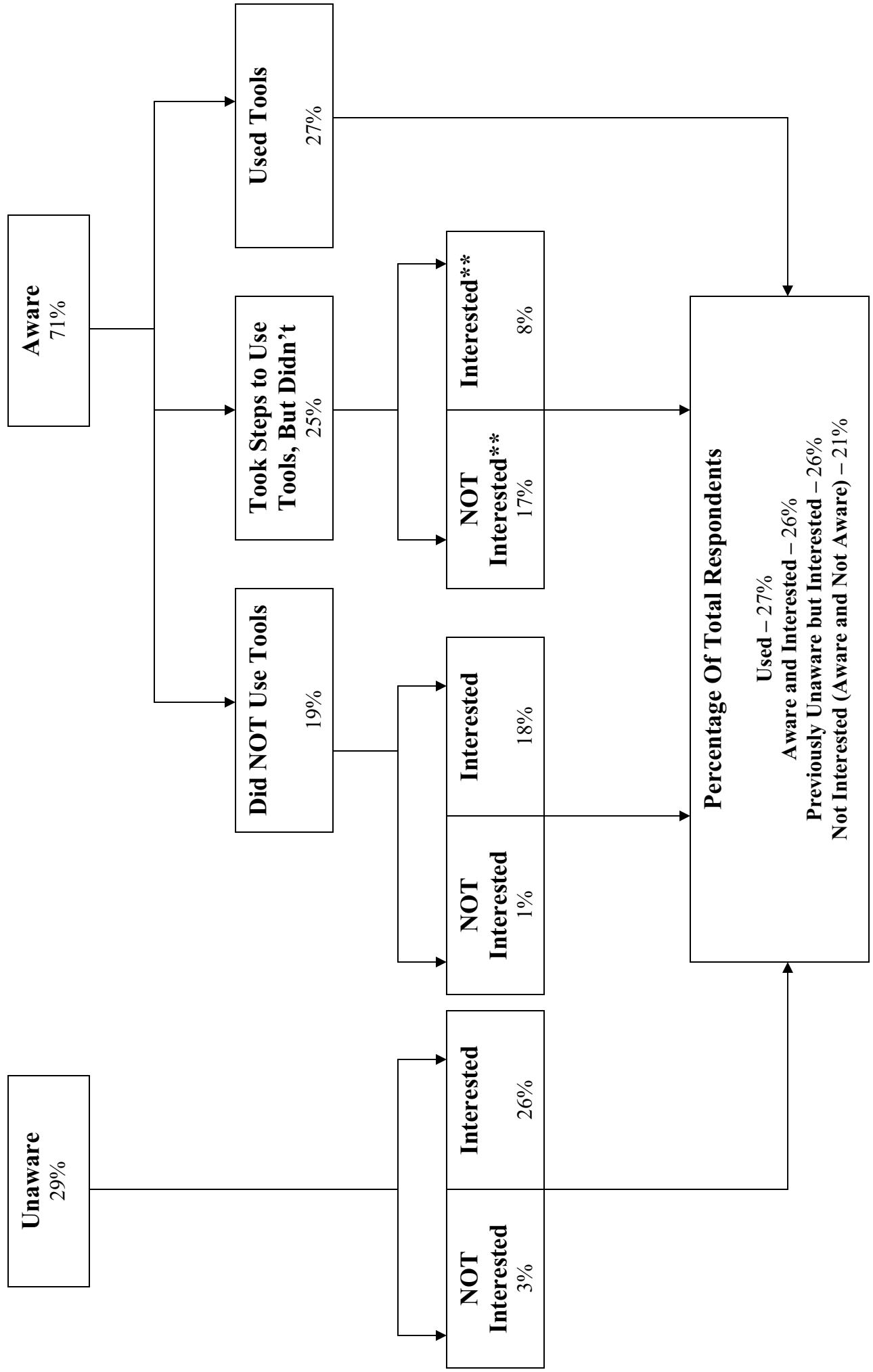
eQUEST Summary

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)

Unaware
29%

Aware
71%

NOT Interested
3%

Interested
26%

Did NOT Use Tools
19%

Took Steps to Use Tools, But Didn't
25%

Used Tools
27%

NOT Interested
1%

Interested
18%

NOT Interested**
17%

Interested**
8%

Percentage Of Total Respondents

Used – 27%
Aware and Interested – 26%
Previously Unaware but Interested – 26%
Not Interested (Aware and Not Aware) – 21%

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.
*[1]Statistically higher percentage of respondents than engineers and energy consultants at the 90% confidence level.
*[2]Statistically higher percentage of respondents than architects at the 90% confidence level.
*[3]Statistically 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)
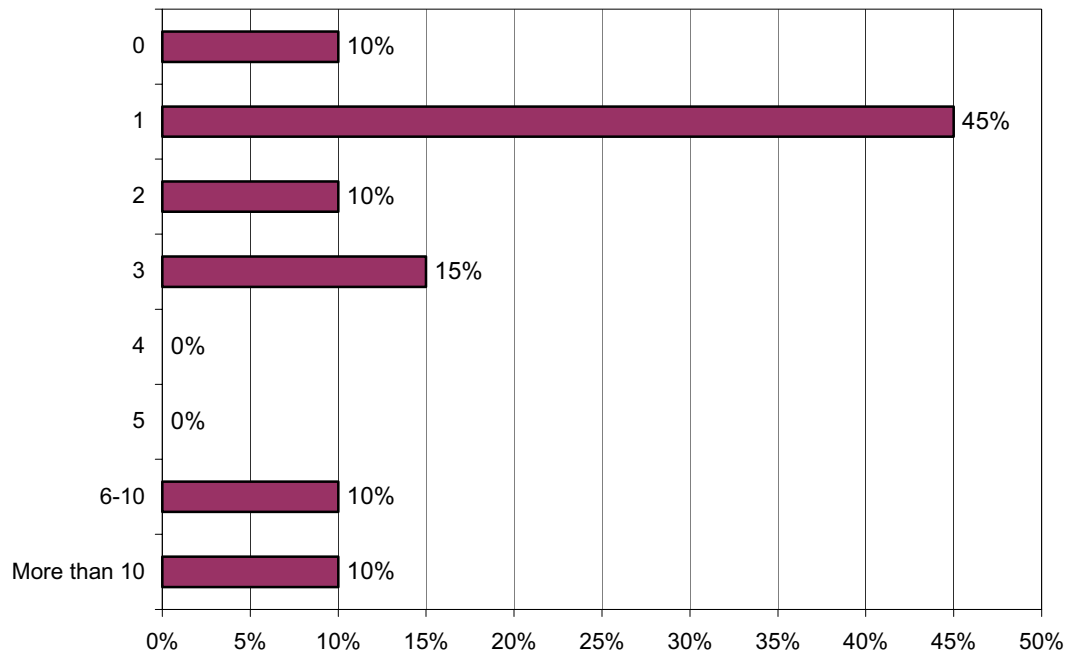
It does not appear that the difficulty of learning how to use the tool was an impediment to use. Fourteen out of the 20 users found it relatively easy to use. Overall, these 20 users gave it an average rating of 5.0 on the 1 to 7 scale shown in Table 5B-2.

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)

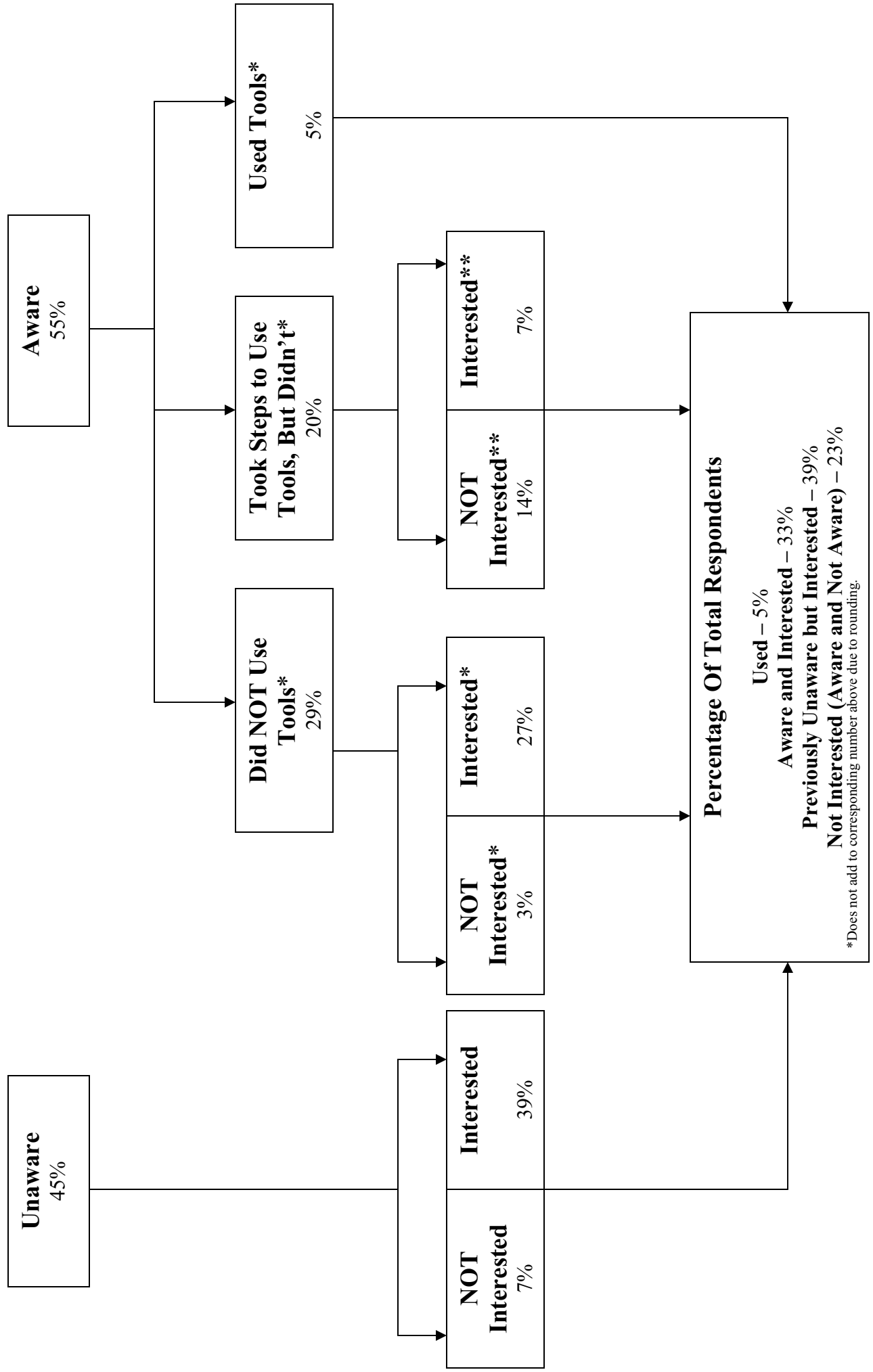| Reasons	Total (n=36)
Not relevant to work I do	61%
Already have the tools to do this and do not need additional tools	19%
Do not have enough time to use this type of tool	17%
Do not have clients who place a high priority on energy efficiency	8%
Design budget doesn't allow for additional analysis	6%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

Unaware
45%

Aware
55%

Used Tools*
5%

Took Steps to Use Tools, But Didn't*
20%

Did NOT Use Tools*
29%

Interested**
7%

NOT Interested**
14%

Interested*
27%

NOT Interested*
3%

Interested
39%

NOT Interested
7%

Percentage Of Total Respondents

Used – 5%
Aware and Interested – 33%
Previously Unaware but Interested – 39%
Not Interested (Aware and Not Aware) – 23%

*Does not add to corresponding number above due to rounding.

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.
*[1]Significantly higher percentage of respondents than engineers and energy y consultants at the 90% confidence level.
*[2]Significantly higher percentage of respondents than architects and other at the 90% confidence level.
*[3]Significantly higher percentage of respondents than architects and engineers at the 90% confidence level.
*[4]Significantly 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)
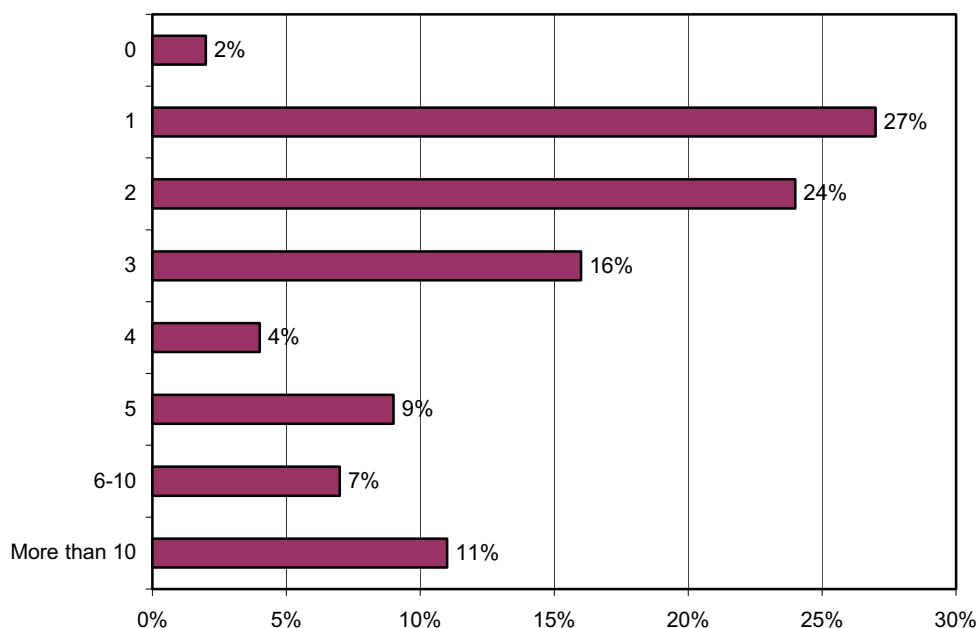
Most respondents felt that it was relatively easy to learn to use SkyCalc. Table 5C-2 shows that three-quarters rated SkyCalc with a 5, 6, or 7, on a 1 to 7 scale where 7 means it was 'extremely easy' to learn. The average response is 5.5, thus indicating respondents found SkyCalc generally easy to learn. 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)

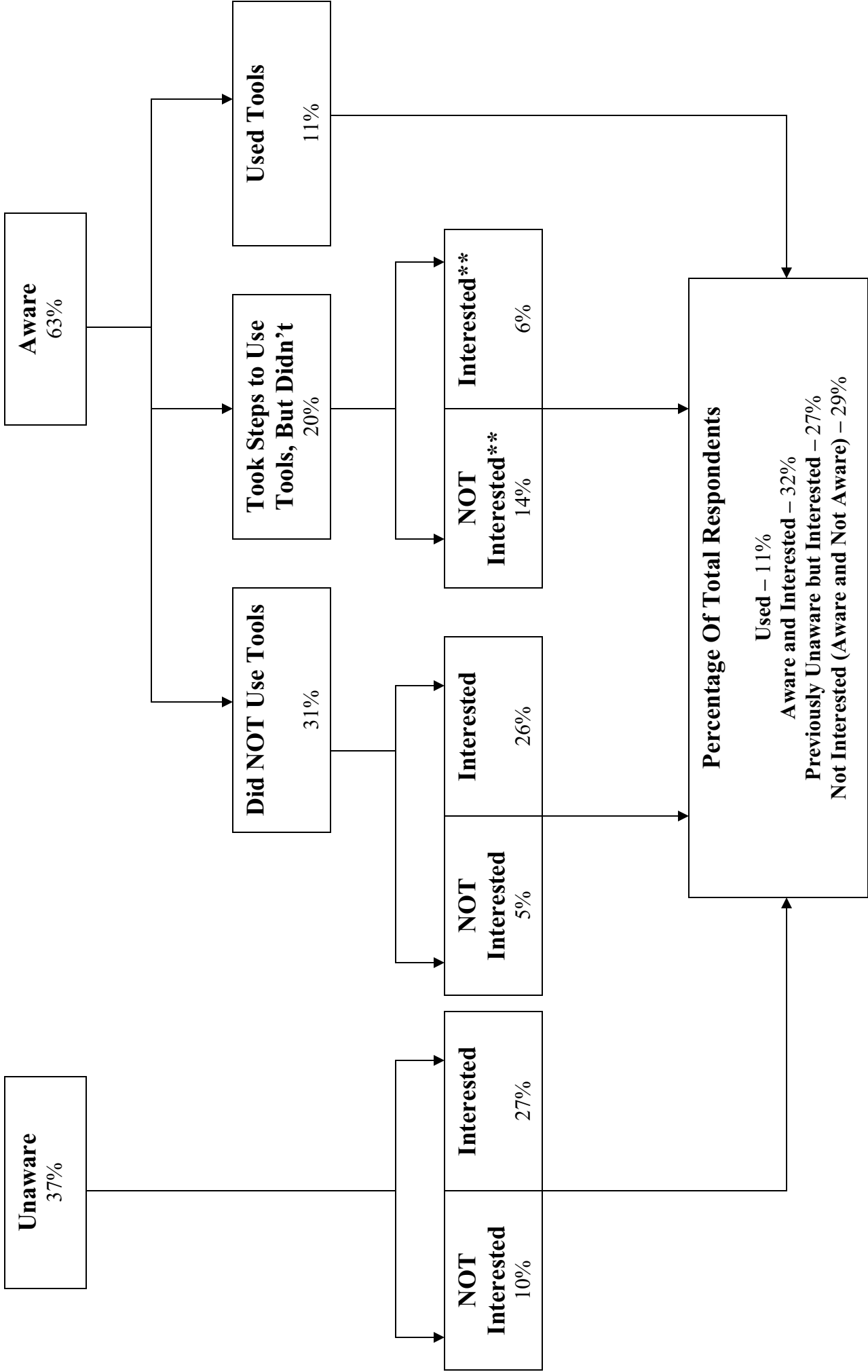| Reasons	Total (n=62)
Not relevant to work I do	82%
Not in California	10%
Design budget does not allow for additional analysis	5%
Already have the tools to do this and do not need additional tools	3%
Do not have enough time to use this type of tool	2%
Do not have enough time to learn how to use this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

Aware
63%

Used Tools
11%

Took Steps to Use Tools, But Didn't
20%

Did NOT Use Tools
31%

Interested**
6%

NOT Interested**
14%

Interested
26%

NOT Interested
5%

Unaware
37%

Interested
27%

NOT Interested
10%

Percentage Of Total Respondents

Used – 11%
Aware and Interested – 32%
Previously Unaware but Interested – 27%
Not Interested (Aware and Not Aware) – 29%

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)

Reasons	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)

Aware 35%

Used Tools
2%

Took Steps to Use Tools, But Didn't
9%

Interested**
2%

NOT Interested**
7%

Did NOT Use Tools
24%

Interested
21%

NOT Interested
3%

Unaware 65%

Interested
58%

NOT Interested
7%

Percentage Of Total Respondents

Used – 2%
Aware and Interested – 23%
Previously Unaware but Interested – 58%
Not Interested (Aware and Not Aware) – 17%
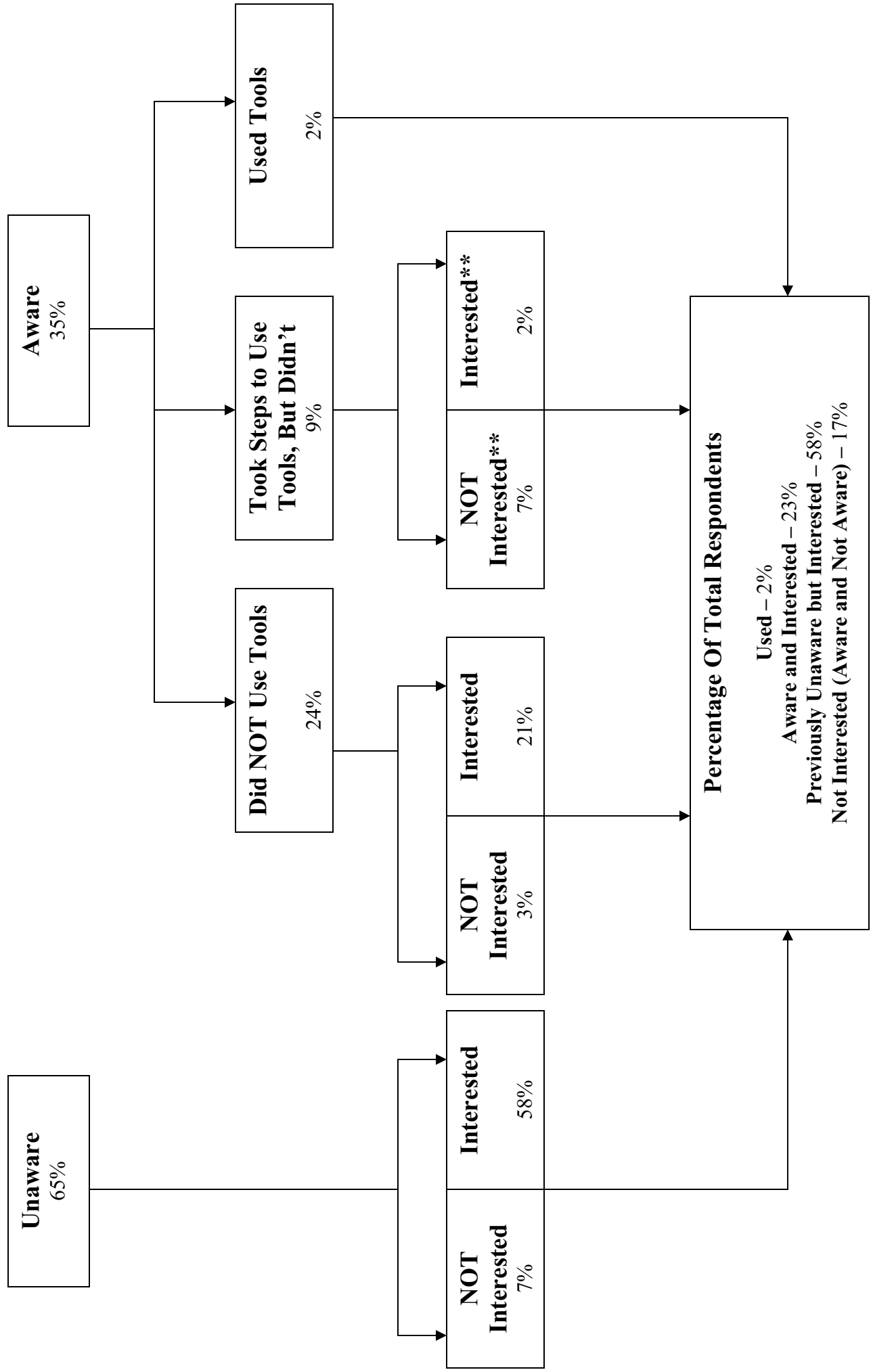
ENERGY SAVINGS FROM SOFTWARE TOOLS

(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,[33] 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.

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[33] 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/ft^2).

Table 5E-1. Values Used in Means Replacement

	Office	Retail	School	Public	Other[34]
Square footage	103,549	104,828	106,028	73,639	41,392
% of projects*	41%	35%	45%	26%	48%
kWh use/ft^2 [35]	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).

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[34] 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.
[35] 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[36]

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.[37]

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%.

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[36] Responses (categorized here) were open-end and respondents' actual answers were used to calculate the mean.
[37] 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.[38]

Annual savings *per user* ranged from 6.9 MWh to over 78 GWh[39] with a median of approximately 1.25 GWh. This large range is partly due to the fact that some respondents used

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[38] 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 be 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.

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[39] 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 GWh[40] 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%).

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[40] 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 GWh[41] 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.[42]

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[41] Note that the largest response was nearly six times greater than the second largest response.

[42] 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.[43] The fact that awareness is low (as is use,

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[43] 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)
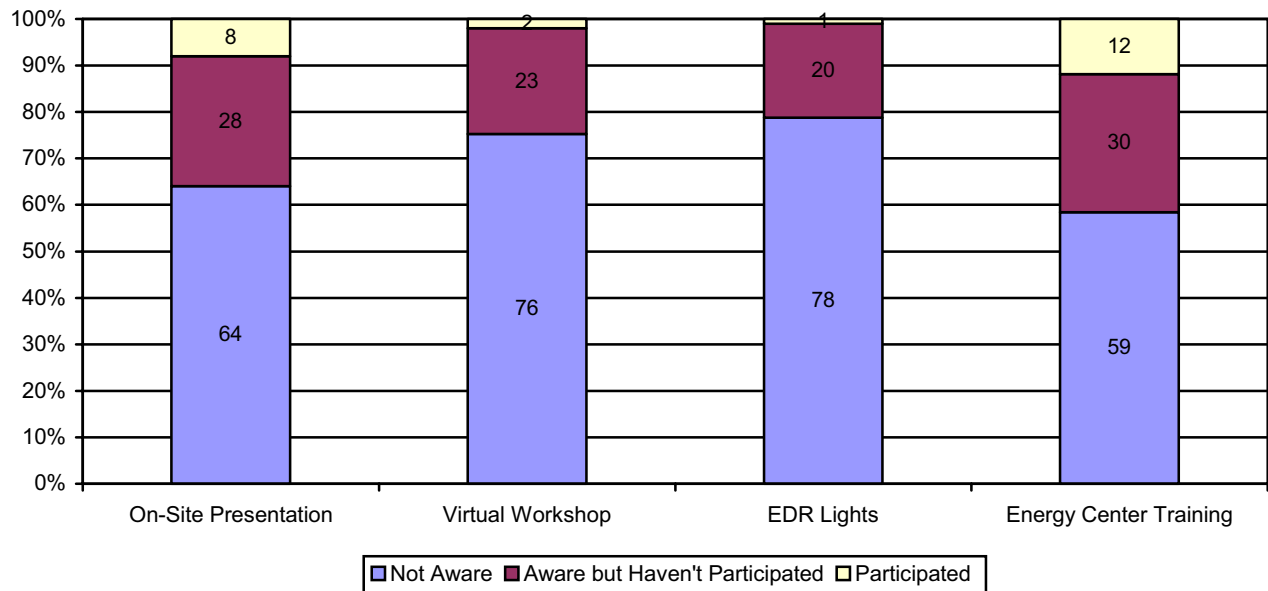
Due to the limited number of participants, brief findings on the four types of trainings—on-site presentations, Virtual Workshops, EDR Lights, and Energy Center trainings—are presented below.

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 payment[44]). 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.[45] In general, most respondents stated that the EDR links are only slightly helpful in helping them find other resources. On average,

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[44] Others who received payments through this program work on buildings in other parts of California.
[45] 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 page[46], 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.

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[46] 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)**

1 — **Most Important**

2
1.9 Energy Efficiency
2.0 Cost

2.8 Aesthetics

3
3.2 Product Availability

4

5 — **Least Important**
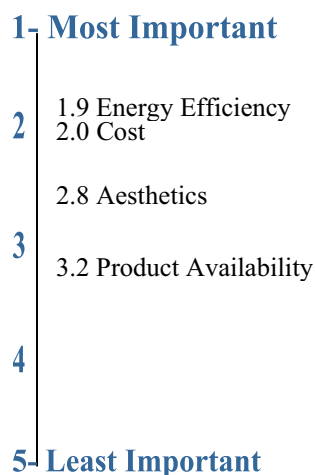
Compared to respondents that work outside of the Southern California market, respondents that work in Southern California felt that aesthetics were more important (2.6 among Southern California respondents verses 3.0 outside of this area) and that energy efficiency was less important (2.0 versus 1.8) 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)

1 — **Most Important**

2
1.9 Aesthetics
2.0 Cost
2.2 Energy Efficiency

3
3.1 Product Availability

4

5 — **Least Important**
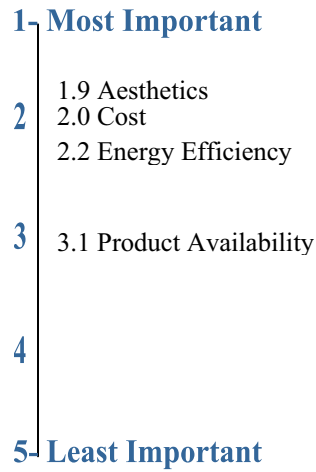
Marketing to Targets

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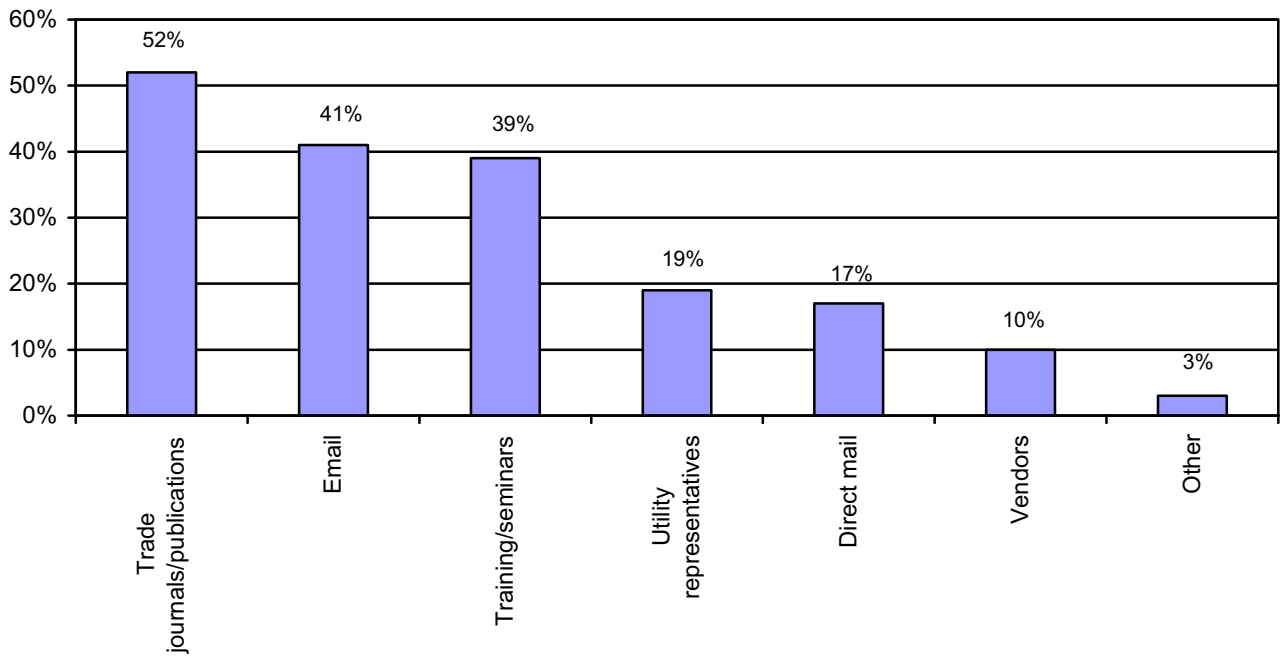
This is slightly different for those within the Southern California market (n=212): training and/or seminars (50%, which is significantly higher than for those outside of this region) is first, followed by email (41%), and then trade journals (40%). Respondents outside of this market (n=180) followed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

PHASE II RESEARCH: STATEWIDE EVALUATION

CHAPTER 8:
METHODOLOGY AND SAMPLE (PHASE II)

Specifically, for the statewide evaluation, we enhanced the value of the information collected through the earlier, Phase I evaluation by completing the following qualitative research:

1. *Analysis of non-user data;*
2. *Depth interviews with Savings By Design field staff;*
3. *Focus group discussion with architects, engineers and energy consultants;*
4. *Depth interviews with architects; and*
5. A s*hort follow-up e-mail questionnaire to prior-respondents to explore issues regarding trainings.*

Each task is described in more detail below.

1. Analysis of non-user data

The ODC project team reviewed existing data from survey respondents who indicated that they have not read any of the EDR publications, nor used any of the EDR software tools, nor participated in any of the EDR-related trainings. These "non-users" represented 27% of all online survey respondents, for a total of 111 non-users. Based on responses, ODC characterized this group.

2. Depth interviews with Savings By Design field staff

A fundamental comment made by all of the program implementers is that EDR is not a stand-alone program. Because of this, EDR is not marketed; rather, it is used as a marketing tool for Savings By Design (SBD). Program implementers state that their utility staff use the EDR tools to steer people to SBD. Alternatively, mention of EDR is made at workshops and training sessions. Based on these comments, the ODC team conducted in-depth interviews with two to three field staff from each of the four utilities to better understand how SBD field staff use EDR in their marketing of SBD. Specifically, we asked utility field staff which EDR tools they discuss with the market actors they visit, and which tools they see as most useful and why. In the case where the EDR tools are not mentioned during the field staff's interactions with market actors, we inquired about the reasons for not providing these tools. These interviews provided insight on the utility staff's perceptions of the needs of the market.

3. Focus group with design professionals

ODC conducted a focus group discussion in conjunction with the 11th Annual National Conference on Building Commissioning to be held in Palm Springs, CA on May 19-22. Five engineers and three architects were in attendance. The eight individuals who attended the focus group received a $100 incentive for their participation.

4. Interviews with architects

Opinion Dynamics Corporation conducted 20 in-depth interviews with architects in California to better understand the degree to which energy efficiency practices are being incorporated into the design process, gauge awareness of Energy Design Resources, and determine how to influence the design process. Ten of the 20 architects participated in the Savings By Design program, based on their involvement in a project that received a SBD incentive, consultation services, or award. For the purposes of this write-up, we refer to these architects as SBD architects. The remaining ten architects are referred to as non-SBD architects. Five of the 20 respondents (three participants and two non-participants) were architects from the top architectural firms listed in the *NRNC Market Characterization and Program Activities Tracking Report.*

5. Follow-up internet survey

ODC also emailed a short follow-up survey to the 405 survey respondents from our prior evaluation conducted for SCE to: 1) inquire about which utility territories respondents have worked in; 2) ask a short series of questions to determine what can be done to encourage greater participation in EDR training, and what types of training are needed; and 3) solicit any additional open-ended responses. The follow-up survey garnered 151 online respondents and 24 email respondents out of the total 405.[47] Eighty of the 151, or 53% of respondents, work in California. Below we report on the findings from these 80 respondents.[48]

Findings from each of these tasks are described in the following chapters.

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[47] Note that the prior respondents were sent an original invitation and two reminders to complete the online survey, with the final reminder providing them with the opportunity to email us a brief response in place of completing the online survey.

[48] The draft topline data presented results from all 151 respondents. Given the focus on California design professionals, this final version of the topline findings as presented in this chapter, reports only on those professional who work on projects in California.

CHAPTER 9:

ANALYSIS OF NON-USERS

In the latter half of 2002, Opinion Dynamics Corporation conducted an internet survey of 405 respondents who were contacted on behalf of Energy Design Resources. All of these respondents had voluntarily submitted their name to Energy Design Resources (EDR) by downloading an EDR tool from the EDR website or by signing up for eNews, the electronic newsletter sent out by EDR.

Approximately 27% of these respondents, or 111 people, stated that they had not *used* any one of the tools EDR offers (that is, none of the publications, software, and training). For the purposes of this write-up, we refer to these respondents as "non-users." To gain further understanding of why people are not using the EDR tools, we analyzed the survey results of these non-users.

The professional make-up of non-users is similar to that of users. When we examined the professional background of non-users, we found that they were predominantly architects (34%) or mechanical engineers (24%). The percentage of architects was slightly (but not significantly) *higher* among non-users than among users. Similarly, the percentage of mechanical engineers was slightly (but not significantly) *lower* among non-users than among users.   Although only a few non-users were electrical engineers, electrical engineers do make up a significantly greater percentage of non-users (9%) than users (3%). (See Table 9-1.)

Table 9-1. Professions of EDR Respondents, by Users and Non-Users

	Users (n=294)	Non-Users (n=111)
Architect	27%	34%
Mechanical Engineer	28%	24%
Energy Consultant	21%	5%
Electrical Engineer	3%	9%*
Other	21%	28%

* significantly higher compared to users

Responses to questions about the types of buildings that respondents work on show that non-users were less likely than users to work on office buildings or industrial projects. Fifty-nine percent of non-users frequently work on office buildings, compared to 70% of users. For industrial projects, 10% of users work on industrial projects while only 5% of non-users work on these types of projects. Overall, however, non-users work on a wide variety of building types.

Most (93) of the 111 non-users were aware of at least one EDR publication, software tool, or training. Only 18 respondents stated that they were not familiar with any of the EDR tools. These 18 were completely unaware of any of the EDR offerings and were mostly unfamiliar with Energy Design Resources itself.

While respondents might have recognized one of the EDR tools, 22% of non-users stated that they have never heard of "Energy Design Resources", and 43% have heard of it but cannot describe EDR. These percentages were significantly higher than the percentages among users. Similarly, 42% said they have never heard of the Savings By Design program. In fact, non-users were significantly less likely to be familiar with Savings By Design (SBD) than users of an EDR tool. (See Table 9-2.) This points to the fact that, despite awareness of its tools, several market actors do not know of EDR itself. They do not equate EDR with the tools it offers.

Table 9-2 highlights some of the differences between users and non-users discussed above, as well as some of the differences among the 111 non-users. Significant differences are denoted by "*" or "^".

Table 9-2. Familiarity with Energy Design Resources and Savings By Design[49]

		Users of EDR Tools (n=294)	Non-Users (n=111)	Among Non-Users	
				Not aware of any tools (n=18)	Aware of at least one tool (n=93)
Energy Design Resources	Never heard of EDR	6%	22%*	39%^	18%
	Heard of EDR, but cannot describe	23%	43%*	44%	43%
	Somewhat familiar with EDR	47%**	30%	11%	33%^^
	Very familiar with EDR	23%**	5%	6%[50]	5%
Savings By Design	Never heard of SBD	26%	42%*	44%	42%
	Heard of SBD, but cannot describe	22%	27%	50%^	23%
	Somewhat familiar with SBD	36%**	24%	6%	28%^^
	Very familiar with SBD	16%**	6%	--	8%

* significantly higher compared to users
** significantly higher compared to non-users
^ significantly higher compared to non-users who are aware of at least one tool
^^ significantly higher compared to non-users who are not aware of any tools
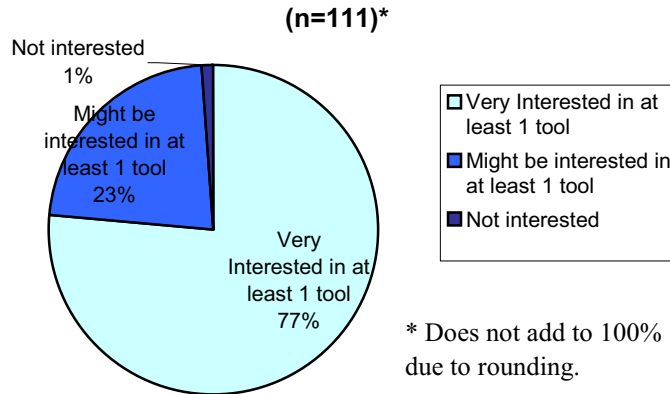
After the 111 non-users were informed of each EDR tool (i.e., they read a brief description of the tools on the website), many said they were interested in what EDR had to offer. Most non-users (77%) reported a strong interest in at least one of the tools that EDR offers; 23% were not very interested in any tools but expressed possible interest;

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[49] Note that it is possible to be familiar with one of the tools such as eQUEST, but not recognize the overarching "Energy Design Resources" name.

[50] This respondent said he was very familiar with EDR yet was not aware of any tools. This is highly improbable, as much of EDR's definition is its suite of tools; therefore, it is likely that this respondent answered early on in the survey that he was familiar with EDR when really he was only somewhat so and based his answer on name recognition.

and only one non-user stated *no* interest in any of the 14 publication, software, or training tools. (See Figure 9-1 and Table 9-3.) Of all of the tools, non-users were most interested in Design Briefs and eQUEST.

Figure 9-1. Non-User Interest in Tools
(General, All Tools Combined)

(n=111)*

Not interested 1%

Might be interested in at least 1 tool 23%

Very Interested in at least 1 tool 77%

- Very Interested in at least 1 tool
- Might be interested in at least 1 tool
- Not interested

* Does not add to 100% due to rounding.

Table 9-3. Non-User Interest in Publications and Software, Specifically

	Publications (n=111)	Software (n=111)
Very interested in at least 1 tool	75%	66%
Might be interested in at least 1 tool	21%	28%
Not interested in any tool	5%	6%

Interestingly, those who were not aware of any EDR tools (n=18) expressed greater interest (than those who were aware of at least one tool) particularly in Design Briefs, SkyCalc, eQUEST, and EDR Charette.

Reasons for not being interested were mainly that respondents do not have the time or that the tool is not relevant to their work.

Publications

Of the six publications offered by EDR, non-users were most aware of Case Studies, eNews, and Skylighting Designs, although only approximately one-quarter were aware of any publication. (See Table 9-4.)

Table 9-4. Non-User Awareness Level of Publications[51]

	eNews	Newsletter	Case Studies	Commissioning Handbook	Design Briefs	Skylighting Guidelines
Not aware of publication	76%*	84%*	74%*	83%*	83%*	77%*
Aware, but haven't read	24%*	16%	26%	17%	17%	23%

* significantly higher compared to users

Among non-users, interest in the Design Briefs (62% are very interested) was higher than interest in other EDR publications; as shown in Table 9-5. Approximately one-half of non-users also said that they were very interested in each of the following publications: the Commissioning Handbook, Skylighting Guidelines, and Case Studies. These percentages are comparable to those among users.

Of the various publications EDR offers, Case Studies was the only one for which responses from non-users were significantly different than users. Non-users were more likely than users to state that they were not interested in Case Studies despite the fact that 26% are aware of the Case Studies, as Table 9-4 above indicates. There was the least overall interest in the Newsletter. This could be either because the publication was originally targeted towards building owners and developers, or perhaps due to lack of time.

Table 9-5. Non-User Level of Interest in Publications
(n=111)

	eNews	Newsletter	Case Studies	Commissioning Handbook	Design Briefs	Skylighting Guidelines
Not interested	16%	31%	17%*	14%	6%	14%
Might be interested	51%	48%	35%**	32%	32%	36%
Very interested	32%	22%	47%	54%	62%	50%

* significantly higher compared to users
** significantly lower compared to users

Overall, the most common reasons for non-users' lack of interest was that they do not have the time or that the publication is not relevant to the work they do. Other responses included: "I already have information on this and do not need additional," "I do not read these types of information," or that they were not located in CA or not a building owner.

When we looked across professions, engineers were more likely to state that they were not interested in Skylighting Guidelines because of irrelevance (more than other reasons) and the Newsletter and Case Studies because of a lack of time.

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[51] While non-users are significantly unaware of publications compared to users, it should be noted that making such comparisons between the two groups was complicated by the fact that responses to these questions (regarding awareness of publications, software, and training) are the determinants in the definition of user and non-user.

Software

Of the four software tools offered through EDR, non-users were least aware of EDR Charette and eVALUator and most aware of eQUEST. More than one-half of all respondents said they know about eQUEST. Twenty-two percent said they are aware of eQUEST but have not downloaded or viewed it, and the other 31% have tried it but have not used it. (See Table 9-6.) The top reasons why non-users who have viewed but not used a tool were that they did not need to use the tool for their job, they did not have time, or they did not have enough instruction or training.

Table 9-6. Non-User Awareness Level of Software[52]
(n=111)

	SkyCalc	EQUEST	eVALUator	EDR Charette
Not aware of this tool	56%*	48%*	63%*	74%*
Aware but haven't downloaded or viewed	25%	22%	28%	20%
Viewed, tried, downloaded it, but haven't used	19%	31%	9%**	6%

* significantly higher compared to users
** significantly lower compared to users

Non-users who were not aware or have not viewed a particular tool were most interested in eQUEST, even significantly more so than users who have used EDR tools other than eQUEST. Non-users were also significantly more interested in SkyCalc than users. (See Table 9-7.)

Table 9-7. Non-User Level of Interest in Software
(n=111)

	SkyCalc	eQUEST	eVALUator	EDR Charette
Not interested	18%	9%	11%	11%
Might be interested	37%**	26%**	38%	37%
Very interested	46%*	65%*	51%	53%

* significantly higher compared to users
** significantly lower compared to users

Of the few who said they were not interested, most cite that the tool is not relevant to their work. Engineers, in particular, do not find SkyCalc pertinent. Architects do not find eQUEST and eVALUator relevant.

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[52] While non-users are significantly unaware of software tools compared to users, it should be noted that making such comparisons between the two groups was complicated by the fact that responses to these questions (regarding awareness of publications, software, and training) are the determinants in the definition of user and non-user.

Non-users suggested that EDR offer online help for software tools and that it "keep working on user interface improvements" because difficult interfaces can discourage users from using software. Also, a few wanted software enhanced with the ability to do Title 24 analysis, and another respondent wanted eQUEST to have the capability of interpreting CAD documentation.

Training

Non-users were most aware of Energy Center Trainings and least aware of Virtual Workshops and EDR Lights, as shown in Table 9-8. (The follow-up survey will address these EDR resources in greater depth.)

Table 9-8. Non-User Awareness Level of Training

	On-Site Presentations	Virtual Workshops	EDR Lights	Energy Center Training
Not aware	84%	88%	87%	71%
Aware, but haven't participated	16%	12%	13%	29%

Web Site

Finally, non-users were significantly less satisfied overall with the EDR website. On a scale of 1 to 7, where 7 means extremely satisfied, non-users gave the website a ranking of 4.5 while users' ranking was higher at 4.8. No additional information was collected at the time, but responses about the EDR website were collected during a follow-up focus group (conducted on May 19th, 2003) and are presented later in the findings from the focus group. Changes were being made to the website and have since been completed.

Chapter Summary

Slightly over one-quarter of the people who came into contact with EDR have not used any of the EDR resources offered. Most are familiar with at least one of the tools (presumably the one that led them to come into contact with EDR), but they are often unfamiliar with the name "Energy Design Resources" and the fact that EDR offers a suite of tools for all types of design professionals. It appears that many design professionals that come across EDR resources do not equate EDR with the tools.

Notably, the professional make-up of "non-users" is similar to users. They are primarily architects and engineers and work on a variety of buildings. Thus, no particular group that stands out as a non-user; EDR appears to offer something for everyone.

After being informed of the variety of resources offered, almost all expressed an interest in at least one tool: 77% expressed a strong interest, and approximately 23% expressed a possible interest. Based on these findings, alerting design professionals about the suite of resources offered, and cross-promoting tools, should increase the use of EDR tools. Information on how to target these design professionals is covered in subsequent chapters.

CHAPTER 10:

FINDINGS FROM SAVINGS BY DESIGN FIELD STAFF INTERVIEWS

Opinion Dynamics Corporation conducted nine interviews with Savings By Design field staff from PG&E, SCE and SDG&E.[53] These interviews offered insight into how SBD field staff use EDR in their marketing of Savings By Design. Specifically, we asked utility field staff which EDR tools they discuss with the market actors they visit, and which tools they see as most useful. In the case where the EDR tools are not mentioned during the field staff's interactions with market actors, we inquired about the reasons for not providing these tools. Note that while comments from the individual respondent varied, there were no apparent differences between the utilities.

SBD Field Staff Familiarity with EDR Tools

All field staff are familiar with the EDR tools and publications, although respondents mentioned only a few of the tools such as Case Studies and Design Briefs (e.g., "the binder") and eQUEST. Field staff seemed less aware of tools such as the Charette, the Commissioning Handbook, or eNews. Half of the field staff we interviewed claimed to be only somewhat familiar with the EDR software tools, meaning they knew what each one was but could not give basic technical assistance if asked. For these "somewhat familiar" staff, knowledge of the tools themselves inhibits them from encouraging EDR tool usage; however, many of the respondents did state that they mention the web site to interested design professionals. The other half claimed they were "very familiar" with the tools, meaning they could give basic technical assistance as well as demonstrate the tools. For these "very familiar" staff, time constraints and the design professionals' interest are the largest barriers to increasing the EDR tool usage.

Field staff expressed that EDR is not a priority in meetings. Field staff mention the EDR website during their presentations, but this reference is merely in passing, as another resource for the design team. Because presentations usually occur in a setting where a computer or the internet is not available to the field staff, they cannot go to the website and demonstrate how to navigate and find the appropriate tools and information off of the EDR website.

Although SBD field staff are not given formal training on how to use and promote EDR, most field staff do not feel an urgent need for any additional training for EDR. They are seldom questioned about the software tools, and they believe most of the design professionals that would need them are aware of the tools and what they do.

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[53] Interviews were completed at random; note that SoCalGas field staff names were not provided until after the completion of this effort.

SBD Field Staff Interactions with Design Professionals

SBD field staff members often visit with design professionals and have good relationships with market actors in the industry. They conduct anywhere from five to 20 site visits per month for the Savings By Design program. The visits consist primarily of meetings in conference rooms with anywhere from one to 20 persons, and they vary in content depending on how knowledgeable the design staff is about the Savings By Design program and whether they have participated in the past or not. In addition, these site visits differ depending on whether the field representative is there to present the nuances of the program for the first time and explain how the program can be applied to future projects or whether the representative is there to discuss one specific project that is already underway at the company and how the program can help that specific project.

Through their visits to design professionals, SBD field staff representatives increase awareness of EDR by mentioning EDR in general. When field staff members give design professionals an overview of the Savings By Design program, they often give a general presentation either via PowerPoint or an oral presentation. All of the SBD field staff representatives stated that they mention EDR in their overview; however, they expressed the sentiment that there is not much time to go into detail about EDR. If the design professionals express specific interest in EDR, the SBD representative does delve deeper into the tools and resources.

Specifically, the SBD staff members most frequently mention the binders, CD-ROM, and EDR website to designers. Several also mention on-site training sessions and utility-specific trainings offered at local energy centers (although they do not mention EDR-specific trainings). Most field staff representatives are unaware of EDR online trainings and thus do not mention this tool during their visits.

Field staff acknowledged the difficulty of getting architects to use energy efficient integrated design concepts, "For example, the architect is basically involved mostly in a schematic…whereas if I were to meet with mechanical or electrical engineers they would have more specific detailed information…In other words, you can provide recommendations on mechanical and electrical systems, but it's hard to provide recommendations to an architect on how they should be designing their building."

While the field staff acknowledge that there are differences between architects and engineers, most of the field staff claim their site visits do not differ greatly by the type of design professional visited. However, architect and engineer visits differ slightly because architects tend to require a very general, overall concept discussion, whereas engineers often discuss more technical information that pertains to the Savings By Design program, such as electrical and mechanical issues. For that reason, SBD staff rely on the case studies and design briefs more heavily with architects, and mention the software tools more frequently with engineers.

SBD Field Staff Perceptions of Market Actors

In general, field staff believe that awareness of EDR among design professionals is mixed. Their perception of the market is that awareness is not the issue, but instead convincing design professionals to actually use the tools is the issue because they tend to get stuck in what they know and are not too open to new concepts. Furthermore, field staff believe that to the design professionals, the EDR tools are often seen as time-consuming, too cumbersome or ineffective to be seriously adopted into the project.

The utility staff also offered their perceptions of the needs of design professionals. Field staff offered the following recommendations:
- Change eQUEST to a certified compliance tool (to raise usage)
- Add more technical content to the information because it is currently "too superficial"
- Develop a whole building energy analysis calculator, described further below.

One field representative stated, "what [design professionals] would like to have is an energy analysis tool that would go from the cradle to the grave, from concept to completion and construction documents that could not only do what eQUEST does now [but take it a step further] to compliance, to sizing equipment… and life cycle costing."

SBD Field Staff Recommendations for Disseminating EDR Tools

When asked for suggestions on how to disseminate EDR tools, the field staff recommended dedicating field representatives to discuss EDR and not trying to include that discussion in the Savings By Design visits. SBD staff feel that there is limited time and competing interests during their visits. As one respondent stated, the design professionals are "overloaded and overwhelmed they don't know what to ask next." Thus, field staff recommended that a separate visit effort be made to the design team specifically for EDR, apart from the Savings By Design visit. Comments such as these seem to indicate a misunderstanding of EDR as a complement to SBD.

Field staff also suggested that the EDR website could be put in the Savings By Design brochure and the EDR tools could be described and linked to the Savings By Design website.

In addition to the current method of specifically meeting with designers, field staff recognize marketing through journals, publications, conferences, e-mail, expos, specialized committees and professional organizations as the best ways to widely reach design professionals. Many felt that the key to targeting this market is to stay in constant communication and to point out success stories to the market. By constantly emphasizing projects where EDR was a success, design professionals will be more apt to try it themselves.

In order to help them promote EDR in the future, all field staff greatly encouraged the development of a one-page "cheat sheet" for EDR tools and resources so that they could

refer design professionals to the best tools. This "cheat sheet" would have to be extremely simple and short. Field staff also suggested that CD-ROMS were more useful than binders, because many feel the binder is too intimidating.

Field staff recommended EDR's marketing and educating efforts be expanded with a focus on early education for design professionals, either developing an EDR class as part of required curriculum or developing a scholarship program. The goal would be to promote energy efficient design in the early stages of education, thus making energy efficiency a core component of the design process.

Chapter Summary

In general, the primary goal during SBD field visits is to increase awareness and participation in the Savings By Design program. While all SBD field staff are aware of EDR and mention it to designers, field staff members are not really using EDR to leverage awareness and participation in the Savings By Design program, but rather, they mention the EDR tools in passing as a useful resource. Based on respondents' comments, it appears that the field staff are increasing design professionals' *awareness* of EDR tools; however, it is unclear as to whether they are increasing *knowledge* and *usage* since the EDR tools are only given a cursory mention in their presentations. Field staff knowledge of EDR tools, meeting time constraints, and design professional interest are the greatest barriers to discussing EDR tools in detail during office visits.

While a couple of field staff representatives mention the value of EDR, others feel that the EDR tools are unnecessary to the Savings By Design process, as non-EDR tools are available to the designers. Comments by field staff seem to indicate a misunderstanding of EDR as a complement to SBD.

To increase use of EDR tools, field staff suggested:
- Promoting EDR tools in the Savings By Design brochure and website;
- Marketing through journals, publications, conferences, e-mail, expos, specialized committees and professional organizations;
- Sharing success stories where use of EDR tools resulted in significant energy savings; and
- Developing a one-page "cheat sheet" for EDR tools and resources.

CHAPTER 11:

FOCUS GROUP FINDINGS

Opinion Dynamics Corporation conducted a focus group discussion for Energy Design Resources on Monday, May 19th, 2003 in Palm Springs, CA during the National Conference on Building Commissioning. Originally, the participants were to be conference attendees; however, due to the small number of conference participants from California, ODC also invited local architecture or engineering design firm representatives to participate in the focus group. Five engineers and three architects were in attendance. The experience with energy efficient design ranged from little knowledge of energy efficient design options to a couple of participants who were users of EDR tools. The eight individuals who attended the focus group received a $100 incentive for their participation. The sections below describe the main points covered in the focus group discussion.

Barriers to Integrated Design

Throughout the focus group discussion, it was clear that the largest barrier to integrated energy-efficient design is getting designers (particularly architects) to consider moving beyond compliance and thinking about integrated energy efficient designs early in the design process.

One of the premises of EDR is that integrated design should include all market actors; however, based on the comments of focus group participants, many architects are not involved (and do not think about) energy modeling. Several participating architects mentioned that they rely on other experts who are more knowledgeable about energy and energy efficiency to deal with energy modeling issues. One said, "Typically I use [an engineer] to do all my energy calculations." Another echoed this, saying, "We don't do any of that work in-house. Everything that we do is similar to [the comment above]…and we rely on professionals outside the office to do that."

Exactly *when* they bring the energy modeler in depends on the complexity of the project. Most of the architects stated that their designs are often done based on "rule of thumb…and experience," and that the energy modelers are only brought in after the design is done, and to make buildings comply. These architects, therefore, tend to only bring in outside engineers to do energy modeling to comply with codes after they have designed the building, instead of integrating energy efficiency measures throughout the design process. According to one architect, out of 100 designs, only two percent would model the energy use of the building in the schematic phase.

Several of the focus group participants repeatedly made comments about what they have to do to get buildings to *comply*, such as "at that point I'm just kind of flying by my experience as to what I can get [an engineer] to do to make buildings comply" and "ultimately it's the compliance path." One architect was under the perception that getting

energy efficient designs (particularly in Southern California) was very difficult. He stated that, "In a lot of cutting edge designs it's hard to get much more than the minimum standard."

There were some participants (two engineers and one architect), however, who did mention their experiences in designing buildings that went beyond compliance. These participants were familiar with Savings By Design. One engineer who conducts energy modeling mentioned that medical buildings, in particular, tend to go beyond basic energy requirements. Furthermore, one participant stated that even for the jobs that go beyond compliance, it is always because the measure is cost effective (such as lighting designs). Others who mentioned going beyond compliance were talking about equipment-driven solutions, not integrated design such as using modeling to drive a building envelope. One respondent mentioned that going beyond compliance and reducing waste is also difficult because designers still have a tendency to oversize.

As one focus group participant stated, "What compounds [it] is, on the non-technical end, *people don't believe it*. It's like you tell them you're going to save, that there's all this hype about how much money you're going to save. Nobody believes it. They think that it's kind of a sales pitch."

The costs of achieving energy efficient designs are also still perceived as a large barrier to energy-efficient or integrated design, especially if the architects or engineers are designing a building for developers. As one focus group participant mentioned, "If you're designing for a developer, forget it, because they're not interested in that. They're not interested in the long-term performance. They're interested in what the initial cost is….You can use all the tools you want but it's going to come back to what is it going to cost."

Linking the Design Process to the Developer or End-User

While most of the design resources are understandably focused on architects and engineers, focus group participants repeatedly pointed out the importance of linking the design process to the end-user. Several respondents indicated a need for tools that present convincing arguments to the end-user that energy efficiency is worth it.

Participants also mentioned that an energy efficient design doesn't always translate into savings once the building is operating. They stated that integrated design needs to go beyond the design phase and into occupancy and equipment functioning. Ultimately, many of the respondents felt that integrated design should be linked to training of O&M staff, such as a Building Operator Certification program. One focus group participant mentioned that a tool specifically for facility managers or developers to help them understand how to make their buildings work better would also be useful.

Case Studies And On-line Design Libraries

Participants stated their interest in additional sources of information on viable designs such as case studies or an online library of designs.

Most of the participants had used case studies in the past, and indicated that they helped move designers (and end-users) to try new concepts. "The case studies are useful because if you want to innovate you've got a client who doesn't know anything about this stuff, the first thing your client's going to ask is has anyone else done it?." Thus, participants felt that case studies are a good resource to both help designers to consider incorporating new designs, and to help end-users to understand the benefits of these designs.

One respondent suggested that the online library should be similar to "Labs21" which he described as a "shopping list of all the different kinds of systems you might find in a research laboratory."

Generally, participants' comments indicated that they felt that an online library of designs or case studies should be organized regionally. Participants also felt that the building's use was also an important driver, and thus should be an organizing principle.

Software

Most focus group participants did not feel that there is a need for software tools during the schematic design phase, preferring to rely upon their past experiences, tailored to their specific geographical region. Those that have used modeling software, however, understand that software is needed to look at options, particularly if the industry is going to move beyond compliance.

Experience with eQUEST

Three respondents who had experience with modeling also had experience with eQUEST. These respondents commented that eQUEST is useful for developing a general idea of energy use in the schematic design phase. Using eQUEST at the schematic design level can prompt new design options that had previously not been considered. In fact, a couple of participants noted that it is a better design tool than some of the compliance tools such as EnergyPro. However, another participant mentioned that eQUEST was limited in its ability to handle specific inputs: "eQUEST is good for developing sort of big picture buildings in a very fast way, [but] if you wanted to get into the nitty gritty of actually designing the building, it might not be the perfect tool for you."

Another respondent brought up the concern that "as soon as [the users] go into eQUEST, for example, it might give the false sense that they're doing something called energy analysis, and they aren't." Thus there is the concern that users of eQUEST will not fully realize that there are different levels of energy analysis. Based on the comments of these

design professionals, generally, this tool is useful, but it is not a comprehensive energy modeling tool.

Commonly Used Software Tools

While only a few participants had used eQUEST, other participants mentioned that they or their colleagues had experience with a variety of software tools, such as:

➢ Visual DOE
➢ EnergyPro (comments included: 'good for balancing Title 24 compliance and sizing equipment.' 'Works well for simple rectangular buildings, but on more complex buildings with courtyards and shadowing its own window, it is not as useful.')
➢ Radiance, for lighting
➢ Lightscape, for lighting
➢ Solar-5, for complex solar modeling, and
➢ HEED (Home Energy Efficient Design), for small commercial buildings (comments included: 'quick modeler,' 'good graphic interface,' 'quite accurate.').

Capabilities Desired In a Software Tool

Participants mentioned that importing data and interfacing with other tools were the two most important capabilities of any software tool.

A major concern for most design professionals is the inputting of data into programs. Generally, they feel that valuable time is spent manually entering in data. The typical architect doesn't want to input a lot of data. Participants felt that most software tools currently available seem to have this disadvantage of not being able to quickly import inputs. "The problem is that the person who's tasked with that has to be at a senior enough level to understand how the program works and that you're asking them to sit around and basically measure things. And not even that, it's clerical work that you can't have a clerical person do it. And that's a huge problem with all of the software tools."

One respondent stated that they usually start with Visual DOE and import CAD files, DWGs, and DXFs, and then they import their data into eQUEST. Importing CAD files is particularly important since most architects are using Auto CAD. However, they recognize that even when CAD files can be imported, the user still has to input mechanical system data.

Creating tools that interface with other common design or compliance tools like Visual DOE, therefore, is important. As far as interfacing multiple tools, one respondent suggested making eVALUator and eQUEST able to integrate with each other and "spit out a net operated income model of a building based on current rate escalated over time."

Other functions and abilities respondents would like to see in a modeling tool included "data logging" and "fluid dynamics."

Participants also suggested that the output be given with a confidence interval or margin of error so that it is more believable to end-users. "There ought to be a correcting factor on any of the energy models—like a confidence interval in statistics." The opinion was that with this option, models with the various levels of error can help identify the costs without giving the client a false sense of certain savings. In addition to having software that gives an output of anticipated ranges around a mean, respondents also thought that the training for software users should stress the fact that these are just ranges depending on how the buildings are used. One respondent indicated that the building operators should be made aware that the range of savings is based on how the building is operating.

Training on Software

The importance of training designers on how to use the tools was mentioned several times. Participants agreed that EDR should provide, or perhaps require, training for their software tools. One respondent suggested that the software should have inherent training, in order to increase correct usage of the tools. Focus group participants suspect that users of software tools often do not have an understanding of what the tools actually do, and that they do not utilize the software correctly. Participants felt that the training would help designers both to understand the limitations and to see the potential for energy-efficient design. Even for designers who won't end up using the tools, participants felt that the training might help them to understand that it's worth hiring someone else to do it.

Specifically on the type of training, several people mentioned that the in-person trainings were "hard to beat." They realized, however, that it is sometimes difficult to get to a centralized location. They suggested that interactive on-line trainings, perhaps proctor moderated sessions that people can do remotely, would be valuable.

Comments About the EDR Website

Focus group participants were also asked for comments on the EDR website. Focus group participants were shown the current front page of the EDR website, and then a picture of the newest revision, which had not yet been published on the internet. The general consensus among focus group participants is that the new version of the EDR website's front page displays too much to digest. In general the respondents disliked the text-heavy home pages and find busy pages intimidating and difficult to read. One respondent suggested having drop-down menus or pop-up windows to reduce the amount of text.

Focus group participants complained that the boxes along the right margin of the page look like advertisements, which are often ignored. One option would be to put the "News & Highlights" section on the right and put featured tools in boxes below the drop-down menus. The idea to feature certain tools is a good one, but it would be helpful to have a little more information about what is contained in the feature boxes, similar to how the "Featured Tool" box highlights eQUEST through a brief synopsis of its capabilities. For

instance, a little more information on the project of Victor Valley Water District Administration Facility or on Case Studies in general may help to draw in viewers who would otherwise overlook Case Studies.

EDR may want to consider also suggestions respondents gave during the focus group. One actionable item is to incorporate drop-down or pull-down menus for the three major sections on the first page: "By Topic," "By Building Type," and "By Resource." Alternatively, respondents suggested that EDR could add javascript code that would allow a viewer to see the relevant subsections when the mouse pointer is over the section heading. This will help clean up the organization of the home page and present the various sub-sections in a digestible, succinct manner, so that viewers will not have to scroll down the page.

EDR As A Clearinghouse

In addition to comments on the current (and future) EDR website. Participants indicated that there are already multiple websites and sources offering an overwhelming amount of information. One respondent echoed this sentiment by saying, "All these people have got their own archaic means of delving into what should be useful information and probably is if you can get to it. But by the time you've gotten to it…you may have spent 30 minutes to 45 minutes culling through irrelevant information." Based on this and similar comments, the most valuable resource would be a website or search engine that pulls together information that is already available through other sites on the internet.

Participants feel that one party should leverage existing resources, partner with organizations or websites that offer valuable information, and integrate the information that is already available rather than duplicating efforts or trying to fill gaps. "So for example, a hundred case studies sitting on an EDR site, a hundred case studies sitting on internet waste management site, a hundred sitting on USGBC site…none of them cross-link, so the question is are these guys in competition...or can they somehow link together, which is what the Internet really can do nicely."

Raising Awareness

Raising awareness of EDR resources that are available will also be important to the success of this effort. There is an obvious need for marketing the existing tools. When participants were asked how EDR could raise awareness of the available resources, several mentioned that using the internet by linking to various trade sites is a good way to raise awareness. Professional associations, newsletters and trade magazines were also viewed as credible ways to get information out to professionals; however, some participants stated that they do not have time to look at trade magazines. The McGraw Hill Construction "Sweets" catalog and website were also mentioned by some. Respondents were generally not interested in bill stuffers or mass mailings.

Chapter Summary

The largest barrier to integrated energy-efficient design is getting designers (particularly architects) to consider moving beyond compliance and thinking about integrated energy efficient designs early in the design process. In part, this is due to the fact that designers perceive that the costs of energy efficient designs are higher. It is also due to the fact that architects and engineers rely heavily on their past experiences and roles, and find it difficult to take the time to incorporate new concepts.

Overall, the roles of design professionals seem to be somewhat segmented. Thus, there is a clear need for collaboration among design professionals and it may be that the best approach to promoting some tools, such as the software tools, may be to work through engineers.

Educational efforts, marketing and outreach (such as some of what is done through Savings By Design) are needed to complement the EDR tools. Ultimately, EDR needs to raise awareness of the resources that it offers. To do this, EDR may want to use email and internet links from web sites that are frequently visited by design professionals as the McGraw Hill Sweets website.

Furthermore, there is a need to provide credible tools and information so that designers can educate and persuade *end-users* to accept the energy efficient designs. Thus, case studies are a good resource to both help designers to consider incorporating new designs and to help end-users understand the benefits of these designs.

In addition, focus group participants suggested that the EDR website could offer a list of people who have completed training in particular areas (or for specific tools). This list could be posted on the EDR website to encourage end-users to seek out users of EDR tools. It might also help to encourage designers and users alike to hire individuals and companies that have participated.

Design professionals, however, are already faced with an enormous amount of information. Because of this, focus group participants strongly supported the idea of using EDR as a clearinghouse of information. Rather than duplicating efforts or trying to fill gaps in resources, participants feel that EDR should leverage existing resources, partner with organizations or websites that offer valuable information, and integrate the information that is already available. As it stands, participants viewed EDR as competing with the other resources that were available and felt that pulling existing information together in a manner that is easily accessible with searchable parameters (e.g., by type of sector, region, resources, building use) is the best way to encourage energy efficient, integrated designs. This would require redesigning the website to act somewhat like a targeted search engine. As an example, one participant mentioned another website that gathers information from all sorts of periodicals throughout the world on a daily basis.

CHAPTER 12:
FINDINGS FROM ARCHITECT INTERVIEWS

Opinion Dynamics Corporation conducted 20 in-depth interviews with architects in California to better understand the degree to which energy efficiency practices are being incorporated into the design process, gauge awareness of Energy Design Resources, and determine how to influence the design process. Ten of the 20 architects participated in the Savings By Design program, based on their involvement in a project that received a SBD incentive, consultation services, or award. For the purposes of this write-up, we refer to these architects as SBD architects. The remaining ten architects are referred to as non-SBD architects. Five of the 20 respondents (three participants and two non-participants) were architects from the top architectural firms listed in the *NRNC Market Characterization and Program Activities Tracking Report.*

Awareness and Branding

Among the architects we interviewed, awareness of Energy Design Resources is mixed. Most SBD architects vaguely recall hearing about EDR but are not familiar with the resources offered; in fact, a couple respondents later referred to EDR as "Energy By Design," probably confusing Energy Design Resources with Savings By Design. This may be due the fact that there has been a conscientious effort to associate the two entities with each other. Although one *non-SBD* architect had tested eQUEST and receives EDR newsletters, generally the non-SBD architects are less familiar with EDR than SBD architects.

The few SBD architects who remembered how they found out about EDR said it was through a SBD visit to their office or through a presentation. While only a few SBD architects said they were familiar with EDR, all were very or somewhat familiar with Savings By Design; conversely, non-SBD architects had limited knowledge about the SBD program.

Although architects were not specifically asked about LEED, many architects appear to be familiar with LEED, mentioning LEED standards or LEED certification, or citing in-house LEED-certified designers. LEED appears to be widely known and respected in the industry, even more so than Savings By Design or Energy Design Resources.

Views on Energy Efficient Design

Almost all architects, whether or not a recipient of a Savings By Design incentive, state that they consider energy efficient design options frequently or often (if not for every project). Only one non-SBD architect said she considers energy efficient design "not that frequently" because "the quality of lighting is just so disgusting because you end up having to do a lot of fluorescents…The other issue is that a lot of times we are going into

a building where the mechanical systems are already in place and you can't really change them." However, non-SBD architects typically think that simply complying with Title 24 equates to considering energy efficient designs. While one non-SBD architect says his projects always go beyond code, the rest of the non-SBD architects say only one-third or less of their projects actually exceed Title 24.

As expected, SBD architects tend to be more energy conscious in their designs than their non-SBD counterparts. Many SBD architects frequently design buildings that exceed Title 24. Almost all of these architects' projects go beyond current energy code requirements, with a few SBD architects as exceptions. One said this occurs only about 25% of the time because budgets are tight and do not allow for designs exceeding code.

Several in the group of SBD architects mention that the requirements of Title 24 are minimal, saying "The recent buildings that we've done have easily exceeded Title 24 standards. Now I know Title 24 is pretty easy to get but that hasn't been a problem to exceed those standards lately anyway." Another respondent stated: "Title 24 is still pretty basic, I think, a minimum so it's pretty easy to go beyond it."

Both types of architects state that the energy use of the building is typically modeled in the beginning of the process. Some architects do it as early as the schematic design phase, although they also do energy modeling during the phases of design development or during the creation of the construction documents.[54] Only one non-SBD architect said that the energy modeling is done towards the completion of the project; indicative of a passive, or reactive, approach: "I control the design factor and then we solve the energy problems."

Collaborative Design Process

In most cases, architects call upon engineers or energy consultants to play a major role in energy modeling and calculations. SBD architects say they rely upon mechanical and electrical engineers and energy consultants for questions related to the energy use of the building, although some also refer to past completed projects for "tried and true strategies," as well as the utility, the internet, or in-house expertise. One SBD architect said that mechanical or electrical engineers or energy consultants are very involved when the budget allows, but if the budget is restrictive, his firm will use its own personal consultant, who is not as specialized in energy savings. Non-SBD architects appear to rely even more upon engineers for their questions on building energy use. Based on comments from these market actors, it appears that because architects often rely on engineers and consultants to do the energy efficiency calculations, their absence from the task most likely has a substantial impact on the building's energy design.

Based on their comments, it is apparent that architects sometimes feel somewhat powerless: often they feel that the energy use of the building is "outside of our control so

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[54] The phases in a project are, broadly: pre-bidding, schematic design, design development, construction documents, bidding or negotiation, construction.

there is nothing we can do no matter how much we know." As such, architects think EDR should educate other members of the design team.

Architects also say that their clients – end users or developers – are also very much involved in the design process and therefore need to be educated, as well as persuaded to include these options into the budget. Architects claim they would like to incorporate energy efficient design but must face opposition from clients first. Several architects attribute the client's emphasis on the bottom line as the limiting factor, prohibiting architects from pursuing the greatest efficiency in their designs. Respondents mentioned that energy efficient design options are often eliminated due to budget considerations or heavily contested if there is a significant upfront cost ramification. With the exception of one architect who feels that it is not worth the effort for EDR to reach out to users or developers, architects generally agree that EDR should target developers because they are the ones that direct the level of commitment to energy efficiency.

Overarching Comments on The Need for Software, Publications and Training

As mentioned earlier, architects rely mainly on other members of the design team to perform energy calculations, rather than doing it themselves. This widespread reliance on engineers and consultants for information on the building's energy use translates into hesitancy to use software programs and into reliance upon other design team members. "In some way I think it's more useful when you have someone who's an expert at it [software to help improve energy design practices], who's available to do it for you. We've got so many different things to do that I'd rather have somebody … pay for consultants to do that kind of modeling."

As such, software has low priority among SBD architects compared to other options such as a central repository of information and active education. The latter two are considered generally equal in terms of importance for this group of architects. Among non-SBD architects, responses were more mixed, with a slight preference for the central repository of information/publications and software tools over active education or training.

When asked, architects indicated that a summary sheet comparing various energy design tools, their capabilities and limitations would be very useful. However, most said they would consider the information more reliable and credible if it came from a neutral third party, rather than from the developer of the tool.

Most architects also suggested that EDR offer more resources to help them make the case for efficiency to their clients. The consensus among architects is also that there needs to be better information on costs and paybacks. "We would like to see [better] tools available to us for modeling life cycle costs. There are really blunt instruments right now that we don't end up using because they are so coarse, they are just generalizations. We find our own intuition and experiences is *(sic)* more accurate at assessing those things so better tools and education about how to use them would be interesting."

Disseminating EDR Tools

According to most architects, office visits by utility representatives are the best approach to train and make architects aware of Energy Design Resources. Architects seem to be most influenced by and supportive of in-person presentations held in their offices, and they suggest doing presentations to the entire design team. Architects had mixed feelings about direct mail and email, but sentiments were slightly negative towards them, because direct mail and email can get lost among the other piles of papers or other messages. All architects, save two who check all the time, never or infrequently consult energy center calendars; some check on an as-needed basis, but two did not even know they exist. Interview respondents also thought methods such as newsletters, trade publications, or other advertising to inform architects about utility programs would be effective.

One suggestion that two respondents mentioned is to have a design competition such as the ones offered through AIA. According to one architect, another opportunity might be to target students to get them involved in the design competition or in learning more about energy efficiency. Because SBD sponsors AIACC's Integrated EE Design Awards, these suggestions may not be difficult to implement.

Training

Most SBD architects have been to some type of energy-related or design-related training in the past two years, such as LEED workshops, energy center seminars, and SBD seminars. Only half of the non-SBD architects interviewed have attended a training. Those who attended a training say their reasons for attending are to keep updated on new ideas within their industry, learn new or useful information specific to certain issues, acquire continuing education credits, or simply because the training was held in the office. For the architects who have not recently gone to any type of seminar or workshop, the largest barriers are cost, location, time, and a sense that the topics being offered are irrelevant. Architects are most interested in having training at their office, followed by their local energy center, and then through the internet.

Most architects have not tried nor completed a training on the computer, with one respondent saying "that's a pain, I do too much on the computer already"; but several are potentially interested and say that a set time with a proctor would help. One architect offers the caveat that the training session, if it is to be used via a computer, must be written and presented well, simple to use, and have concise and actionable information.

Architects suggest good advertising and marketing in order to encourage greater participation in EDR training sessions. Overall, the sentiments were that EDR should offer training sessions with topics of interest and value, in convenient locations and times (having them earlier or later in the day, after hours, and a few mentioned noontime or lunchtime seminars), and at no or low costs.

Chapter Summary

EDR needs to encourage architects to be proactive about incorporating energy efficient design. The overarching sentiment among architects is that they don't feel pivotal in decisions about energy efficient design options. Although they clearly feel that they are in charge of many aspects of the design, they are wont to say the other members of the design team—engineers, consultants—need to be more energy conscious before they can incorporate energy efficient design options. Architects often rely on engineers and consultants to do the energy efficiency calculations and their absence from the task makes them feel somewhat powerless to affect energy-related decisions.

Furthermore, architects feel that the end-user or owner needs to buy-in to the concept of energy-efficient design before they can make changes. According to comments made by architects, they need more persuasive tools to sell clients on the benefits of building energy efficient buildings.

Architects, themselves, are still in need of help to develop design ideas. EDR's goal in terms of reaching architects should be to encourage architects to play a more active role in energy decisions and to always consider energy efficient design options (beyond Title 24) even if the client does not seem to take great interest in it. In-person visits to architect offices, arming architects with the tools that they need to educate clients, and additional opportunities for training, may help in encouraging proactive energy efficient designs.

CHAPTER 13:
SUMMARY OF THE NEED FOR ADDITIONAL TRAINING

The 405 respondents who answered the original Energy Design Resources survey were contacted again to answer a few additional questions on EDR training through a follow-up internet survey. The follow-up survey garnered 151 online respondents and 24 email respondents out of the total 405.[55] Eighty of the 151, or 53% of respondents, work in California, and Figure 13-1 below shows the occupations of the 80 respondents. Below we report on the findings from these 80 respondents.[56]

Figure 13-1. Respondent Type of Profession
(n=80)

Other 20%

Energy Consultant 15%

Architect 32%

Engineer 33%

CA Respondents (n=151)
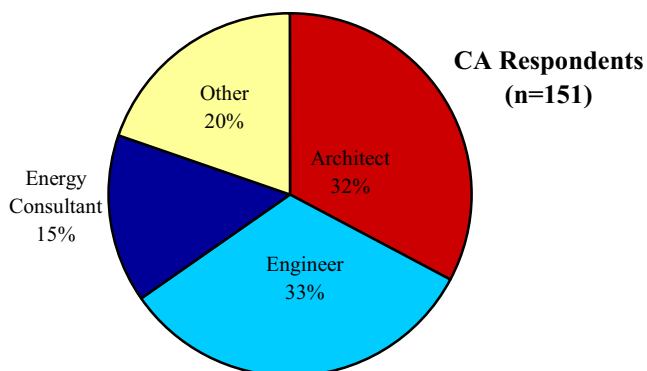
The original analysis (see the Phase I Research) revealed that very few of the 405 respondents were aware of the various EDR trainings, and even fewer had participated in them. For this reason, questions in the follow-up survey focused more on respondents' needs and preferences in trainings, as well as other suggestions they had.

In order to gain a better understanding of the need for training, ODC presents here the quantitative data from the follow-up internet survey, supplemented with qualitative comments on the need for training from Savings By Design field staff, architects and other design professionals during in-depth interviews or focus groups.[57]

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[55] Note that the prior respondents were sent an original invitation and two reminders to complete the online survey, with the final reminder providing them with the opportunity to email us a brief response in place of completing the online survey.

[56] The draft topline data presented results from all 151 respondents. Given the focus on California design professionals, this final version of the topline findings as presented in this chapter, reports only on those professional who work on projects in California.

[57] More detailed findings from the in-depth interviews are found in other sections of the report.

Respondent Interest in The Various Types of Training

In order to gauge interest about general aspects of training, ODC asked respondents what methods of training they are interested in. Respondents indicated that they were most interested in trainings at local energy centers, followed by CD-ROMs or online trainings. Over 60% of respondents expressed a strong interest for these types of trainings. Given a scale of 1 to 5, where 5 indicates "very interested," respondents ranked trainings at a local energy center or community center the highest, with a mean response of 3.9. Trainings on CD-ROM and Internet-based classes each received a mean rating of 3.6; and finally, trainings at their office, a 3.3. (See Table 13-1.) While the last option received the lowest rating, the mean is higher (3.6 and 3.5, respectively) among architects and engineers, which make up 65% of the 80 respondents (energy consultants and others gave an average rating of 3.0 and 2.8, respectively). This finding is further supported by ODC's in-depth interviews with architects, in which most stated a strong preference for office visits, followed by their local energy center, and then through the internet.

Table 13-1. Interest in Various Types of Trainings
(n=80)

	Very interested	4	3	2	Not at all interested	Mean Rating
Trainings at a local energy center or community center	35%	36%	19%	8%	2%	**3.9**
Training on a CD-ROM	31%	30%	20%	12%	6%	**3.6**
Internet-based classes	26%	34%	21%	14%	5%	**3.6**
Training at your office	21%	29%	25%	10%	15%	**3.3**

Several focus group participants mentioned that in-person trainings were "hard to beat" because they allow for networking. They realized, however, that it is sometimes difficult to get to a centralized location. Thus, one architect offered the caveat that trainings, if they are to be used via a computer (i.e., CD-ROM), must be written and presented well, simple to use, and have concise and active information.

The previous attributes also apply to online training sessions. During the focus group, participants suggested that interactive online training sessions moderated by a proctor would be valuable; architects who were interviewed generally agreed that online training sessions would be more appealing if someone were available to answer any questions that arise.

Interest in Specific EDR Trainings

Respondents were given brief explanations of the four EDR trainings and asked whether they were very interested, might be interested, or were not at all interested. Virtual Workshops and Energy Center Trainings garnered the most interest, with 58% and 52% respectively reporting strong interest in these two. (See Table 13-2.) Respondents were least interested in the on-site presentations, with only 30% who are very interested and 34% who are not at all interested. However, architects expressed significantly more interest in the on-site presentations than engineers or energy consultants. Architects also

tend to be more interested in EDR Lights than market actor groups, and significantly more so than engineers.

Table 13-2. Interest in Trainings Currently Offered By EDR
(n=80)

	Very interested	Might be interested	Not interested
Virtual Workshops	58%	31%	11%
Energy Center Training	52%	40%	8%
EDR Lights	36%	40%	24%
On-Site Presentations Specifically Designed for the Respondent's Company	30%	36%	34%

Reasons why respondents were interested in the various trainings are shown in Table 13-3 below. Energy Center trainings offer the opportunity to network with other design professionals, however in-house sessions allow more staff to attend. The appeal of Virtual Workshops lies in neither of these attributes, but is found in flexibility of schedule and location.

Table 13-3. Reasons for Interest in the EDR Trainings
(multiple response)

Why are you interested in…	Virtual Workshops (n=47)	Energy Center Trainings (n=46)	EDR Lights (n=38)	On-site Presentations (n=33)
Time/scheduling/work at own pace	60%	2%	3%	6%
Convenient/location/no travel	40%	7%	3%	30%
Increase professional knowledge	21%	22%	45%	15%
Topics covered/areas of interest	6%	24%	50%	6%
More staff could attend	-	-	-	52%
Teaching method enables attention to be directed on topic of training	-	30%	-	-
Networking	-	24%	-	-
Live/in-person training/demos, Q&As	-	9%	-	12%
See facility/On-site	-	13%	-	-
My vocation	-	2%	11%	3%
Less expensive/save us money/budget concerns	2%	-	5%	6%
Have done in the past	2%	9%	-	-
Other	2%	-	5%	3%

Table 13-4 summarizes the reasons cited for respondents not being interested in a particular training. While only a few expressed disinterest, reasons respondents were not interested in trainings in their office because the format was not a right fit for them, either because of their size or because the topics are not relevant.

Note that the respondent size varies among the types of training; for example, 17 respondents were not interested in on-site presentations, while only three respondents were not interested in Virtual Workshops.

Table 13-4. Reasons for Interest in the EDR Trainings
(multiple response)

Why are you NOT interested in…	Virtual Workshops (n=3)	Energy Center Trainings (n=2)	EDR Lights (n=10)	On-site Presentations (n=17)
Too small/Training inefficient	-	-	-	35%
Wrong focus/Topics not for us	-	-	50%	29%
Inconvenient – schedule, interruptions	100%	50%	10%	18%
My vocation – different	-	-	50%	12%
Work on CA projects but office out of state	-	50%	-	12%
Cost/Expensive	-	-	-	12%
No access	33%	-	-	-
DK/Refused	-	-	-	6%

Based on comments from architects who have attended a training in the past two years, most said their reasons for attending are to keep updated and on the cutting edge of their industry, learn new or useful information specific to certain issues, acquire continuing education credits, or simply because the training was held in the office. For the architects who had not recently been to any type of seminar or workshop, the largest barriers are cost, location, time, and a sense that the topics being offered are irrelevant.

Topics of Interest

Based on the internet survey, respondents were primarily interested in learning more on energy codes and energy efficiency standards, HVAC, and envelope design. (See Table 13-5.) More than half of the respondents were also interested in lighting, energy management systems, skylighting, and commissioning. Thirty-eight respondents (or 48% of all respondents) also mentioned sector-specific trainings; of these respondents, one-half were each interested in trainings about educational institutions/schools (50%) or hospitals/healthcare or medical facilities (50%).

Table 13-5. Topics of Interest (n=80; multiple response, aided)

Topic	Percentage of Respondents
Energy codes and energy efficiency standards	84%
HVAC	74
Envelope design	69
Lighting	66
Energy management systems (EMS)	61
Skylighting	61
Commissioning	52
Sector specific trainings (i.e., retail, school, hospital, office) (see details below, Q2A)	48
Tutorials on software	46
Identifying other resources and incentive programs	41
Financing	35
Motors	32
Communications and marketing strategies	26
Other (Please type your answer in the box below)*	5
None of the above	-

*Other responses included the mention of lifecycle cost analyses/energy audits, refrigeration, CHP, alternative energy systems (including cogeneration), energy saving monitoring and verification ,and daylighting.

While 'tutorials on software' was mentioned by slightly less than half of the follow-up survey respondents, among the various groups interviewed by telephone or through the focus groups, several design professionals expressed the need to associate trainings more closely with EDR tools, particularly the software tools. In fact, respondents attributed not having enough instruction or training on the software tools as the one of the main reasons they had not used EDR software even though they were aware of it. Respondents felt that users of software tools often do not have an understanding of what the tools actually do, and they do not utilize the capabilities of the software correctly or to its full potential. Even for designers who do not end up extensively using the tools, some felt that the training might help design professionals to understand that it may be worth hiring someone else to do it, and do it correctly.

Design professionals in the focus group mentioned that software-related training would help designers both to understand the limitations and to see the potential for energy-efficient design. A survey respondent said that he wanted to see "more extensive tutorials on use of analysis tools for energy efficient design." One focus group participant noted that "there's a disconnect between the training and the tools. The tools are out there, no question. The limitations of it aren't apparent and so a user can really misunderstand what the outcome is." Another echoed this sentiment and suggested that the website require an online tutorial before the software can be downloaded.

Suggestions for Training Structure and Organization

In addition to more extensive tutorials to the software, respondents wanted more structure to the trainings. One respondent said, "trainings should be developmental and applied.

Start from the basic concept of site choice through climate considerations onto equipment and facility design."

Another wanted to see tiered training courses, organized by level of expertise so that professionals could attend and progress upwards. "I would like to see structured courses (introductory, medium, advanced) offered for fundamental topics so that professionals like me can choose the level that is appropriate and get the most out of their time. Further, it would be nice to be able to progress from intro levels to advanced levels for those seriously committed to learning this material."

Several respondents also expressed interest in being able to earn learning credits for the AIA or towards LEED certification or Lighting Certified (LC) exams while participating in EDR trainings. EDR currently offers learning unit credits through most of its trainings for AIA or CES members or credit towards LC recertification from the National Council on Qualification for Lighting Professionals. However, several design professionals expressed the sentiment that they do not want training that requires any type of certification that would need to be renewed.

Marketing Trainings

Respondents overwhelmingly thought EDR should use email to send out information regarding trainings in order to encourage greater participation. (See Table 13-6.) Eighty-six percent felt this way, while 32% suggested a direct mailing. (Note that this was a multiple-response question.) However, while many find email convenient for both sides (sender and recipient), interviewed market actors acknowledged the well-known weaknesses of email as well – mainly, that they are easy to forget about or ignore and easy to delete, without requiring much thought or review of the email.

Table 13-6. Informing Design Professionals About Trainings
(n=80; multiple response)

Method of Delivery	Percentage of Respondents
Send announcement through email	86%
Direct mailing	32
Mail to my company	25
Articles	16
Ads in trade journals	4
Other	-

Up until now, there has not been a lot of marketing of the training although Savings By Design field staff did mention that they alert design professionals about on-site training sessions, utility-specific trainings, and trainings offered at local energy centers (although not necessarily always associated specific to EDR) through their interactions with these groups.

Chapter Summary

As stated in the original analysis (see the Phase I Research), awareness and participation of EDR trainings are low, but are highest for Energy Center Trainings and on-site presentations.

Many professionals realize that in-person trainings (either at their office or at an Energy Center) are the best way for them to learn, requiring them to set aside time and allowing them to have all of their questions answered. Among architect, in particular, there is a strong preference for on-site presentations or trainings at their office, and thus this group should be approached by EDR in this manner. However, they may also be drawn to trainings offered through the computer and/or online because of the related conveniences.

Online training is extremely valuable for design professionals because it allows these professionals flexibility with time and pace of learning and it does not require any travel. The follow-up survey shows that there is a lot of interest in Virtual Workshops and Energy Center Trainings among all respondents. Offering designers a variety of options, such as online and at convenient locations (such as at the architect's office) as well as at various times can help to encourage participation in training sessions.

EDR sponsored training courses should also attempt to more cohesively tie the training to its other tools; for example, it should consider offering more extensive tutorials on the software tools so that users would understand clearly how to use the software and its capabilities and limitations. In more training sessions that cover more general topics, EDR staff should also consider leveraging these interactions with design professionals to inform them of the available EDR resources.

EDR should also consider offering a tiered set of trainings where participants could progress upward from introductory courses to advanced level ones, thus providing resources for a wide level of expertise among design professionals. EDR may want to consider offering the basic level of training in-person training, while offering more advanced topics as proctored on-line sessions.

Because awareness of EDR trainings is low among the design community, greater marketing of its offerings also needs to occur. Furthermore, greater differentiation needs to be made between EDR trainings at the energy centers or any other energy center trainings. Email and mail announcements could be sent out notifying design professionals of the schedules of EDR-specific trainings, and with descriptions of its other, non-scheduled trainings. Several architects mentioned that they did not know about the energy center calendars so disseminating this information more widely and aggressively through multiple methods such as email, trade publications and personal contact with designers would encourage greater participation in EDR-specific trainings held at local energy centers.

Focus group participants also mentioned that the EDR website could also offer a list of people who have completed training in particular areas (or on specific tools). This might

encourage participation in the training by providing the incentive off posting the participant's name as a qualified user of the tool.

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:

MARKET INDICATORS FOR ENERGY DESIGN RESOURCES

1. Awareness and Coordination of EDR and SBD	
• Familiarity with:	*Includes those who are very or somewhat familiar*
➢ Energy Design Resources (EDR)	61%
➢ Savings By Design (SBD)	46%
• Percent who received incentive payment through SBD	22%
2. Awareness of Specific EDR Offerings	
• Percent who are aware of EDR publications:	*Includes those who have read or are aware but have not read*
➢ eNews	52%
➢ The Newsletter	40%
➢ Case Studies	51%
➢ Commissioning Handbook	30%
➢ Design Briefs	44%
➢ Skylighting Guidelines	46%
• Percent who are aware of EDR software:	*Includes those who have used, have viewed but not used, or are aware but have not viewed*
➢ SkyCalc	63%
➢ eQUEST	71%
➢ eVALUator	54%
➢ EDR Charette	35%
• Percent who are aware of EDR training:	*Includes those who have participated or are aware but have not participated*
➢ On-Site Presentations	36%
➢ Virtual Workshops	24%
➢ EDR Lights	22%
➢ Energy Center Training	41%
3. Proportion of Respondents Who Use Tools	
• Percent who have read EDR publications:	
➢ eNews	34%
➢ The Newsletter	21%
➢ Case Studies	23%
➢ Commissioning Handbook	9%
➢ Design Briefs	23%
➢ Skylighting Guidelines	20%
• Percent who have used EDR software:	
➢ SkyCalc	11%
➢ EQUEST	27%
➢ EVALUator	5%
➢ EDR Charette	2%

• Percent who have attended EDR training:	
➢ On-Site Presentations	8%
➢ Virtual Workshops	2%
➢ EDR Lights	1%
➢ Energy Center Training	12%
4. Usefulness and Impact of Tools Among Users	
• Average usefulness ratings for publications	*Based on a scale of 1 to 7, where 7 is "extremely useful"*
➢ eNews	4.6
➢ The Newsletter	4.9
➢ Case Studies	5.0
➢ Commissioning Handbook	5.3
➢ Design Briefs	5.1
➢ Skylighting Guidelines	5.0
• Impact of software	
➢ Percent whose use of SkyCalc resulted in incorporation of energy efficient design options	63%
➢ Percent whose use of eQUEST resulted in incorporation of energy efficient design options	55%
➢ Percent whose use of eVALUator resulted in incorporation of energy efficient design options	60%
➢ Percent whose use of EDR Charette resulted in a basic understanding of design and energy use	71%
• Average usefulness ratings for training	*Based on a scale of 1 to 7, where 7 is "extremely useful"*
➢ On-Site Presentations	5.4
➢ Virtual Workshops	5.4
➢ EDR Lights	4.8
➢ Energy Center Training	5.7
• Impact of training	*Percent who say training helped to influence design practices*
➢ On-Site Presentations	74%
➢ Virtual Workshops	86%
➢ EDR Lights	60%
➢ Energy Center Training	79%
5. Satisfaction Among Users	
• Likelihood (very or somewhat) of continued use	
➢ SkyCalc	98% (65% very)
➢ EQUEST	97% (68% very)
➢ EVALUator	85% (20% very)
➢ EDR Charette	86% (43% very)
• Comparison to other tools	
➢ Percent who say eQUEST is much or slightly better than other similar tools	57%
➢ Percent who say eVALUator is much or slightly better than other similar tools	27%
6. Satisfaction with Web Site	
• Average overall satisfaction rating for EDR web site (1 to 7 scale, where 7 is extremely satisfied)	4.7

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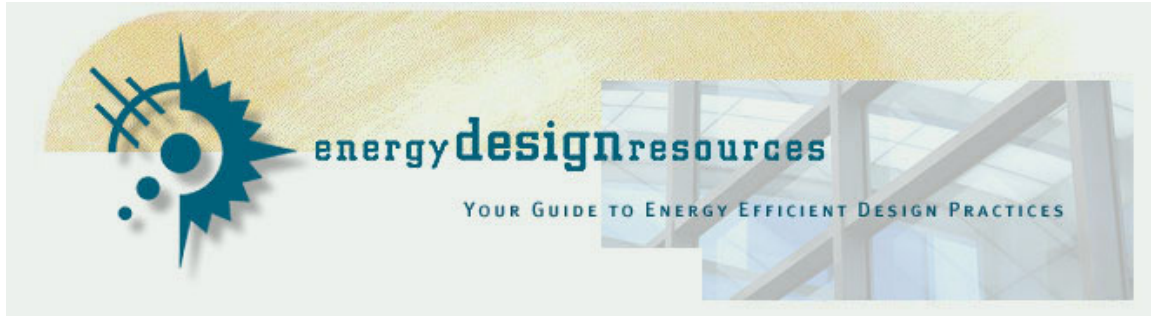
Thank you for agreeing to participate in our online survey. Please note the following before you begin:

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 QI2=a]
A1. Are you aware that Southern California Edison offers new construction services and assistance to [INSERT TITLE FROM QO1] 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 down-loaded or viewed	Viewed, tried, or downloaded it, but haven't used it	Use this 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.				
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.				

[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]?
  a. I couldn't download or open the program [DO NOT INCLUDE FOR CHARETTE SEQUENCE]
  b. I did not have enough instruction or training
  c. I did not have the required inputs available
  d. I did not need to use the tool for my job
  e. I did not have time
  f. After downloading the tool, I realized it wasn't what I needed
  g. I forgot I downloaded the tool
  h. 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.
  a. I couldn't download or open the program
  b. I didn't have enough instruction or training
  c. I didn't have the required inputs available
  d. Don't remember
  e. None
  f. Other (please specify)

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

Approximately, what is the average size of the [INSERT BUILDING TYPE 2] that you work on, in terms of square feet ?

Approximately, what is the average size of the [INSERT BUILDING TYPE 3] that you work on, in terms of square feet ?

[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 D:
SURVEY INSTRUMENTS FOR PHASE II RESEARCH

Survey Instruments and Depth Interview Guides include:

Online Follow-up Survey
Savings By Design Field Staff Interview Guide
Architect Interview Guide
Focus Group Guide

Energy Design Resources (EDR)
Online Follow-up Survey

D1. Do you work on the new construction or renovation of commercial or industrial buildings *in California*?
   a. Yes
   b. No

[IF D1=a (yes)]
D2. What utility territories do you work in? (Check all that apply.)
   a. Pacific Gas and Electric Company (PG&E) – northern and central California (Eureka to Bakersfield, and Pacific Ocean to the Sierra Nevada)
   b. Southern California Edison (SCE) – central, coastal, southern California
   c. Southern California Gas Company (SoCalGas) – central and southern California (Visalia to the Mexican border)
   d. San Diego Gas and Electric (SDG&E)– San Diego and southern Orange counties
   e. None of the above

TRAINING

1. On a scale of 1 to 5 where 1 is "not at all interested" and 5 is "very interested," how likely are you to participate in the following types of trainings if the topic was of interest to you?

a.	Internet-based classes	1	2	3	4	5
b.	Training at your office	1	2	3	4	5
c.	Trainings at a local energy center or community center	1	2	3	4	5
d.	Training on a CD-ROM	1	2	3	4	5

2. If EDR offered workshops, seminars or other trainings on the following topics, which ones would be of interest to you (check all that apply):
   a. HVAC
   b. Lighting
   c. Envelope design
   d. Motors
   e. Commissioning
   f. Energy codes and energy efficiency standards
   g. Energy management systems (EMS)
   h. Skylighting
   i. Sector specific trainings (i.e., retail, school, hospital, office): _____
   j. Tutorials on software
   k. Communications and marketing strategies
   l. Financing
   m. Identifying other resources and incentive programs
   n. Other (please specify): _____
   o. None of the above

3. Below are brief explanations of the different trainings that are offered free by EDR. Would you be interested in participating in any of these trainings? (Please check one box for each row.)

(Please note that you are under no obligation to participate, as your name will not be matched with your response. Your identifying information will be kept confidential and your email address will not be shared.)

EDR Training	Not interested	Might be interested	Very interested
On-Site Presentations DESIGNED FOR: ARCHITECTURAL FIRMS, BUILDING OWNERS Technical seminars for your staff on the benefits of energy efficient buildings and energy efficiency techniques for design teams ➢ Presentations customized to circumstances and needs, several topics offered ➢ Focuses on building design, building owner, and development market ➢ 1-2 hour in-house seminar ➢ Complements the Savings by Design incentive program ➢ LU credits offered for AIA members			
Virtual Workshops DESIGNED FOR: ARCHITECTS, DESIGNERS, ENERGY ENGINEERS, CONSULTANTS Workshops using multi-media and the Internet to provide 24-hour access to workshops that can be completed at one's own pace. ➢ Topics include commissioning, integrated energy design, HVAC, performance measurement and verification, control systems and building automation, financing and marketing strategies, lighting ➢ Includes PowerPoint material, audio lecture, relevant links, exam ➢ Learning units (LU) credits			
EDR Lights DESIGNED FOR: ENGINEERS, ARCHITECTS, BUILDING OPERATORS Provides useful professional level education on high performance lighting for the workplace — especially offices, retail, and industrial buildings. ➢ Topics include lighting issues and technologies and applications, with special consideration given to California energy codes and efficiency programs ➢ Distance self-paced learning course over the Internet; texts and reference text are Internet resources or available online ➢ LU credits for AIA, credit towards LC recertification from NCQLP			
Energy Center Training Each utility (PG&E, SDG&E, SCE, SoCalGas) offers seminars and workshops through its energy centers. ➢ Wide variety of topics, wide target audience ➢ Some offer AIA credits			

[FOR EACH "VERY INTERESTED" TRAININGS]
[PROGRAMMING WILL ENSURE THE APPROPRIATE TRAININGS ARE BROUGHT UP ON ONE SCREEN]
4. Why are you interested in…
      a. On-Site Presentations?
      b. Virtual Workshops?
      c. EDR Lights course?
      d. Energy Center Trainings?

[FOR EACH "NOT AT ALL INTERESTED" AND "MIGHT BE INTERESTED" TRAININGS]
[PROGRAMMING WILL ENSURE THE APPROPRIATE TRAININGS ARE BROUGHT UP ON ONE SCREEN]
5. Why are you NOT interested in …
      a. On-Site Presentations?
      b. Virtual Workshops?
      c. EDR Lights course?
      d. Energy Center Trainings?

6. How can we encourage your participation in these trainings?
      a. Direct mailing
      b. Mail to my company
      c. Send announcement through email
      d. Ads in trade journals
      e. Articles
      f. Other (please specify): _____

Finally, if you have any additional comments on the types of trainings or other resources you would like to see EDR offer, please write them in the box below:

OPINION DYNAMICS
C O R P O R A T I O N

Energy Design Resources (EDR)
Savings By Design Field Staff In-depth Interview Guide
(2 or 3 From Each Utility)
6204

Hi, my name is _____ and I'm calling from Opinion Dynamics. We're conducting an evaluation of the Energy Design Resources effort and we want to talk to a few Savings-By-Design field staff to get some of your insights about architects, engineers, and others involved in the design process. This interview shouldn't take too long—about 20 minutes or so. Do you have a few minutes to talk about your experiences as a Savings-By-Design field representative?

Interactions With Architects and Engineers

1.   Do you go out and visit the offices of architects, engineers and other members of a design team? [PROBE TO GET A SENSE OF WHICH MARKET ACTORS THEY VISIT THE MOST]

2.   Typically, at what point in the design process do you meet with them?

   a. [FOLLOW UP, IF NEEDED] Do you typically visit architects and engineers offices to market the program? –If so, how many times per year? Do you (also) meet with them once they are involved in the Savings-By-Design process? –If so, how many times during the design process?

3.   On average, how many offices do you visit a month? On average, how many people do you meet with at each office? [PROBE TO SEE IF THEY MEET WITH MULTIPLE PEOPLE AT EACH OFFICE]

4.   Can you describe a typical visit to an architect's office? Can you describe a typical visit to an engineer's office? [PROBE FOR DIFFERENCES BETWEEN ARCHITECTS AND ENGINEERS]

5.   When you visit these market actors, what types of handouts or brochures do you provide and what types of resources do you recommend to the people you visit? [PROBE FOR UTILITY MATERIALS OR ENERGY CENTER INFORMATION]

[IF THEY <u>DO NOT</u> MENTION EDR TOOLS ASK Q6 and Q7, OTHERWISE SKIP TO Q8]

SBD Field Staff Familiarity With EDR and Use of EDR Tools

6.   Do you use EDR tools to encourage participation in SBD? If so, how? (If no, ask why not?)

7.   Specifically, which EDR tools do you use? [**PUBLICATIONS**—Design Briefs, Case Studies, Commissioning Handbook, Skylighting Guidelines, eNews, the Newsletter; **SOFTWARE**—eQUEST, eVALUator, SkyCalc, EDR Charette] [PROBE FOR DIFFERENCES BETWEEN ARCHITECTS, ENGINEERS, BUILDING OWNERS. PROBE FOR DIFFERENT CIRCUMSTANCES WHERE ONE TOOL, OR TYPE OF TOOL IS RECOMENDED]

8.   Do you mention Energy Design Resources by name (in order to brand the name)?

9.   During your presentation, do you go online to demonstrate how to access and use EDR on-line tools?

10.   Do you mention the training seminars offered?
   - Do you mention the Energy Center trainings?
   - Do you mention that utility representatives can conduct trainings at their offices?
   - Do you mention the online trainings like the Virtual Workshops or EDR Lights?

[IF RESPONDENT IS NOT INDICATING A FAMILIARITY WITH THE TOOLS, EXPLORE Q11 - Q13, OTHERWISE SKIP TO Q14]

11.   How familiar are you with EDR tools? [PROBE FOR VERY, SOMEWHAT, NOT VERY]

12.   Which ones are you most familiar with? Which are you least familiar with?

13.   [IF RESPONDENT DOES NOT INDICATE THAT HE/SHE DOES NOT DISCUSS EDR TOOLS VERY MUCH] What are some reasons you do not bring up the EDR tools (more)?

14.   Have you been trained on how to use and promote Energy Design Resources? (If so, what did you learn how to do?) [PROBE FOR DETAILS OF THE TRAINING. HOW EXTENSIVE]

15.   Do you know how to talk about or explain the publications, software tools and online trainings?   Do you feel that you need additional training to give you an overview of the resources available?

16.   Do the market actors you visit ask detailed questions about these tools?

17.   Would you be able to give basic technical assistance for the software tools if someone asked you for help?

Perceptions of Market Actors

18.   Which EDR publications, trainings or software tools do you think are most useful to the people that you interact with?

19.   What changes do you think could make the tools more useful to you or to the market actors that you interact with? [PROBE FOR SUGGESTIONS FOR MODIFICATIONS]

20.   What other types of tools do you think designers need? [PROBE FOR ANYTHING SPECIFIC TO ARCHITECTS OR ENGINEERS]

Marketing

21.   Do the market actors that you talk to already know about EDR? Specifically, which tools do they use, or which publications do they know about? If they know about EDR, how do they learn about it?

22.   What are the best ways to inform architects, engineers and other design professionals about the EDR tools? [PROBE FOR DIFFERENCES BETWEEN ARCHITECTS AND ENGINEERS. PROBE FOR DIFFERENCES BY TYPE OF TOOL]

23.   Do you refer market actors to the EDR website for more information? Do you think that the website a good way to disseminate the information and tools?

24.   Can you think of anything that can help you to promote EDR better? [PROBE WITH: Do you have a cheat sheet of the resources offered by EDR and the value of the EDR resources? Would this be useful to you?]

Thank you for your time.

ODC
OPINION DYNAMICS
C O R P O R A T I O N

Energy Design Resources (EDR)
Architects In-depth Interview Guide
(10 Savings By Design Participants and 10 Non-Participants From Top Firms)
6204

My name is _____ and I'm calling from Opinion Dynamics on behalf of Investor-Owned Utilities in California (READ IF NEEDED: Pacific Gas & Electric, Southern California Edison, Southern California Gas Company, and San Diego Gas & Electric). We want to ask you about the resources and tools that you use to design commercial buildings. Your comments will help the utilities update the resources that they provide to architects. This interview shouldn't take too long—about 20 minutes or so. Do you have a few minutes to discuss Energy Design Resources and the design process?

Screeners

O1. What is your job title?

O2. Do you design <u>commercial</u> buildings in California?
   a. Yes
   b. No [TERMINATE]

O3. Which utility territories do you work in?
   f.   Pacific Gas and Electric Company (PG&E) – northern and central California (Eureka to Bakersfield, and Pacific Ocean to the Sierra Nevada)
   g. Southern California Edison (SCE) – central, coastal, southern California
   h. Southern California Gas Company (SoCalGas) – central and southern California (Visalia to the Mexican border)
   i.   San Diego Gas and Electric (SDG&E)– San Diego and southern Orange counties
   j.   (Don't know)

Awareness and Branding

   1. How would you characterize your familiarity with Energy Design Resources? [PROBE WITH: VERY, SOMEWHAT, OR NOT VERY FAMILIAR. IF NECESSARY, DESCRIBE TOOLS]

      [IF VERY OR SOMEWHAT FAMILIAR CONTINUE, OTHERWISE SKIP TO Q4]

   2. Have you been to the Energy Design Resources website or used any of their case studies or software tools such as eQUEST? [IF YES, RECORD ALL PUBLICATIONS, SOFTWARE OR TRAININGS. PROMPT WITH LIST OF TOOLS]

3. How did you find out about Energy Design Resources?

[DO NOT ASK RESPONDENTS FROM THE SBD PARTICIPANT SAMPLE Q4 or Q5]

4. How about Savings By Design? How would you characterize your familiarity with Savings By Design? [PROBE WITH: VERY, SOMEWHAT, OR NOT VERY FAMILIAR]

[IF VERY OR SOMEWHAT FAMILIAR CONTINUE, OTHERWISE SKIP TO Q6]

5. Have you ever received an incentive from Savings-By-Design?

Collaborative Design and Barriers to Working in An Integrated Fashion

6. When you are designing a commercial building, what role do engineers or energy consultants play? [PROBE WITH: How frequently do you work with engineers or energy consultants? How much do you rely on them?]

[IF RESPONDENT INDICATES THAT THEY DON'T WORK VERY CLOSELY WITH ENGINEERS OR ENERGY CONSULTANTS]

7. Are there barriers that prevent you from collaborating more with engineers or energy consultants?
a. [IF BARRIERS MENTIONED] Do you have suggestions for how to overcome these barriers?

8. What other groups are involved in the design process? [Developers? End-users?]

[IF NONE, SKIP TO Q10]

9. Energy Design Resources primarily targets architects and engineers in order to try to influence design practices. Do you think the groups that you mentioned should be targeted by Energy Design Resources? If so, how can they be targeted?

Design Process

10. How frequently do you consider energy efficient design options when designing your projects?

a. [IF NOT VERY FREQUENTLY] What are the reasons you don't? (e.g., work with engineers or others who do)

11. How often do you design buildings that go beyond current energy code requirements?

12. At what point in the design process is the energy use of the building modeled? [IF NOT ALREADY COVERED, ASK: Who does this?]

13. When you are designing a commercial building, what resources do you rely on to address questions <u>related to the energy use of the building</u>? [PROBE: consultation with others, in-house expertise (including themselves), specific modeling tools (which ones? by who?), literature provided by manufacturer]

Publications

14. How do you stay current with what is going on in the industry? [PROBE WITH: What are some publications that you find pertinent to your work? IF YOU NEED MORE FOCUS, FOCUS IN ON PUBLICATIONS OR RESOURCES RELATED TO THE ENERGY USE OF THE BUILDING]

    a. [IF THEY MENTION PUBLICATIONS] Specifically, what types of information are you looking for when you look at these publications? Do you look for design- or energy-related information?

15. Do you have a need for additional educational information?

16. Are there specific areas for which you need information or other resources? For example,
- lighting
- HVAC
- occupant comfort (thermal, acoustic, etc.)
- economics
- environmental impacts
- safety
- other non-energy issues such as productivity
- other

[PROBE FOR THE MOST IMPORTANT AREAS AND NOTE THAT THESE ARE THE MOST IMPORTANT]

17. Do you have a need for additional educational information or presentations for "making the case for efficiency" to your clients? [PROBE WITH WHY OR WHY NOT?]

18. What is the best format to get you information? How do you like it presented? (e.g., emails, mailed newsletter, case studies, web postings)

19. How often do you look to websites for industry-related information or resources?

SOFTWARE

20. When you are designing a commercial building, do you use any software tools? (For example, do you use any software that models or affect the energy use of the building such as software that would help you design the lighting or systems in a building)? If so, which ones?

21. If a software tool were being offered for free to help you improve your energy design practices to increase the energy efficiency of your projects, would you try it? Why or why not? (If not, would additional training or support make a difference?)

Training

22. Have you attended any energy- or design-related seminars, workshops or trainings in the past two years? Which ones? Any at the utility's energy center? What are your reasons for going/obstacles to not going?

23. Have you ever tried or completed a training on the computer? How does it compare to in-person trainings?

24. Are you interested in…
    a. Web-based classes?
    b. Trainings at your office?
    c. Trainings at the local energy center or community center?

25. Would you complete an online training on your own? What if you had to do it at a set time and it were proctored by a teacher that you could communicate with?

26. How can we encourage greater participation in the trainings?

Other Tools

27. Given your needs, what would you like EDR to provide to you? I'm going to read a list of four options and I would like you to prioritize the following: [RANK 1 TO 4]
    - Performance evaluation to make sure that you comply with code or to show energy savings to the client
    - A central repository of information that you can go to
    - Active education and training
    - Software tools that help you to optimize designs
    - (Other-specify)

28. Would it be helpful to have a comparison of various energy design tools, such as a breakdown of the pros/cons of available tools?

    a. [IF YES] Would you trust the comparison if it came from a developer of one of the tools, or would the information comparing the tools need to come from a neutral third party?

Marketing

We want to find effective ways to get the word out about EDR tools.

29. How can utilities do a better job of keeping you informed about the programs it offers?

30. How do you prefer to receive information?
[EXPLORE EFFECTIVENESS OF…What do you think about using…..to reach architects]
   a. Direct mail
   b. Email
   c. Trade journals (advertisements or articles)
   d. Advertising through associations
   e. Office visits to architects
   f. Newsletter with short, specific technical synopses of new technologies

31. How frequently do you consult energy center calendars or information lines?

32. How can EDR appeal to a wider audience of design professionals?

Those are all the questions I have. Thank you for your time.

OPINION DYNAMICS
C O R P O R A T I O N

Energy Design Resources (EDR)
Focus Group Guide
6204 SCE
19 May 2003

Introductions [5 minutes]

    a. Moderator Introduction
    b. Introduce Utilities, EDR/Integrated Design, and Purpose of the Focus Group
    c. Explain Focus Group Parameters (e.g., videotaping for client, utility representatives are monitoring, taping for analysis only not for broadcasting)
    d. Explain Focus Group Process (90 minute discussion among group, followed by informal interactions with client)

NOTES FOR MODERATOR:

As we mentioned in the letter, you do not have to have viewed or used the EDR tools to participate in this group. You've got a summary sheet in front of you that briefly describes the tools offered by EDR and that should be enough information for you to participate in the group.

[EXPLAIN THE USE OF THE WORD "TOOLS", i.e., tools refer to publications, software and trainings…everything on the summary sheet.]

[ALSO EXPLAIN ENERGY EFFICIENCY, i.e., Title 24 minimum requirements represent the most energy intensive building that is allowed by law but I am asking more about exceeding the minimum energy efficiency standards.]

Each of you represents a unique perspective. Some of you have used the tools or would use them in the future? Others work with people who might use them? EDR itself is geared to several different types of users and everyone's input is valuable.

Let's start off by going around and saying your name and what you do.

Intro. Questions [5 minutes]

I want to start out by asking those of you that have experience designing new buildings, what resources you currently use to address questions related to energy efficient design? [consultations with architects/engineers on-staff or outside consultants, refer to literature provided by manufacturer or consultation with manufacturer's representatives]

Think about the design process, what tools do you rely on specifically for areas that would affect the energy efficiency of the building?

By a show of hands, how many of you were aware of the EDR tools prior to being contacted for this group? [IF FAMILIAR WITH EDR, EXPLORE KNOWLEDGE OF SBD AND RELATIONSHIP BETWEEN THE TWO.]

Publications [10 minutes]

[REFER TO SIX PUBLICATIONS LISTED ON CHEAT SHEET]

EDR offers six types of publications, as shown on your summary sheet. Are any of you familiar with these? If so, what were your impressions of the publications? Did you use the information in the publications?

Which ones appear to be the most valuable? Why? [Which ones for architects? Which ones for mechanical engineers? Structural engineers?] [MAKE SURE TO ASK SPECIFICALLY ABOUT THE Cx HANDBOOK.]

Why wouldn't you use this suite of publications?

How can they be adjusted or revised to be more suitable to the needs of your field? [How about for architects? For engineers?]

How do you keep current with new design practices? Do you read publications, are you on a listserv, go to conferences, etc? What other information is out there that you rely upon for energy efficient designs?

Is there a need for additional educational information for designers? What types of information? On what topics?

Is there a need for additional education information or presentations for "making the case for efficiency" to building owners or developers?

Would something like a comparison of all energy modeling tools be something you are interested in? How about comparisons of other resources?

Software [20 minutes]

By a show of hands, how many of you have used a building energy simulation or modeling tool? Which ones? Which ones do you rely upon the most? How often?

Of the software you use, what features and functions are most important? Why do you use them?

What capabilities do you require in your energy efficiency design tools?
- Importing data/Flexible inputs?
- Interface with the user?
- Interface with other products, software or tools that you might use such as CAD? Interoperability and integration with other building tools such as CAD?

- Customizability?
- Graphical input/output?
- Defaults/error checking/help?
- Data storage?

Do the EDR offerings look like they would be applicable to your work? How can they be adjusted or revised to be more suitable to the needs of your field?

Which ones are valuable? Why? [To architects? To engineers?]

Why wouldn't you use the energy efficiency software tools? [ASK SPECIFICALLY ABOUT EACH eQuest, eVALUator, SkyCal, EDR Charrette…NOTE THAT SOME OF THESE (SUCH AS EVALUATOR) ARE FOR DIFFERENT AUDIENCES, IN THESE CASES…WHY WOULDN'T THE TARGETED AUDIENCES USE THEM]

Do the tools that you use incorporate (or work with) the new codes? Is there a need for this?

What level of detail and accuracy are you looking for? Does this differ across end-user?

Do you feel that there is a need for new tools? What additional functions would be useful to you?

During what phase of design do you use software tools? If not during the early phases of design, why not?

Would a tool that downloads CAD files to be used for energy analysis and provides alternatives for compliance with building codes be something that interests you? [Also ask about efficiency beyond the code] Do you have tools that already meet your needs?

Would an online library of high-efficient lighting designs be valuable? In what ways? How often do you think it would be used? By which groups?

Would a commissioning tool that allows you to put in the parameters of the project and gives you the forms and info to help you commission the building be helpful? In what ways? How often do you think it would be used? By which groups?

Training [15 minutes]

How many of you have attended a training on an energy related topic within the past year? On what topics?

By a show of hands, how many of you have tried or completed a training on the computer? [Web based, CD-ROM or dick or e-mailed training files?] What was this experience like? Did you learn from it? How does it compare to in-person trainings? [ASK SPECIFICALLY ABOUT UTILITY-SPONSORED TRAININGS]

Do the EDR trainings look like they would be applicable to your work? [How about to architects? To engineers?]

Which ones are valuable? Why?

Are you interested in additional trainings? On what topics?

Gauge level of interest in:
- Web-based classes, versus
- Training at your office, versus
- Trainings at a local energy center, or community center.

Are there reasons why you wouldn't use the online trainings? Reasons for not attending an on-site training?

How can we encourage greater participation in the trainings? [ASK BY PROFESSION]

Future EDR Offerings—Summary Questions [5 minutes]

If you think about the three areas (publications, software and trainings), where do you think EDR should direct their efforts?

Given your needs, what would you like EDR to provide to you? Prioritize the following:
- Design assistance
- Performance evaluation (for example, to make sure that you comply with code or to show energy savings to the client)
- A repository of information that you can go to
- Active education and training

What kinds of resources would you like to be available to you? What kinds of applications or services, for example:
- Design concepts (teaching, charrettes, case studies)
- Design optimization studies (physical, computer modeling)
- Energy report
- Tech sheets, sample specs
- Selling to client (presentations)
- Case studies
- Other

Are there specific integrated design concepts for which you need information or tools? Are there specific areas or questions within integrated design for which you need information or tools?
- lighting
- HVAC
- occupant comfort (thermal, acoustic, etc.)
- economics
- environmental impacts
- safety
- other non-energy issues such as productivity

[GOAL PRIORITIZE AREAS AND IDENTIFY BASIC AND LUXURY ISSUES]

Are there differences in building types or sectors that would require targeted resources (tools or training)? Regional differences?

How do new concepts around sustainability and sustainable design impact your business and efforts?

Marketing [20 minutes]

Are you likely to actively seek out EDR? Would you do it on-line or by calling for a CD?

How can EDR appeal to a wider audience of design professionals? Which groups? How do you think that facility managers and building operators should fit in to the integrated design process? What is the importance/relevance of their roles?

Do you think there are other groups involved in design that should be targeted? Which ones? [Developers? End-users?] How can they be targeted?

How closely should a program like EDR align itself with the "sustainability" message?

How many of you are involved in LEED (Leadership in Energy Efficient Design)? Can you think of ways to work with LEED to help promote EDR?

The EDR tools are available on the EDR website. [REFER TO HANDOUT WITH FRONT PAGE OF WEBSITE] As you can see on your handout, currently the tools are grouped by category (publications, software, trainings). What are your initial reactions to these groupings? Are there other ways that you might want the information organized and presented? By building type? By process or technology?

Have any of you been to the web site? What did you like? Dislike?

[IF THEY SUGGEST TOPIC BY TOPIC] EDR promotes the concept of integrated design? Do you think that the topic by topic approach works with this concept or should the website also try to be more integrated?

How can EDR promote the web site? What would make you go to the site?

[EXPLORE EFFECTIVENESS OF]
- Direct mail
- Email
- Search engines
- Journals
- Office visits
- Relationships
- Newsletter with short, specific technical synopses of new technologies
- Happy hours
- Advertising through associations and publications
- Calendars of events that already exist

Is there an opportunity to piggyback on manufacturer's information?

[EXPLORE DIFFERENCES BETWEEN REGIONS]

Wrap-up Questions [10 minutes]

Note that with 10 minutes left to go, I will step out of the room and check in with clients to see if there are additional areas that need to be explored.

Thank you.