



NORTHWEST ENERGY EFFICIENCY ALLIANCE

Market Progress Evaluation Report

Architecture + Energy Program, No. 1

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MARKET PROGRESS EVALUATION REPORT ARCHITECTURE + ENERGY PROGRAM, NO. 1

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EXECUTIVE SUMMARY

This report summarizes the results of the first Market Progress Evaluation Report (MPER) for the Architecture + Energy: Building Excellence in the Northwest (A+E) Program sponsored by the American Institute of Architects – Portland Chapter (AIA/Portland) and funded by the Northwest Energy Efficiency Alliance (the Alliance).

PROGRAM DESCRIPTION

The purpose of the A+E program is to encourage design professionals to use “energy efficient/sustainable building practices”¹ from inception to completion of a building project. To accomplish this purpose, the A+E program has three key components:

- An annual juried award program recognizing design excellence for energy efficient nonresidential buildings throughout the Pacific Northwest region;
- An interactive workshop held with the jury in conjunction with the award program; and
- Regional educational workshops for architects and engineers on the integration of architecture and energy in building design.

Funding for the program initially came from the Bonneville Power Administration, with supplemental support from Portland General Electric. The first awards were given in 1993. The program has been consistently well received by participants. Judges in the award competition rate the A+E program as one of the top award programs in the United States and note that it is unique in its comprehensive focus on energy and design.

The premise of the program is that a barrier to the practice of energy efficient and sustainable design occurs because architects and engineers are not fully aware and knowledgeable of the value and benefits of energy efficient and sustainable building

¹ *Architecture + Energy: Building Excellence in the Northwest*. Proposal to the Northwest Energy Efficiency Alliance, July 1997. Page 1. (Energy efficient refers to reduced energy use as the result of design and construction practices. Sustainable refers to the use of material and building practices and designs that have the lowest impact on the environment both at the time of construction and during long term operation of the facility.)

design practices. They lack awareness of the need to incorporate these practices into the earliest stages of the project. With this lack of knowledge and awareness, and little impetus from clients, integration of energy efficient and sustainable design principles is not a priority consideration.

The A+E program rests on two key assumptions about how knowledge and awareness of energy efficient design practices can be effectively transferred to architects and engineers:

1. Architects and engineers are most effectively persuaded to embrace and champion energy efficient and sustainable building practices through professional recognition and acknowledgment by peers, such as occurs in the A+E design awards process; and
2. Architects and engineers are receptive to and learn well in an interdisciplinary interactive educational workshop format.

As an exit strategy, plans call for developing within five years other sources to fund up to 50% of A+E's ongoing implementation, perhaps serving a larger geographic area.

ALLIANCE FUNDING AND CRITERIA FOR VENTURE SUCCESS

The Alliance funded the A+E program in October 1997 with a maximum of \$500,000 for a two-year effort. The Alliance set success and progress indicators for A+E and contracted with Research Into Action, Inc. (RIA) to conduct an evaluation of the program.

The evaluation of the A+E program is designed both to provide data for assessment of progress toward program success and to provide a characterization of the commercial building design market. This first MPER characterizes the design market, identifies barriers to energy efficient and sustainable commercial building design, and assesses which barriers have been reduced by the A+E program. In addition, the MPER analyzes the responses of past A+E participants to determine the effect of the program on their design practices.

The data we collected included interviews with 41 past participants, focus groups with 29 nonparticipants from Seattle and Portland, interviews with two program staff members and three steering committee members, and a review of the program mailing list provided to us in January 1999.

PROGRAM SUCCESS

Interviews with participants and nonparticipants demonstrated that the A+E program is held in high regard by the architectural community in the Pacific Northwest. Those who attend A+E programs were enthusiastic about the program and the quality of information they received. Over half of the participants we spoke with reported that the A+E program had influenced their design practice. Yet the program influence is limited, because it has been targeted primarily at architects and available mainly to those who are able to attend events in the Portland and Seattle metropolitan areas. There remain many market participants in the commercial design process who are not affected by the program.

The criteria for success of the A+E program requires an increased percent of energy efficient and sustainable design to occur in the region “two years after Alliance support ends.” At the end of this first year of funding the program made steps toward increasing regional participation in the program.

This was accomplished through the first regional workshop in Boise, Idaho in October 1998. Another workshop was scheduled for Spokane, Washington in April 1999. Other indicators of progress toward that goal were less than hoped for. Entries to the award program were lower than expected and participation in the program was small with attendance largely by Portland area architects.

There are important explanations for the slow progress in 1998:

1. The project got off to a slow start due to a lengthy Alliance decision process and subsequent contract negotiations. This delayed program start-up by five months.
2. Seattle and Portland were in the middle of a boom building period. This led to two problems, first architects reported little time available to submit proposals and some felt that few projects were completed in time for the 1998 award program.
3. Architects contacted to submit projects responded that their buildings were not particularly noteworthy (i.e., not energy-efficient enough).
4. Confirmed attendance of 40 at the award day workshop dropped to 28 due to weather problems in Seattle area.

Within this context, the evaluation provides evidence of initial progress toward the goal. This progress is detailed below relative to each of the five progress indicators defined by the Alliance staff.

- *The awards program receives a balance² of entries from around the region. Compared to the entries received in 1997, no change was observed in 1998 in terms of a balance of entries from the region. In 1998, the majority of entries were from Western Oregon based architectural firms for Western Oregon located projects.*
- *Attendance at the awards function and field workshops meets or exceeds targets set by the steering committee. The steering committee reported goals of maximum of 50 participants for the 1998 award program. With a very busy building year for architects, the award program did not meet its goal, 40 confirmed but 28 attended. The 1998 workshop in Boise, Idaho did not have a set goal, but had 35 attendees.*
- *Participants in the awards events and field workshops take action to apply energy efficiency concepts in their designs. The interviews with workshop participants and A+E award recipients indicated that over 50% take actions to apply energy efficiency concepts they learned from the A+E program in their designs.*
- *Entrants indicate that interest in the awards influenced their design submittals and other projects. Over 90% of the participants reported that the A+E Program had either a direct or an indirect effect on projects completed after participation. No entrants reported that the award influenced their design; however, one nonparticipant indicated that interest in the award on the part of a building owner had influenced his firm to design for and prepare and submit an entry.*
- *Non-Alliance sources provide at least 15% in matching funds for operating the program by the end of Alliance funding. Contacts were made with potential funders in 1998, but no funding sources committed to funding.*

There remains opportunity to improve the performance of the A+E program and facilitate progress toward its goals. Fundamental to capturing the opportunity is

² The Alliance did not define "balance." We interpret balance to mean proportional entries relative to commercial building square footage in the four-state region.

modifying the program to respond to the characteristics of the commercial building design market.

MARKET ASSESSMENT

The market targeted by the A+E program is the market for commercial building design in the Pacific Northwest. Whenever a landowner or building owner contracts for design services for a new building or to alter an existing building, they are operating in this market. The A+E program specifically targets three of these market participants, architects, engineers and owners.³ The following describes the participants in this market:

- *The landowner, developer, or building owner;*
- *Possibly the owner's agent – a construction or project manager to oversee the project;*
- *The architect;*
- *The various design consultants – e.g., mechanical engineer, lighting designer, electrical engineer, landscape architect, interior designer, structural engineer, civil engineer;*
- *The general building contractor and various sub-contractors – e.g., HVAC contractor, electrical contractor, sheet metal fabricators, plumbers; and*
- *The end-user – building occupants who might own or lease the facility.*

Based on comments from architects, design services in the Pacific Northwest range between traditional design and design-build. The fundamental differences between the strategies lie in how the owner contracts for services. In a traditional design strategy, the owner contracts with architects and general contractors who in turn contract with consultants and sub-contractors. In a design-build strategy, the owner contracts independently with architects, consultants, the general contractor, and sub-contractors. In both situations, architects and engineers are involved in the projects as prescribed by law, but their role in the decision making process varies.

³ *Architecture + Energy: Building Excellence in the Northwest*. Proposal to the Northwest Energy Efficiency Alliance, July 1997. Page 2.

The comments of those we spoke with suggest that traditional design predominates among institutional, corporate and owner-occupied building design, especially for new construction; while the design-build strategy predominates among new construction of franchises, chains, and speculative commercial buildings and is the primary strategy for tenant improvements. Based on comments from Seattle architects, it appears that design-build is an increasing part of the commercial building construction market share, dominating design east of the Cascades and increasingly important west of the Cascades.

The increased use of design-build strategies has significant consequences on key design decisions. In design-build settings the architects we spoke with indicate they have very little influence on the design of anything but those things required by law, such as the exterior of the building. They also often have a role in interior layouts. The effect of the design-build approach is to place the majority of design decisions about energy efficient and sustainable building practices decisions with the owner or the owner's agent. Integrated design is very difficult to accomplish in a design-build setting.

The potential number of market participants in the Pacific Northwest is substantial. The total number of registered resident architects in the four-state region is 5,528. Estimates from AIA and other architects suggest that about 40% design commercial buildings, leading to a market of at 2,211 architects for the A+E program, presuming all of them are currently practicing. The size of the full market population for commercial design is likely to be much greater than that of architects alone.

Architects learn new tools and techniques in a variety of environments. The two most preferred formal learning formats were conferences and publications. Other environments less frequently used include Web sites, recognition awards, participation in professional organizations, associations, and workshops.

Our conversations with architects identified a multitude of market barriers to energy efficient design. These barriers affect the behavior of both architects and other market participants.

Barriers That A+E Could Target

The following market barriers are those that architects we spoke with consider important and that could be addressed by the A+E program

Lack of Awareness

Lack of awareness is a barrier if the market participants are unaware of energy efficient and sustainable building practices. We found architects and engineering consultants to be aware of the possibility and general benefit of energy efficient design, thus there is no market barrier from lack of awareness. However, architects characterize owners and contractors as highly unaware.

Performance Uncertainty

Performance uncertainty is a barrier when market participants are uncertain that the energy efficient and sustainable building practices will deliver the energy savings expected. A+E addresses this barrier by showcasing built examples of energy efficient design, demonstrating the acceptability of such design and the applicability to a variety of projects. However, architects commented that the program does not directly demonstrate for them or other market participants the reliability of energy efficient features or the functional implications nor does the current format reduce uncertainty about energy and non-energy benefits that accrue from energy efficient and sustainable design practices.

Information and Search Costs

Information and search costs are a barrier when it is costly in time or money for market participants to search for and obtain information about energy efficient and sustainable building practices. The architects we spoke with indicated that they face high information and search costs, which the owner seldom covers. Architects commented that the A+E program does not address this barrier in its current format, though it could.

Hassle costs

Hassle costs are a barrier when market participants have difficulty in doing the calculations required to determine whether a product or design solution is cost effective for the owner as well as the hassle of evolving effective integrated design teams. A+E facilitates architects meeting skilled consultants who can assist them with cost-effectiveness assessments or participate on design teams, this reduces some of the hassle costs. Architects note that the program does not reduce the hassle costs associated with doing the calculations, though it could.

Organizational Practices

Organizational practices are a barrier when an organization's design practices cannot be modified to include energy efficient and sustainable building practices. The A+E program clearly targets this market barrier for both architects and consultants though not for owners and contractors.

Barriers Outside of the A+E Purview

The following market barriers are considered by architects to be barriers to energy efficient and sustainable design practices, but are not in the potential purview of the A+E program.

Split or Misplaced Incentives

Split or misplaced incentives are a barrier when the decision-maker for commercial building design decisions is different from those who operate the building. Only in owner-occupied projects are the incentives sufficiently aligned that operating costs and construction costs are assessed in tandem. In most construction settings, the owner of the building will not operate it. The owner has an incentive to lower the up-front costs of the project without regard to long-term operating costs.

Low Energy Costs

Low energy costs are a barrier to energy efficient and sustainable design if the costs and benefits do not align. The architects we spoke with see low energy costs as a barrier to energy efficient design in the Pacific Northwest, though not to sustainable design. Owners are more likely to accept sustainable design solutions than energy efficient solutions because of the appeal of the variety of quality-of-life issues involved in sustainability.

Structural

Structural barriers occur when existing conditions in buildings limit the opportunities for energy efficiency. Architects report that energy code requirements do not affect most design activities in existing buildings. This limits the impetus to look for energy efficient solutions. A second barrier concerns the cosmetic focus of much design work in existing construction; owners typically change out systems only if necessary to attain some cosmetic or functional goal. This barrier affects designers, consultants, contractors, and subcontractors.

Access to Financing

Access to financing is a barrier if market participants cannot obtain financing for energy efficient and sustainable designs. Owners typically finance projects using short-term loans. Interest rates on these loans are often high and time is of the essence. In this context, it is difficult for architects to justify the additional time and expense to conduct research and analysis of potential energy efficient features.

Asymmetric Information

Asymmetric information is a barrier when one party to an exchange has more information than another party and makes claims that cannot be verified by the person with less information. Product manufacturers make claims the consultants, owners, architects, contractors and end-users are often unable to test without proprietary information, large quantities of materials, or specialized equipment or training.

FINDINGS AND RECOMMENDATIONS

The findings and recommendations follow from this evaluation research. We have organized them into four topic areas: reconsideration of what is award-worthy, expanding the program, getting program results to those who can use them, improving the quality of program data, and using A+E to address market barriers in commercial building design.

What is Award-Worthy?

Over the years, using the definitions of energy efficient design practices to guide their selection process the A+E program has made awards to some outstanding examples of energy efficient and sustainable design. Architects we spoke to also report that awards have been given for designs that incorporate energy efficient features but either do not go beyond code or are not otherwise particularly noteworthy.

Some of the people we spoke with believe that awards should go to “truly special” buildings. An opposing viewpoint was expressed by a number of the architects who have and how have not participated in the A+E program but actively incorporate energy efficient and sustainable features in their buildings. According to these architects, the design market can be best transformed by designers who seize on the myriad of small opportunities for increased efficiency and sustainability in every

building, independent of client commitment. Respondents holding this view believe that an educational program that only promotes stellar energy efficiency examples will create an impression among designers that energy efficient and sustainable design can only occur in the perfect project for the perfect client.

Another set of findings concerns the need to obtain greater involvement in the A+E program by clients and consultants. One way to do this, suggested by a number of participants, would be to involve them in the awards ceremony to a greater extent than has occurred to date. Some suggestions offered by the architects we spoke with are:

- *Create several types of awards.* One type would recognize outstanding examples of energy efficient design. This award might be given less frequently than annually, if necessary due to a small pool of qualifying buildings. A second type of award would recognize the many small things that can be done to enhance efficiency and sustainability. This award might include recognition of particularly creative solutions to design problems, and would follow the model set forth in the 1998 program. A third type of award might recognize all buildings appropriately involved in the program, an approach also implemented in 1998.
- *Continue to use the submittal requirements developed for the 1998/99 programs in 2000.* These appear to be easier for architects and consultants to prepare. However, submitters should be queried about their experience to determine if the requirements can be further modified for 2000.
- *Publicize different award categories and the philosophy used to define them.* If some award categories are preset as suggested above, it will be important to publicize the different award categories and the philosophy around recognizing different categories to set expectations for attendees as well as submitters, and to inform the national community of the achievements of award recipients.

Expanding the Program Targets

Our analysis of the mailing list we were provided found that the A+E program currently targets AIA members in the Pacific Northwest region, though the

program proposal indicated they would target architects, engineers and owners.⁴ The market assessment identified other market participants in the commercial building design market who are viewed by architects as critical in bringing about energy efficient and sustainable practice.

In addition to a limited target market, architects in Seattle view the A+E program as a Portland-based program. The award program was held in Seattle two years of the first six and a workshop was held in Boise in October 24. Over the years submissions and winners have come from architects throughout the region, yet Oregon projects dominate the awards and Oregon firms dominate the attendance list. We offer the following recommendations as a means for expanding the program:

- Expand on current efforts to reach out to mechanical and electrical consultants through advertising the A+E program in engineering association newsletters, through presentations to consulting firms, and through coordination with and presentations to the engineering associations.
- Continue to reach out to other AIA chapters and engineering associations in the region, offering to include them as co-sponsors of the A+E program (at no cost) and offering technical assistance to help their members prepare award submittals. Also consider including owner and developer organizations; one to consider would be Building Owners and Managers Association (BOMA).
- If the award suggestions made herein are adopted such that all appropriate submittals are recognized, send invitations for program workshop and award presentations directly from the AIA/Portland Executive Vice President to the owners, consultants, contractors and subcontractors for all projects submitted to the A+E award program. Inform the architects that this outreach is part of the A+E program.
- Publish a list of consultants who have been on award-winning teams or who have attended A+E workshops, updating it periodically. Make this list available to architects throughout the region and inform consultants that this list exists.

⁴ The mailing list we analyzed had 2,653 names. We subsequently learned that A+E also has a mailing list with an additional 2,500 names. Our results therefore are only valid if there is no systematic bias in the list we analyzed compared to the complete list. The full list will be analyzed as part of the 1999 evaluation.

- **Expand the steering committee to include representatives from other utilities and associations in the region. Meetings can occur through telephone conference calls. The expanded committee could be involved in just one or two meetings a year. For example, one meeting could be held at the outset of the program year to focus on the program structure and content, and another meeting held during the project solicitation period to flush out additional ideas for identifying projects and providing technical assistance where needed.**

Getting the Results to Those Who Can Use Them

The advertorial⁵ is well received by A+E award winners. Many were unaware of the amount of press and publicity they would receive after winning the award. While some found the award mainly a personal accomplishment, others noted that the advertorial contributed to their marketing capability. The advertorial also has been a significant tool for gaining national prestige for the program.

The architects we spoke with frequently noted that the pictures used for the advertorials did not tell them much about the energy efficiency solutions used in the building and that the text accompanying the pictures did not give them what they really need: the numbers (i.e., how much was the additional cost, if any, and what benefit did they get for that cost).

In addition to wanting more technical information in the text, respondents also noted that the audience needs to expand beyond architects if the program is going to change design practice. In particular, information about the feasibility and financial and nonfinancial benefits of energy efficient sustainable design needs to reach owners, consultants, and contractors. Given these considerations we offer the following recommendations:

- *Expand the reach of the advertorial.* Currently the advertorial is run in one architecture magazine. Other venues that might consider this event newsworthy should be explored, such as: *CEO Magazine*, *Engineering News Record*, and *Energy User News*. Trade publications associated with the businesses of the building owners might also be interested in a news story or in a shorter version of the advertorial featuring a single building.

⁵ An advertorial is an information piece, which the A+E program pays to run in a major architectural magazine. It is paid for as if it were an advertisement, but since it is informational in content, it is termed an advertorial.

- *Include “the numbers” and other information characterizing costs, benefits and performance factors for the projects – both energy and non-energy factors – relative to standard practice. Measured savings data are not necessary.*
- *Develop case studies of award winning projects and publish those for use by architects and consultants. These case studies should include “the numbers” as well and would be especially valuable if they included operating costs.*

Program Data

Program data are important as a means for conveying the progress of the program. The current data sources on the program need attention. The mailing list we reviewed is slightly larger than the Pacific Northwest AIA membership list. The numbers of attendees to the workshop are confusing to interpret.

Better tracking of participants is critical. Accurate tracking is necessary to demonstrate that professionals are interested in A+E and energy efficient sustainable design. It also provides a tool for program coordinators to use when they need to identify potential participants for future programs. We offer the following suggestions:

- *Have a consistent sign-up sheet available at every A+E event even those affiliated with other organizations. The sign-up sheet should include a place for attendees to note their name, profession, firm affiliation, job title, mailing address, phone number, and e-mail address.*
- *Expand the mailing list to include more mechanical and lighting consultants and other design firms.*
- *Consider revising the data sets to readily permit comparisons of participants’ names and firms with mailing list names and firms, and to count unique firms as a measure of outreach into the market. Inputting these into a relational database would be valuable. Given that most of the current data are in spreadsheets, use of a database such as *Microsoft Access* may be the easiest solution as spreadsheets can be uploaded into *Access* after the database design is specified.*

Using A+E to Address Market Barriers

The A+E program directly targets two market barriers in the new commercial design market: performance uncertainty and organizational practices for architects and consultants. If the recommendations above are implemented the program can more effectively target these two barriers and can expand to address additional barriers, such as hassle costs, search and information costs, and lack of awareness for other market participants (e.g., owners and contractors).

Table ES-1 identifies the barriers to energy efficient and sustainable commercial building design. Dark shaded boxes indicate the barriers currently addressed by the A+E program. Lightly shaded boxes are barriers that could be addressed by the A+E program following the recommendations in this report regarding outreach activities and the advertising materials used to publish its accomplishments.

**Table ES-1
BARRIERS TARGETED BY A+E**

OWNER	ARCHITECT	CONSULTANTS	GENERAL CONTRACTOR	SUB-CONTRACTOR	END-USER
Lack of awareness			Lack of awareness	Lack of awareness	Lack of awareness
Performance uncertainty					
Search costs					
	Hassle costs	Hassle costs			
Organization Practices					
Split incentives					Split incentives
Low energy costs					Low energy costs
	Structural	Structural	Structural	Structural	
Access to financing					
Asymmetric Information					

The A+E program could be the most effective program for addressing these barriers, though it is not the only way. The A+E program is well known and respected by the architecture community in the Pacific Northwest and would likely be recommended by architects to owners, consultants and contractors if the recommendations were implemented and the program truly expanded to reach more broadly into the commercial building design community.

Executive Summary



1. INTRODUCTION

This report is the first Market Progress Evaluation Report (MPER) for the Architecture + Energy: Building Excellence in the Northwest (A+E) Program sponsored by the American Institute of Architects-Portland Chapter (AIA/Portland) and funded by the Northwest Energy Efficiency Alliance (the Alliance). This introduction presents a brief description of the A+E program and the MPER.

PROGRAM DESCRIPTION

The purpose of the A+E program is to encourage design professionals to use energy efficient and sustainable practices from inception to completion of a building project. To accomplish this purpose, the A+E program has three key components: an annual award program recognizing design excellence for energy efficient nonresidential buildings throughout the Pacific Northwest region; an interactive workshop held with the jury in conjunction with the award program; and regional educational workshops for architects and engineers on the integration of architecture and energy in building design.

The concept of a regional award program for energy efficient design excellence was proposed in 1991, and the first awards were given in 1993. Through the sixth award program in 1998, the program has been consistently well received by participants. Judges in the award competition rate the A+E program as one of the top award programs in the United States and note that it is unique in its comprehensive focus on energy and design.

The premise of the program is that a barrier to the practice of energy efficient and sustainable design occurs because architects and engineers are not fully aware and knowledgeable of the value and benefits of energy efficient and sustainable building design practices. They lack awareness of the importance of incorporating these practices into the earliest stages of the project. With the lack of knowledge and awareness, and little impetus from clients, full integration of energy efficiency sustainable design principles is not a priority consideration.

The A+E program provides a demonstration to architects and engineers that energy efficient design can be aesthetically and functionally effective. In addition to the awards and award-day workshop, a regional workshop program transfers the experience of the winning projects to architects and engineers to locations other

1. Introduction

than Seattle and Portland. A key component of the A+E program is the interactive interdisciplinary teaching that occurs in these workshops.

The A+E program rests on two key assumptions about how knowledge and awareness of energy efficient design practices can be effectively transferred to architects and engineers:

1. Architects and engineers are most effectively persuaded to embrace and champion energy efficient and sustainable building practices through professional recognition and acknowledgment by peers, such as occurs in the A+E design awards process; and
2. Architects and engineers are receptive to and learn well in an interdisciplinary interactive educational workshop format.

As an exit strategy, plans call for developing within five years other sources to fund up to 50% of A+E's ongoing implementation, perhaps serving a larger geographic area.

ALLIANCE FUNDING AND CRITERIA FOR VENTURE SUCCESS

The Alliance funded the A+E program as a venture in October 1997 with a maximum of \$500,000 for a two-year effort. During the two years, AIA/Portland will continue the nationally-recognized award program and provide regional workshops and other opportunities to work with architects, engineers and building owners in the Northwest.

The Alliance has set the following success and progress indicators for A+E.⁶

⁶ *Criteria for Success of Alliance Projects.* The Northwest Energy Efficiency Alliance, Portland, OR. Draft Final 9/3/98.

Alliance Criteria for Success of A+E Program

Goal: Increase the extent to which architects and engineers include energy efficiency as a key component of the design process.

Definition of Success: Architects and engineers incorporate energy efficiency concepts in five percent of their largest projects. The private and/or public sector supports an ongoing education and recognition program within 2 years after Alliance support ends.

Progress Indicators:

- The awards program receives a balance of entries from around the region;
- Attendance at the awards function and field workshops meets or exceeds targets set by the steering committee;
- Participants in the awards events and field workshops take action to apply energy efficiency concepts in their designs;
- Entrants indicate that interest in the awards influenced their design submittals and other projects; and
- Non-Alliance sources provide at least 15% in matching funds for operating the program by the end of Alliance funding.

EVALUATION ISSUES

The evaluation of the A+E program is designed both to provide data for assessment of progress toward program success and to provide a characterization of the commercial building design market.

As described, the A+E program rests on two specific assumptions about how the knowledge and awareness of energy efficient design practices can be transferred to architects and engineers. If these assumptions are valid, then the program as it has been designed and implemented holds much promise to influence the target market, to generate additional funding, and to expand to a larger geographic area. If, however, the assumptions are not valid, then the program – even if executed in the most effective manner – will be unlikely to have a transforming effect on the intended target market.

The key evaluation issues occur in two areas. The first area is to understand the market structure and its relation to program assumptions and the second area to assess whether the program is having an impact on the market. This first MPER characterizes the design market, identifies barriers to energy efficient and

1. Introduction

sustainable commercial building design, and assesses which barriers the A+E program reduces. In addition, the MPER analyzes the responses of past A+E participants to determine the effect of the program on their design practices.

The data we collected included interviews with 41 past participants, focus groups with 29 nonparticipants from Seattle and Portland, interviews with two program staff members and three steering committee members, and a review of the program mailing list we were provided. A detailed description of the methodology for the evaluation is presented in Appendix A.

OUTLINE OF THE REPORT

The report is organized to provide the Alliance and other interested parties with information for decision making. Following this introductory chapter, the second chapter presents a review of the A+E program from staff, steering committee, and participants' perspectives and addresses whether the A+E program has made progress toward achieving successful market transformation as of 1998. The third chapter presents an assessment of the commercial building design market based on data collected from participants and nonparticipants about the market for energy efficient sustainable building design services. The fourth chapter presents our conclusions and recommendations for the A+E program.

Four appendices provide a description of the evaluation methodology, the participant interview findings, the nonparticipant focus group findings, and copies of data collection instruments.

2. ASSESSMENT OF A+E

STAFF AND STEERING COMMITTEE ASSESSMENT

In 1991, John Perry, then of the Oregon Office of Energy, approached the Bonneville Power Administration and the AIA/Portland Board of Directors with the concept of a regional energy award program focused at the design community. The Architecture + Energy: Building Excellence in the Northwest (A+E) program was born from this vision. The first program award year was 1993 and included a daylong workshop.

The A+E program is coordinated by a steering committee whose size ranges from six to 12 members. The steering committee works with the Executive Vice President of the AIA/Portland chapter to coordinate the event. In 1998, AIA/Portland hired a new program coordinator to oversee the project on a day-to-day basis. The current program coordinator had previously served on the steering committee and brings significant experience to the position.

The workshop sessions have evolved over the six years of program operation. The most popular part of the workshop has been the “Jury with the Jury,” a two to three hour session in which small groups of workshop participants meet with jury members and discuss projects submitted to the award program. In 1997, a session called “Lessons Learned” was added. This session includes presentations by past award winners discussing lessons that they have learned from their projects. The awards are usually presented during a reception at the close of the day.

Goals

Program staff and steering committee members see the goals of the program as primarily educational. All who we spoke with discussed how the award program should have an effect on the way architects design buildings. The members of the steering committee and staff see the program as focused primarily at architects. Three members espouse program goals of helping architects to realize that an attractive building can be energy efficient and to approach their design work with new ways of thinking about energy efficiency. Two members hold the goal of encouraging integrated design practices through the program.

Objectives

Workshop and Award Program

A+E did not achieve its programmatic objectives in 1998. The number of entries (9) was lower than the target of 10-15. The maximum goal for the award-day workshop was 50, the number of confirmed participants for the award-day workshop was 40, only 28 were able to make the event due to weather complications in the Seattle-Tacoma area. Those interviewed offered three primary explanations for this:

1. The A+E program got off to a late start because the Alliance funding approval cycle delayed program implementation by five months. Typically, the A+E program cycle begins in September. The 1998 project could not begin until February, after the contract was signed.
2. Seattle and Portland were in the middle of a boom building period. Two factors coincided because of the boom, first there were few projects that had been completed in time for the 1998 award program. Secondly, for those that were completed, architects did not have time to put entries together. Steering committee members were optimistic that 1999 and 2000 will have a much larger pool of completed projects from which to draw and that architects will have more time as the boom as slowed.
3. When the project coordinator called architects to suggest they might have a building to submit, many responded that their buildings were not particularly noteworthy, i.e., not energy efficient enough.

The steering committee and program staff began actively marketing the 1999 program in September 1998. The AIA/Portland Web site had materials for the 1999 program available by December 1998. The program coordinator is expanding marketing strategies. These include more meetings at architectural firms in Portland and Seattle and expanding the scope of outreach activities to include advertisements in Pacific Northwest engineering association newsletters, in addition to AIA chapter newsletters.

Staff and steering committee members report that in some years it has been difficult to attract entries to the award program. Attempting to remedy this situation, staff directly solicit projects from firms who are known to do energy efficient design and have permitted any completed building that has not received an award to be submitted – even if the building is several years old. Some steering committee members dislike these solutions. They suggest that soliciting entries from firms known to do energy efficient design may result in too few new ideas; including buildings that are several years old may create the impression that the

program is grasping at straws to find qualified buildings. On the other hand, committee members note that these solutions have resulted in some submittals that were especially noteworthy and good examples from which other architects can learn.

Tables 1 and 2 provide a comparison of 1998 to previous years for location of firms entering projects and for location of projects. These tables show that the entries have consistently tended to come from Western Oregon firms, though the projects have been somewhat spread across the region, they do not reflect the distribution of commercial construction in the region. In 1998, the distribution showed no change over the previous years.

Table 1
PROJECTS SUBMITTED BY LOCATION OF ARCHITECTURE FIRM*

LOCATION	1993	1994	1995	1996	1997	1998	TOTAL**
Western Oregon	12	4	7	7	6	8	44
Western Washington	5	3	3	4	2	1	18
Eastern Oregon							0
Eastern Washington	2		2	1			5
Idaho	2			3	1		6
Montana			1				1
Other	1	1	1				3
Total	22	8	14	15	9	9	77

* The numbers for each year reflect total number of projects submitted, some firms may submit multiple projects.

** The total represent total number of submittals, some projects were submitted in multiple years.

2. Assessment of A+E

Table 2
PROJECTS SUBMITTED BY LOCATION OF PROJECT*

LOCATION	1993	1994	1995	1996	1997	1998	TOTAL**
Western Oregon	9	3	5	6	6	8	37
Western Washington	9	4	6	5	2	1	27
Eastern Oregon	1						1
Eastern Washington	1		1	2			4
Idaho	2	1	1	2	1		7
Montana			1				1
Other	1	1	1				3
Total	22	8	14	15	9	9	77

* The numbers for each year reflect total number of projects submitted, some firms may submit multiple projects.

** The total represent total number of submittals, some projects were submitted in multiple years.

Regional Workshops

The A+E program sponsored its first regional workshop in 1998. The workshop was held in Boise, Idaho as part of AIA Idaho Conference '98, October 24, 1998. Thirty-five individuals attended the conference, with somewhat fewer attending the A+E session. The session included a case study presentation by an award-winning eastern Washington project.

Future workshop locations are being identified through contacts with AIA chapters throughout the region. A second workshop is schedule for Spokane, Washington in April 1999, and the Eugene, Oregon, AIA chapter has expressed interest in hosting a workshop.

The format for the workshops is to use a past award-winning project as a case study teaching tool. Members of the award winning team make the presentation and lead the discussion. Since the Spokane workshop will not be part of a conference program, staff and steering committee members see the Spokane workshop as the first true test of architect response to the regional workshop concept.

Market Response

Market response includes how other AIA chapters around the region and nationally respond to the program, how participants and award winners view the program, and how the awards are marketed nationally.

Regional and National Response

The steering committee members we spoke with did not have any specific knowledge of national market response to the program, although program staff had received some feedback.

Market response over the six years of implementation has included several national organizations requesting information about the A+E program, including a Utah utility that adopted the program concept. In 1998, there were no additional requests for information, although in 1998 the Seattle NW Regional Sustainable Building Action Team began discussing developing a sustainable building award program that would be similar to A+E.

Most of the steering committee and the A+E staff expressed puzzlement over the difficulty encountered in attracting architects from all areas of the region. Few entrants have come from east of the Cascades or even from the Puget Sound area. One Seattle award-winning respondent and several Seattle workshop attendees expressed disappointment about the lack of participation among Seattle-area architects.

Committee and staff members wondered whether sponsorship of the program by AIA/Portland has contributed to the lower levels of participation by others in the region. A brief interview with AIA staff in Seattle suggested that there may be some truth to this. The Seattle AIA staff members stated that each AIA chapter focuses on their own members and own programs; attention to programs conducted by other chapters is minimal. Seattle focus group participants, however, did not convey any negative response to AIA/Portland's role as program sponsor.

A+E Participant Response

Program staff are aware of more than ten firms who advertise they won the award, two firms who have gone to award winning buildings to observe and study them prior to submitting a project for award consideration, and three consultants who have contacted A+E staff for technical information on award-winning projects.

2. Assessment of A+E

(More information about participant response was obtained from participant interviews and is described in a subsequent section of this chapter.)

National Marketing Efforts

A significant component of the A+E program, from a market analysis perspective, has been the advertorial used to publicize the winners in a national architecture magazine.⁷ In 1998, *Architectural Record* had been selected as the venue for the advertorial. However, in May, the *Record* omitted the advertisement for the A+E program. In response, the A+E program arranged for *Architecture* magazine to carry the advertorial. The program will use *Architecture* for its national advertising in 1999.

RECOMMENDATIONS

The committee and staff members generally view the A+E program as the best way to influence architects. As one said, it is “a soft sell, keeps energy in their mind.” Most members commented that among the program’s greatest strengths are the quality of the jury and their hands-on demonstration of the value of interdisciplinary effort and integrated design.

Steering committee and staff members also had suggestions that might improve the program.

- Include a component in the workshop on how to build an integrated team, including team building, communication, and leadership training.
- Include British Columbia, making A+E a truly regional program serving the Pacific Northwest.
- Expand the offer of technical assistance to help architects complete the entry forms.
- Continue to focus on getting a few good buildings and learning from these buildings, rather than trying to get a specific number of entries.

⁷ An advertorial is an information piece, which the A+E program pays to run in a major architectural magazine. It is paid for as if it were an advertisement, but since it is informational in content, it is termed an advertorial.

PARTICIPANT ASSESSMENT

Participants in the A+E program include people who submitted buildings for award consideration (and who may or may not have attended the awards ceremony) and non-submitting people who have attended the awards ceremony, the educational workshops, or both. We interviewed 41 participants, 17 of whom had submitted buildings for award consideration between 1993 and 1998, and 24 who had attended the workshop between 1996 and 1998 and had never submitted projects. Of the 17 respondents who had submitted buildings, 15 had won awards and 2 had not.

We sought to ask all relevant interview questions to all of the respondents. However, a number of respondents indicated at the outset that they had available less time than the average interview was lasting. For these respondents, we skipped some or all of the program assessment questions so that we might focus on questions addressing the design market, the influence of architects on the market, and the support architects might need to have a greater influence on the market.

Of the 41 A+E participants interviewed, 30 respondents elaborated on their assessment of the A+E program, both the workshop and the awards ceremony, if they attended both. In addition, two other respondents who were pressed for time gave cursory comments assessing the program. The other nine respondents who did not comment on the program included award submitters who did not attend the program and respondents whose time constraints led us to restrict our questions.

Direct Influence of the A+E Program

Table 3 summarizes respondents' assessment of the influence of the A+E program on their design practices.

Four respondents said that they used ideas they obtained from the A+E program in a specific design project.

Fourteen respondents said that the program has directly influenced their design work (although not any project specifically), such as providing them with useful techniques, examples proven in the field. Three of these respondents noted that the program gives them a tool for persuading clients or for supporting suggestions they make to clients. Two people spoke of the value of seeing examples of small techniques that make a difference. "It helped me to realize I don't need to wait for the perfect client, rather I can seize small victories on any project." "It is possible to do this [energy efficiency] even without a big budget. Small investments with quick paybacks are possible." This was also the perspective of an award-winner. One person said that his firm now considers sustainability issues earlier in a project.

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Table 3
INFLUENCE OF A+E ON PARTICIPANTS' DESIGN PRACTICES
(N=30)

A+E INFLUENCE ON DESIGN	NUMBER RESPONDING
A+E Ideas Used In Specific Project	4
A+E Ideas Directly Influence Practice	14
A+E Ideas Indirectly Influence Practice	10
No Influence On Practice	2

Ten respondents said the program influenced them indirectly, by increasing their awareness of the importance of energy efficiency.

Only two respondents said the program had no influence on their design work.

Award-winners were asked the benefits that resulted from winning the award. Their answers are summarized in Table 4.

Table 4
BENEFIT OF AWARD FOR DESIGN PRACTICE
(N=15)

BENEFIT OF AWARD	NUMBER RESPONDING YES
Specific Benefits Described	10
Indirect Benefits Described	5

Ten award-winners described specific benefits related to their marketing or their design practice. The award “credentials” them or provides “confirmation” of their claim to expertise in sustainable or environmentally-sensitive design. They use their award-winning projects to demonstrate features they are proposing. One respondent said, “It’s a very prestigious award. Our client was delighted.” This respondent went on to say that the awards are a “valuable tool for getting clients to spend the time, energy, and money to do the right thing.”

Another respondent said that having won an award “ups the ante” for the firm’s management, increasing its commitment to sustainability. This respondent said that the firm now considers sustainability issues earlier in the design phase.

Several respondents noted that the process of completing the award submittal “honed” their presentation skills with respect to the issues of energy efficiency and sustainability. They have drawn on the photographs, prose, and even calculations made for the application for subsequent marketing efforts.

Five award-winners described obtaining indirect, including personal, benefit from the award. They got media publicity and reprints of articles useful in marketing. They include the award in their statement of qualifications and their resumes. Yet they felt the award held low value in terms of business development with prospective clients.

They described benefits accruing to them personally, such as speaking opportunities and the satisfaction of obtaining an award that is meaningful to them. One respondent said the benefits were “all personal. I have gotten no work from it. But it’s been very, very satisfying since it has been a tough process to get anything [energy efficient] accomplished [in projects].” Respondents noted that they enjoyed the recognition from their peers.

These respondents noted that the award served to increase awareness in the firm of sustainability issues and to increase the commitment and involvement of some firm members. It serves as a morale-builder for the members of the firm that are most interested in energy efficiency and who are frequently disappointed that they can’t do more in their projects.

Overall Assessment

Nine respondents described the program, either in its entirety or specific sessions, in superlative terms: “wonderfully done,” “great program,” “extremely interesting,” “quite impressed by the whole thing.” One person said, “The whole concept of recognizing good architecture that has good energy efficiency is an incredibly wonderful thing. I love that. It’s wonderful to have a venue for projects that have extra effort.”

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Seven respondents mentioned the value of seeing a variety of current projects, learning the details of projects, and hearing from the designers.⁸ The format of combining slides with commentary gave attendees more insight into what makes a project work than would simply reading about the project. They liked seeing proof that good design could be energy efficient design. Some noted that such proof enables them to talk to their clients more persuasively. Respondents enjoyed learning about what was built, not just theoretically possible. As one person noted, “these are projects that clients were willing to pay for.” The program gave him an idea of markets to target for energy efficient design. One respondent liked that the concept of integrated design was shown to be viable and successful. Another respondent summarized that the A+E program is “very effective for opening one’s eyes to opportunities – things being done in Portland, right here and right now.”

Another seven respondents addressed the value of talking in organized discussions and informally with other architects who are interested in energy efficiency. Consequently, even the breaks and meals were valuable, noted one respondent. “Typically, you feel like you are alone when you are doing this [energy efficient design].”

Five respondents appreciated having discussions with people in related design fields – e.g., mechanical and electrical engineers and lighting designers. Several respondents noted that design consultants tend not to be knowledgeable about energy efficiency. Accordingly, one respondent mentioned the value of meeting engineers and others at the workshop that he might collaborate with in the future. One respondent saw the program as part of an initial effort to break down the barriers between architects and engineers.

Many people commented on the caliber of the jury and how much they learned from jurors. Two respondents appreciated hearing how projects were judged and the features judges considered essential.

Two people noted that “every bit of new information” is helpful, especially when the techniques are demonstrated by built projects. Another respondent noted that the workshop was very valuable in heightening participants’ knowledge of a lot of energy related techniques and features that “you don’t think about energy efficiency unless confronted with it – even the obvious things.”

⁸ The interview posed open-ended questions to which respondents could make a number of points. Thus, throughout the discussion the number of respondents associated with a given comment or point of view may exceed the total number interviewed.

Confirming respondents' overall positive assessment of the A+E program, seven people have recommended the program to their colleagues, another eight said they would recommend it if they thought someone might be interested and only three respondents said they would not recommend it (see Table 5).

Table 5
RECOMMENDATIONS TO COLLEAGUES TO ATTEND A+E
(N=30)

RECOMMENDATION	NUMBER RESPONDING
Have Recommended	7
Would Recommend	8
Might Recommend	1
Would Not Recommend	3
Did Not Ask	11

Ten people said they plan to attend future A+E programs and only one person said he would not attend again (see Table 6).

In the context of this favorable assessment, however, it is important to note that more than one-third of respondents (eleven) commented that they did not obtain much technical information directly relevant to their own design decisions, rather they got “tidbits,” and “a few ideas.” Comments included: “There was not enough time for nuts and bolts learning.” “[I would like to see] more intense learning along with the inspiration.” “[We] did not really learn how to improve a project.”

Respondents asked for more information to be presented. Many people wanted to know more about what went into various design decisions. Suggestions included ways to modify the sessions to convey more information, having more involvement from engineers and other design consultants and from clients, and presenting more information on design tradeoffs and the financial analyses of design decisions. Some of the suggestions were amplified later in the interview when respondents offered thoughts on the barriers architects face in influencing clients toward energy efficient design and what in addition to the A+E program might be done to support architects seeking to design efficient and sustainable buildings (see Chapter 3 and Appendix B).

Table 6
PLANS TO ATTEND FUTURE A+E PROGRAMS
(N=30)

BENEFIT OF AWARD	NUMBER RESPONDING YES
Plan To Attend	10
Might Attend	6
Would Attend Award Ceremony Only	1
Would Not Attend Lessons Learned	1
Would Not Attend	1
Did Not Ask	11

In a vein similar to that of wanting more usable information, a number of respondents commented on what they assessed as relatively poor examples of energy efficient design. Five respondents thought that the awards should be “serious,” and for something “special,” not just projects that meet code. One person suggested that perhaps the awards should be given every two or three years to increase the pool of award-worthy projects. Four people criticized specific projects that they thought were poor examples of energy-efficient design. One respondent said, “We looked at a submission in a group. It was just your basic thing. I thought to myself, ‘This is not an innovative, award-winning design. It is just a project. It has some nice things with daylighting, but...’ It ended up the project won. I thought ‘Come on!’”

Two respondents noted that they saw an opportunity for increased energy efficiency in buildings “more from what wasn’t presented than what was. Most of the entries used the same approach – daylighting. I thought ‘Oh, no one has yet explored X.’” Another respondent said, “It showed me we have a long way to go. I looked at projects and thought ‘Gee, that’s not hard to do. We can do more.’” Nonetheless, this group of eleven respondents who wanted more technical information and, in some cases, a higher standard for awards included the four people who said they had applied something they learned to a specific project.

Regarding other aspects of the program they did not like, five respondents commented that the program would be improved by having more attendees. A larger group would “enhance the spirit and vitality of the discussion,” making it more valuable. Five respondents commented that the rooms were too big or too

small for the activity. They liked the establishments the programs were held in, however.

Assessment of Program Components

When asked what they liked about the workshop, more than half of respondents (n=18) focused their remarks on the session “Jury with the Jury.” About one-quarter of respondents (n=7) focused on the “Lessons Learned” session, while the remainder (n=5) offered general comments about the workshop.

Jury with the Jury Session

Respondents enjoyed the direct learning experience provided by the Jury with the Jury session. It offered “hands on,” in-depth analysis and problem-solving. This approach contrasts favorably with most other workshops, in which attendees passively receive the information presented. They liked the opportunity to look at a project critically, both its merits and demerits. Some respondents noted that features are sometimes misleading and they appreciated seeing whether the claims made matched with performance. Respondents appreciated that the discussions were led by jurors, experts who were “very well informed” and who kept the conversation on track. Conversations were lively and contributed to the learning: “It is always helpful to talk with one’s peers in a discussion atmosphere.” Said one respondent, “I learned a tremendous amount from my peers and the energy expert. We really got into the nuts and bolts of what made this project able to be in the competition.”

A few negative comments were offered. One respondent said that he subsequently learned that someone at his table had been involved in the project they were discussing, and he thought this was an awkward situation (“weird”). Another noted that she felt uncomfortable second guessing projects without knowing enough about them.

Two respondents who attended the workshop in 1996 thought the comments made by peer jurors seemed marked by posturing and trying to impress one another in their critical assessments. One respondent gave an example of a peer jury “trashed” a building with very sophisticated technical systems because they did not like its design.” He suggested that perhaps instructions needed to be offered in how to be a good juror or commentator.

Lessons Learned Session

Seven respondents focused on the Lessons Learned session in their remarks on what they liked about the workshop. Of these, half assessed the session as very or extremely interesting – “the single most valuable part of the day.” They liked hearing a comprehensive review of the design strategies and how these were applied to projects. They liked seeing details on a variety of projects. They appreciated hearing designers speak about how they approached their designs, what they achieved, and how they got it, such as the multiple systems involved.

Four respondents who attended in 1998 offered the opposing point of view, three of whom were quite negative in their assessment of Lessons Learned. They thought the presentations sounded like sales pitches for the winning projects. Both of these respondents described the presenters as defensive, especially when answering questions. They characterized presenters as justifying what they had done rather than exploring the issues, an attitude not conducive to learning or the development of insight. Suggestions were made that the session might be improved by framing it as a discussion of the pros and cons of different approaches or as an exploration into the design process, not a critique. The third respondent was “disappointed” in the session because there was little debate, discussion, or challenge of the information presented. In her opinion, the information presented hardly went beyond what she knew from the literature on these projects.

Awards Ceremony

Respondents’ assessments of the Awards Ceremony reflected differences in the tone of the ceremony occurring in different years. The ceremony, at its best, was described as “informal, enjoyable, humorous, lighthearted,” “informative,” and “fun” (1998 program); at its worst, it was described by a few respondents as “mean-spirited,” with posturing by the jurors who appeared to try to outdo each other in their negative remarks (1996 and 1997 programs).

All but three respondents gave a positive assessment of the Awards Ceremony. They appreciated hearing commentary from each juror for each project, obtaining differing interpretations based on the jurors’ diverse expertise (“a good mix”). Jury members were characterized as “top notch” and “nationally recognized.” Several respondents liked that the 1998 jurors made up their own awards for a project, emphasizing what “shines” in the building and makes it unique. A number of respondents appreciated the balanced commentary that included praise for what was award-worthy yet did not gloss over what could have been done differently.

Some respondents thought the critical comments were more interesting than the praise.

Two respondents had extremely negative experiences with the Awards Ceremony. One of these had submitted a project and one had not. These two respondents were the same ones who thought the peer jury comments were unnecessarily negative. The respondent who had not submitted a project said that he was “stunned” during the awards ceremony and “felt badly for everyone who had submitted a project.” Projects were criticized based on unrealistic expectations about what could have been done. “And after having criticized 90% of the project, it got an award – a real back-handed compliment.”

The respondent who had a project under consideration said juror comments were sarcastic, such as “I don’t know how this ever got done.” Yet, this respondent noted, a project may span three years: “there are lots of stories, lots of reasons.” This respondent described the 1998 awards ceremony as a “huge improvement” over that of the previous year. Jurors spoke to the positive side of projects and used nonjudgmental language (e.g., “we wondered if X could have been done differently”). The 1998 award categories better recognized the good technical and design features of the projects under consideration.

While only two respondents expressed this view, it should be noted that people who submitted projects that did not win an award are underrepresented in this analysis because they were much less likely than the other groups of participants to agree to be interviewed. Thus, the current evaluation reflects primarily the views of award winners and non-submitting attendees. Attendees may be less sensitive to the tone of the proceedings than those who submitted projects and award winners may be disinclined to express attitudes critical of the jurors.

One respondent noted his disappointment that there wasn’t more explanation of projects at the time of the awards. He was “hungry” for more information, including more visual detail. He thought his interest might be satisfied by the making the project submittal information available for perusal by attendees or by having carousels of slides provide an ongoing display during the reception. This respondent and another respondent noted that the brochures and printed information available were not particularly informative.

Project Submittal

We conducted interviews with architects responsible for or involved in the design of 17 projects submitted for consideration. Fifteen interviews were with those who won awards and two interviews were with those who did not.

2. Assessment of A+E

We asked respondents about the application process and its degree of difficulty. Only six of those submitting were involved in the process sufficiently to speak to these issues. For the others, the marketing staff or more junior architects completed the application. Four of these respondents thought the application forms were difficult to complete. They noted that they had to persuade the mechanical engineer or other consultants to conduct the necessary calculations. Even a submitter to the 1998 program thought the application was “complex.” However, he estimated that he spent about 20-30 hours completing the application, whereas a 1997 applicant estimated that it took about 100 hours to complete the application in addition to the time spent by the mechanical engineer. The 1998 applicant thought that any subsequent applications would only take him 8-10 hours because he would set aside the necessary information during the design process. One respondent estimated that he spent about \$3,000 on photographs; he had to take the photographs a second time to adequately convey the effectiveness of the natural lighting features.

In commenting on how to improve the application process, several respondents noted that the calculation requirements serve the important goal of “keeping people honest,” ensuring that a project’s performance meets the designer’s claims. They support having building performance measured. On the other hand, the required calculations should not be so rigorous that the program is not able to recognize attempts by designers and owners/developers. “It’s important to recognize any effort to do environmental design.” One respondent thought the 1998 requirements and categories were generally successful in meeting these potentially opposing objectives.

Several respondents stated that it was hard to get their mechanical engineers to volunteer their time to complete the application. “If I had known what the media coverage would be for award-winners, I could have used this to motivate their marketing department.”

Participant Recommendations

Program Enhancement

Most of the suggestions offered by respondents concern ways to increase the usable technical information presented during the program, some are implemented to some degree but the respondents clearly thought they were worth mentioning.

Suggestions include:

- Ensure the “Lessons Learned” session is a genuine exploration of a project rather than a marketing presentation;

- Have the engineering and design consultants for the project present to give details on what went into various decisions;
- Discuss how to get engineering and other design consultants “on board”;
- Have building owners and developers speak about the benefits of the building from their perspective;
- Provide information on the economics of energy efficient and sustainable features;
- Limit the focus to two or three buildings that could be covered in more detail;
- Address more than one project in the Jury with the Jury group;
- Make available additional information on award submittals, such as the submittal information or a carousel of slides;
- Provide information on the energy codes, such as innovative solutions meeting code, code constraints, or implications for code compliance;
- Present more information on what went into the various design decisions; and
- Hear from those who submitted projects yet did not win.

Suggestions relating to other aspects of the program included:

- Recognize “small victories,” emphasizing that energy efficiency and sustainability can enter into every project, not just the perfect project for the perfect client;
- Advertise the program by emphasizing the unique, interactive learning format;
- Advertise the program more widely, especially among engineers and students;
- Include a residential component;
- Include renovations and remodels in an “adaptive re-use” category (enables projects that might not have many energy efficiency features to

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be recognized nonetheless as energy conserving through re-use rather than new construction);

- Obtain an exciting keynote speaker; continue to have dynamic jurors; and
- Clarify the purpose of the awards: is the purpose to recognize those projects that go well beyond code?

Submittal Enhancements

The following recommendations were offered for improving the application process:

- Simplify the mechanical engineering calculations required.
- Include in the “call for entries” notices a preview of the information and format required for submittals, so that people can retain this information as they design and not need to recreate it for the application.
- Promote the award among mechanical engineers, so that they see the value of participating and are motivated to complete the application.
- Inform potential applicants of the media-coverage winners receive, especially coverage that would interest the mechanical engineers and other consultants whose participation is needed to complete the application.
- Return to applicants their submittal packets.

The following recommendations address the types of projects that can be submitted.

- Include “lower-tech” award categories, such as passive solar design that architects can do without engineering consultants that would not need as extensive engineering calculations.
- Allow projects in the design phase to be included for consideration, with the goal of increasing design-phase dialogue among professionals.

2. Assessment of A+E

3. MARKET ASSESSMENT

APPROACH

The evaluation work plan includes a list of about 20 questions about how the design market works and how the market might be best influenced. Since the work plan was developed, the study team and the Alliance learned that the California Board of Energy Efficiency had drafted guidelines for market assessments.⁹ These guidelines identify four elements to be included in a market characterization or assessment:

1. A clear definition of the market or markets to be discussed, and a description of the scope and natural boundaries implicit in this definition.
2. A description of the structure of the market, including the following features:
 - A summary of the specific technologies, services, or products being exchanged;
 - A summary of the major market participants and the nature of the transactions and other interactions between them, including buyers, sellers, and intermediaries;
 - A description of the distribution chain – i.e., the variety of paths that a product follows on its way from a manufacturer to an end-user;
 - A description of the geographic boundaries of the market;
 - A description of the circumstances and settings under which transactions tend to occur, including the sales practices and the market events that tend to result in transactions within the market;

⁹ CBEE Technical Services Consultants. (1998) *Proposed Recommendation to CBEE on Program Classification, Cost Effectiveness, Capability of Transforming Markets and Market Assessment and Evaluation*. California Board for Energy Efficiency. Sacramento, CA. February 4, 1998. Available at <http://www.cbee.org/cbee/library.html# Policy Rules>.

- Approximate estimates of the number of buyers, sellers, and intermediaries in the market, as well as an order of magnitude estimate of the total annual sales of relevant measures and services; and
 - An analysis of efficient market share, or the percentage of the measures or services sold that meet appropriate energy efficiency criteria.
3. An assessment of the relationship between the level of investment in energy efficiency within the market that would appear to be societally cost effective and the level that currently exists.
 4. A thorough description of the market barriers impeding the adoption of cost-effective energy efficiency measures and services within the market.

These guidelines are grounded in the *Scoping Study*,¹⁰ which has been shown to be a viable tool for the measurement of market effects for demand side management and market transformation programs.¹¹ These guidelines, rather than the 20 questions proposed in the work plan, are used here to organize the assessment of the commercial building design market, with the addition of one element recommended by Peters, et al. (1998), to include communication channels and information sources as an element of the description of the market.

MARKET DEFINITION

The market addressed by the A+E program is the market for commercial building design in the Pacific Northwest, defined as all of Washington, Oregon, and Idaho and those parts of Montana west of the continental divide.

In 1992, E Source identified integrated design as a preferred design strategy for ensuring energy efficient sustainable design practice.¹² As Lovins states, “A well-integrated and interdisciplinary effort by a design team is often the key to

¹⁰ Eto, Joe, Ralph Prael and Jeff Schlegel. (1996) *A Scoping Study on Energy-Efficiency Market Transformation by California Utility DSM Programs - LBNL-39059 UC-1322*. Ernest Orlando Lawrence Berkeley National Laboratory. Berkeley, CA. July 1996.

¹¹ Peters, Jane, Bruce Mast, Lori Megdal, & Patrice Ignelzi. (1998) *The Market Effects Summary Study*. California Demand Side Measurement Advisory Committee. December 1998.

¹² Lovins, Amory. (1992) *Energy-Efficient Buildings: Institutional Barriers and Opportunities*. E Source Strategic Issues Paper. Boulder, Colorado. December 1992. pp.14.

producing buildings that achieve exceptional energy efficiency and aesthetic comfort.” Integrated design, however, is not the specific objective of the A+E program. Throughout this market assessment, we use energy efficient and sustainable design to include integrated interdisciplinary design as well as design that maximizes energy efficient and sustainable design practices.

MARKET STRUCTURE

Services Exchanged

The commercial building design market occurs when a landowner or building owner contracts for services to design a building or alter an existing building. Commercial building design includes new construction and major renovations, as well as design for existing buildings such as remodeling and tenant improvements.

Market Participants

The market participants include:

- *The landowner, developer, or building owner;*
- *Possibly the owner’s agent – a construction or project manager to oversee the project;*
- *The architect;*
- *The various design consultants – e.g., mechanical engineer, lighting designer, electrical engineer, landscape architect, interior designer, structural engineer, civil engineer;*
- *The general building contractor and various sub-contractors – e.g., HVAC contractor, electrical contractor, sheet metal fabricators, plumbers; and*
- *The end-user – building occupants who might own or lease the facility.*

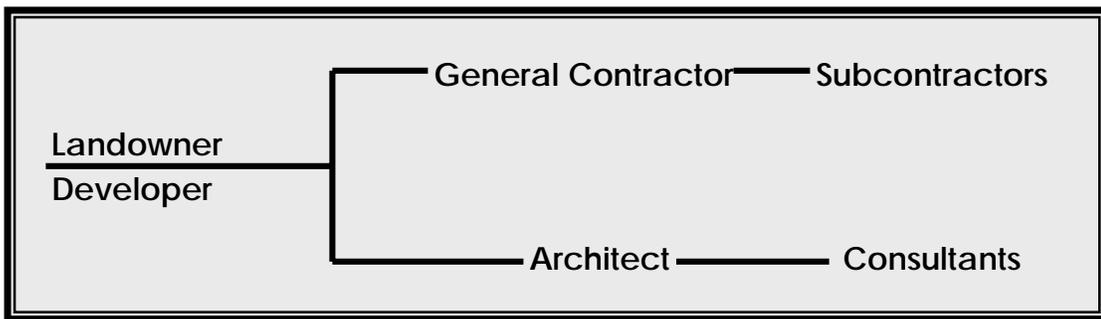
Distribution Chain

The combinations of market participants the owner hires varies based on the scale of the project and the intent of the owner in constructing the building. These combinations form the structure of the design services.

Comments from architects suggest that design services range between traditional design and design-build. Figures 1 and 2 describe these two design strategies. The fundamental difference between the strategies lies in how the owner contracts with different parties. In a traditional design strategy, the owner contracts with architects and general contractors who in turn contract with consultants and sub-contractors.

Figure 1

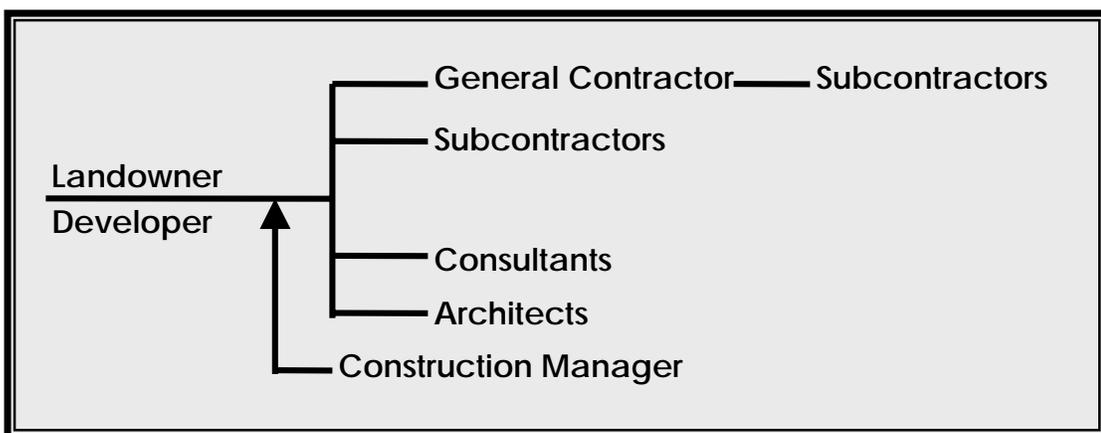
COMMERCIAL BUILDING DESIGN MARKETS – TRADITIONAL DESIGN STRATEGY



In a design-build strategy, the owner contracts independently with architects, consultants, contractors and some sub-contractors for the services each provide.

Figure 2

COMMERCIAL BUILDING DESIGN MARKETS – DESIGN-BUILD/
TENANT IMPROVEMENTS STRATEGY



3. Market Assessment

Traditional design strategies are based on the notion that architects should be the primary design decision-makers and contractors should execute the design to the best of their ability. The rationale for using a design-build strategy is to reduce cost. The strategy brings expenses under the direct control of the owner or the owner's agent, a construction manager. As compared with traditional design, design-build reduces the influence on the overall design exerted by any one player, other than the owner or the owner's agent.

The current research did not directly seek to quantify the percentage of buildings designed under each strategy. However, the comments of the architects we spoke with, especially those in Seattle, suggested that traditional design predominates among institutional, corporate and owner-occupied building design, especially for new construction; while the design-build strategy predominates among new construction of franchises, chains, and speculative commercial buildings and is the primary strategy for tenant improvements.

When Transactions Occur

Some design decisions affect building energy consumption, some do not. In addition to occurring for new construction and major renovations, design occurs whenever a tenant or owner wishes to change the use or configuration of a building. Design also occurs whenever major new equipment is installed in a building, regardless of whether the equipment uses energy. Even equipment replacement can lead to design decisions if resizing is required or if the configuration of the equipment has changed since initial installation.

With the number of instances in which design decisions occur, the expansion of design-build can be easily understood. Subcontractors gain experience with design through equipment replacement that they then parlay into design capability for new installations.

The increased use of design-build strategies has significant consequences as to which market actors make the key design decisions and at what points in the process key transactions affecting energy use occur. The architects we spoke with noted that in design-build settings the architect has very little influence on the design of anything but that required by law. One of the Seattle architects commented that in design-build projects they mainly "do the exterior of the building and perhaps interior layouts." Even in traditional design, the complexity of new HVAC systems means that the mechanical contractor and mechanical engineer make key decisions that affect the energy consumption of the building. Often these

decisions are made late in the design process, with minimal input from the architect.

Geographic Boundaries of the Design Market

The current research did not directly seek to quantify the percentage of design strategies by geography. However, based on the comments of those we spoke with, it appears probable that less than 50% of the market share for commercial building design west of the Cascades is design-build while more than 50% of the market share for commercial building design east of the Cascades is design-build. However, this issue requires more research to develop a reliable estimate.

Estimate of Market Participant Population

The potential number of market participants in the Pacific Northwest is substantial. The total number of registered resident architects in the four-state region is 5,528 many of these are not AIA member nor are they currently practicing architects.¹³ Estimates from AIA and other architects suggest a rule of thumb that 40% of these architects design commercial buildings. This suggests a market of up to 2,211 architects for the A+E program.

The A+E mailing list we were given was comprised almost exclusively of AIA members in the Pacific Northwest. The list contained 2,653 names, of which only 28 were not identified in the listing as AIA members.¹⁴ Table 7 displays the distribution of list members by firm type and by state, for those with known affiliation.

Our analysis of the list found that these 2,653 individuals worked in just under 900 unique firms, of which around 500 were readily identifiable as architectural firms. (About 900 people had no firm affiliation listed.)

Identification of the total population of market participants for the A+E program is incomplete. To complete the estimate we would need to include landowners and developers, building owners and managers, consultants for lighting and mechanical systems, general contractors and subcontractors for lighting and mechanical

¹³ National Council of Architectural Registration Boards, *Press Release*, June 11, 1999.

¹⁴ The mailing list we analyzed had 2,653 names. We subsequently learned that A+E also has an additional mailing list with 2,500 names. Our results therefore are only valid if there is no systematic bias in the list that we analyzed. The complete list will be analyzed as part of the 1999 evaluation.

3. Market Assessment

systems, and interior and landscape designers who might be part of an integrated design team on some projects. The size of the full market population for commercial design is thus much greater than that of commercial architects alone (2,211.)

Table 7
DISTRIBUTION OF A+E MAILING LIST BY FIRM TYPE AND STATE

STATE	TOTAL FIRMS	ARCHITECTURAL	DESIGN	ENGINEERING	CONSTRUCTION	OWNERS	UNABLE TO DETERMINE
Total	892	514	87	16	9	59	207
WA	503	271	57	11	5	31	128
OR	248	161	22	4	3	19	39
MT	74	53	4	0	1	4	12
ID	80	38	4	1	0	6	31

Percentage of Energy Efficient Sustainable Design

In Oregon, Montana and Washington and in parts of Idaho all new commercial buildings are subject to energy code standards. (Though there is currently no energy code enforcement in Montana.) According to the architects we spoke with, energy efficient and sustainable design should go beyond code compliance in energy performance.

We did not request the architects' estimate the precise percentage of buildings that meet this requirement. However, based on their comments about their own work and others with which they were familiar, it appears that less than 5% of the traditional design in the Pacific Northwest region uses energy efficient and sustainable design practices – i.e., go beyond code – and virtually none of the design-build market uses it.

Communication Channels and Information Sources

Architects learn new tools and techniques in a variety of environments. The two most common formal learning formats are conferences and publications. Other

preferred environments for learning include Web sites, especially when additional information on a topic of interest is desired, recognition awards, participation in professional organizations, and associations and workshops.

Within architectural firms, information on specialty topics frequently is made available to staff by firm members who are assigned the topics and given the task of tracking and disseminating relevant information. Several of the firms we spoke with have “green teams” who focus on sustainable and environmentally beneficial products. Other firms have specialists assigned to cover Construction Specification Institute (CSI) division topics.

ASSESSMENT OF IDEAL MARKET

The ideal market describes one where the level of investment in energy efficiency is equal to that which is societally cost-effective. The current research did not undertake to quantify the ideal level of investment nor to determine with precision the degree to which the current market fails to achieve this goal.

MARKET BARRIERS

Our conversations with architects identified a multitude of market barriers to energy efficient design. These barriers affect the behavior of both architects and the other market participants. However, the current research did not interview other market participants and so has no direct confirmation of the architects’ comments regarding them. In lieu of such direct confirmation, we reviewed an assessment of barriers and opportunities for energy efficient buildings prepared by Amory Lovins for E Source in 1992.¹⁵ The E Source document addresses barriers for all market participants and enabled us to present a deeper assessment than we could after talking only with architects.

Table 8 displays the key market barriers to energy efficient design practices for commercial building design. A discussion follows the table that defines the barriers as they apply to the design market. Although traditional design and design-build mark the extremes of design strategies, our research suggests that the market barriers to energy efficient design are similar in each of these market strategies. While the barriers themselves are similar, there exist differences between the two strategies in the degree that the barriers inhibit energy efficient design practices and in the likelihood that integrated inter-disciplinary design can be utilized in the

¹⁵ Lovins, Amory. (1992)

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design process. We comment on these differences in the discussion of market barriers.

Table 8
BARRIERS TO ENERGY EFFICIENT DESIGN PRACTICES

OWNER	ARCHITECT	CONSULTANTS	GENERAL CONTRACTOR	SUB-CONTRACTOR	END-USER
Lack of awareness			Lack of awareness	Lack of awareness	Lack of awareness
Performance uncertainty					
Search costs					
	Hassle costs	Hassle costs			
Organization Practices					
Split incentives					Split incentives
Low energy costs					Low energy costs
	Structural	Structural	Structural	Structural	
Access to financing					
Asymmetric Information					

Description of Market Barriers

Lack of Awareness

This barrier refers to the fact that some market participants are unaware that energy efficient design is possible and can yield benefits to the building owner, operator, and occupants. The architects we spoke with did not lack awareness of the possibility of energy efficient design. They were aware, in general terms, of its

potential benefits. They noted that owners and contractors are considerably less aware, holding views that the energy code ensures buildings are efficient, that there are no tangible gains to energy efficiency, only added costs, and that energy efficient design might be a liability, making the building more difficult to lease, sell, operate, or comfortably occupy. Some of the architects also believe that consultants lack awareness, though others we spoke with did not share this concern. In addition, most of our respondents worked in traditional design. There may be less awareness of energy efficient design practices among designers working with a design-build strategy, where there is little need and opportunity to be exposed to the concepts.

Performance Uncertainty

This barrier refers to the difficulty of evaluating claims about future benefits. We found this to be a significant barrier to the incorporation of more energy efficient sustainable solutions into commercial building design by architects. Performance uncertainty affects claims to the financial benefit of measures and the acceptability, applicability, and reliability of measures. The architects stated that they frequently knew the solutions existed (i.e., they had awareness) but they did not pursue the solutions because they did not have "the numbers" to prove the financial benefit or lacked documentation of comparable built examples to demonstrate the acceptability, applicability, and reliability. This is a barrier in all design strategies and to all market participants.

Information and Search Costs

This barrier refers to the difficulty of tracking down energy efficient design solutions and products. All market participants experience significant search costs. The architects we spoke with indicated that they have difficulty:

1. Identifying specific energy efficient techniques and products;
2. Obtaining sufficient information on the techniques and products to assess their strengths and limitations in the given application or to understand how to implement or use them;
3. Finding experts or experienced professionals to provide consultation;
4. Obtaining the tools to determine the cost effectiveness of a technique or product; and
5. Generating the information to be used in a cost effectiveness analysis.

3. Market Assessment

This is a barrier in all design strategies, although architects using the traditional design strategy are more likely to have opportunities to reduce this barrier than design-build practitioners. However, the traditional design architects noted that clients typically are unwilling to bear the costs to search for products and information, so architects increase their information base in small increments, often at their own cost.

Hassle costs

There are a number of hassle costs that architects incur in implementing energy efficient design. One hassle is the time-consuming, and therefore expensive, process of actually conducting the calculations required to assess performance efficiency and payback. Relatively few design professionals are skilled in such tools as the DOE-2 analysis, they need to hire others to do such analyses.

A second hassle can occur in attempting an integrated design approach with team members who are inexperienced with integrated design or with energy efficiency. Hassles occur (that is, time is spent) assessing the team members' knowledge and expertise in various areas, obtaining and maintaining commitment to energy efficiency, developing a collaborative, flexible working relationship, and persuading members to tackle solutions outside of their comfort area. The architects we spoke with viewed time spent by a team as much more expensive than time spent by an individual, and hassling through these tasks only lays a foundation for the design work but does not, in itself, generate output (a design). This is a barrier in all design strategies although, as with information and search costs, architects working in the traditional design strategy may have more opportunities to reduce this barrier than design-build practitioners.

Organizational Practices

This barrier concerns the internal business practices and institutional practices of market participants that limit the likelihood that the market participant will use energy efficient sustainable design practices. Such organizational practices include: owners who select contractors and consultants using a lowest cost criterion; design firms who set their fee based on project cost; firms that lack processes for employees to learn new techniques; and firms that stick to "tried and true" methods rather than trying new approaches.

Split or Misplaced Incentives

Substantial split or misplaced incentives occur in commercial building design. Only in owner-occupied projects are the incentives sufficiently aligned that operating costs and construction costs are assessed in tandem. In most construction settings, the owner of the building will not operate it. The owner has an incentive to lower the up-front costs of the project without regard to long-term operating costs. This is mainly a barrier to the owners and end-users since the architects, consultants and contractors do not experience it as a barrier to their work, but to the sale of the concept of energy efficient and sustainable design.

Low Energy Costs

Many of the architects we spoke with noted low energy costs as a barrier to energy efficient design in the Pacific Northwest, though not to sustainable design. Architects noted that it is difficult to economically justify energy efficient design solutions where the payback is long due to low energy costs. Owners are more likely to accept without economic justification sustainable design solutions than energy efficient solutions because of the appeal of the variety of quality-of-life issues involved in sustainability. This is mainly a barrier to the owners and end-users since the architects, consultants and contractors do not experience it as a barrier to their work, but to the sale of the concept of energy efficient and sustainable design.

Structural

Referring to existing conditions in buildings that may limit the opportunities for energy efficiency, this market barrier primarily affects retrofit and build-out design. The lack of energy code requirements for most of the design activities affecting existing buildings constitutes one structural barrier. The lack of code requirements limits the impetus to look for energy efficient solutions. A second barrier concerns the cosmetic focus of much design work in existing construction; owners typically change out systems only if necessary to attain some cosmetic or functional goal. This barrier affects designers, consultants, contractors, and subcontractors, primarily in design for existing buildings.

Access to Financing

Not surprisingly, “cost” is the reason most commonly stated by architects for the low penetration of energy efficient sustainable design. Access to financing is one aspect of cost limitations. Though owners typically have acquired financing by the time

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design starts, usually short-term loans finance the development, design, and construction costs. Interest rates on these loans are often high and time is of the essence. In such a financial context, it is difficult for architects to justify the time and expense necessary to conduct research and analysis of potential energy efficient features. Financial institutions do not value energy efficiency and are unlikely to provide additional funding to cover those activities. This is mainly a barrier to the owners and end-users since the architects, consultants and contractors do not experience it as a barrier to their work, but to the sale of the concept of energy efficient and sustainable design.

Asymmetric Information

Asymmetric information occurs when one party to an exchange has more information than another party and makes claims that cannot be verified by the person with less information. Product manufacturers make claims the consultants, owners, architects, contractors and end-users are often unable to test without proprietary information, large quantities of materials, or specialized equipment or training. This barrier affects owners, architects, consultants and contractors.

THE A+E PROGRAM INTERVENTION

An energy efficiency program must have a target market and a plan for transforming the market. The 1998 A+E program targeted commercial building architects, engineers and owners. The following discussion elaborates on the success of the A+E program in reducing the barriers of performance uncertainty and organization practices. Recommendations for further reducing these barriers and for reducing other barriers are offered as well.

Many of the recommendations were drawn from program participants' assessment of A+E (see Chapter 2) and their assessment of the market (see Appendix B). These recommendations, we recognize, would sometimes require restructuring of the A+E program. Additional funding or reallocation of funding might be required as well. Nonetheless, we feel they are important to consider in light of the overall Alliance goal of market transformation.

Market Barriers That A+E Could Address More Broadly

Lack of Awareness

Architects and consultants appear to be aware of the possibility and general benefit of energy efficient design. However, architects characterize owners and contractors as highly unaware. A+E could expand the reach of the program to the owner and contractor communities through its outreach and advertorial activities and by structuring the workshop and award ceremony to involve owners and contractors to a greater extent. In addition, A+E could increase contact between architects and consultants by expanding advertising to the consultant community and stressing the value the program might have to consultants seeking to work more closely with architects on energy efficient sustainable designs.

Performance Uncertainty

A+E as currently implemented reduces some components of performance uncertainty. By showcasing built examples of energy efficient design, the program provides demonstrations of the acceptability of such design and the applicability to a variety of projects. Demonstration of the applicability of energy efficient features will expand with time as more facilities and, presumably, a greater variety of facilities receive awards. Performance uncertainty however, remains a barrier. The program could also directly demonstrate features' reliability or functional implications, as suggested by some program participants who suggested that the program expand to include tours of award winning projects so that architects could "kick the tires" (see Appendix B).

The program also could reduce uncertainty about energy and non-energy benefits that accrue to energy efficient sustainable design. A+E could incorporate more specific information – "the numbers" – on the performance of award winning buildings, both within the workshops and in material published about the buildings. Though we recognize that this suggestion takes time and money, the architects we spoke with overwhelmingly saw this as a solution to a major barrier.

Information and Search Costs

The architects we spoke with indicated that they face high information and search costs, which the owner seldom covers. These costs could be reduced by the A+E. By publishing the "numbers" for award winning buildings, A+E could reduce search costs for performance information, as well as reduce the performance uncertainty through its demonstration of energy efficient designs. Dissemination of performance

3. Market Assessment

information would not preclude a discussion of the numerous small decisions that contribute to energy efficiency and sustainability in some designs and discussion of ideas that were considered but deemed inapplicable. A+E could also incorporate in the Lessons Learned sessions a discussion of how the winners solved the problem of finding information on different products and features and determining cost effectiveness.

Hassle costs

This barrier addresses the difficulty architects have in doing the calculations required to determine whether a product or design solution is cost effective for the owner and the hassle of evolving effective integrated design teams. A+E addresses this by informally facilitating architects meeting skilled consultants who can assist them with cost-effectiveness assessments or participate on design teams. A+E could more actively facilitate this interaction by directly reaching out to consultants, structuring a greater role for them in the workshop and award ceremony, and expanding program advertising to them.

Organizational Practices

The A+E program clearly targets this market barrier for both architects and consultants. The expectation is that architects who come to the workshop or read the advertorial will see that new approaches have merit, can be readily implemented, and either enhance or do not detract from a building's aesthetic appeal.

Though the A+E program directly addresses organizational practices for architects and consultants, it does not address these practices for owners and contractors. Expansion of the reach of program into the owner and contractor communities is important if energy efficient and sustainable design practices are going to become more widely adopted. This can be accomplished through advertising and outreach and by involving owners and contractors in the workshops and award ceremonies.

Comparing Barriers Targeted by A+E to Those A+E Could Address

Table 9 below builds on Table 8 highlighting those barriers to energy efficient sustainable design addressed by the A+E program today and those that could be addressed by the program.

Table 9
BARRIERS TARGETED BY A+E

OWNER	ARCHITECT	CONSULTANTS	GENERAL CONTRACTOR	SUB-CONTRACTOR	END-USER
Lack of awareness			Lack of awareness	Lack of awareness	Lack of awareness
Performance uncertainty					
Search costs					
	Hassle costs	Hassle costs			
Organization Practices					
Split incentives					Split incentives
Low energy costs					Low energy costs
	Structural	Structural	Structural	Structural	
Access to financing					
Asymmetric Information					

Dark shaded boxes indicate the barriers addressed by the A+E program as it is currently designed and operated. Lightly shaded boxes are barriers that could be addressed by the A+E program were modifications made in the program, its outreach activities, and the advertorial materials used to publish its accomplishments.

4. CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

This MPER is being prepared after the A+E program received funding from the Alliance for one year. The Alliance set forth specific criteria for venture success along with progress indicators the A+E program was expected to achieve during its two-year funding cycle. The criteria for success of the A+E program requires an increased percent of energy efficient sustainable design be occurring in the region “two years after Alliance support ends.” To date it is possible to conclude that the 1998 A+E program has made some progress toward increasing regional participation in the program.

This was accomplished through the first regional workshop in Boise, Idaho in October 1998. Other indicators of progress toward that goal occurred in 1998, though entries to the award program were lower than expected and participation in the award-day program was less than expected.

The explanations for this include:

- The project got off to a late start because the Alliance funding approval cycle delayed program implementation by five months. Typically, the program cycle begins in September. The 1998 project could not begin until February, after the contract was signed.
- Seattle and Portland were in the middle of a boom building period, which led to two consequences. First, very few projects had been completed in time for the 1998 award program. Second, for those that were completed architects did not have time to prepare an entry.
- When the project coordinator called architects to suggest they might have a building to submit, many responded that their buildings were not particularly noteworthy, i.e., not energy efficient enough.
- Participants for the award-day workshop from Seattle could not attend due to weather delays at the airport.

Within this context, our findings provide evidence of initial progress toward the goal. This progress is detailed below relative to each of the five progress indicators defined by the Alliance staff.

- *The awards program receives a balance¹⁶ of entries from around the region. Compared to the entries received in 1997, no change was observed in 1998 in terms of a balance of entries from the region. In 1998, the majority of entries were from Western Oregon based architectural firms for Western Oregon located projects.*
- *Attendance at the awards function and field workshops meets or exceeds targets set by the steering committee. The steering committee reported goals of maximum of 50 participants for 1998 award program. With a very busy building year for architects, the award program did not meet its goal, 40 confirmed but 28 attended. The 1998 workshop in Boise, Idaho did not have a set goal, but had 35 attendees.*
- *Participants in the awards events and field workshops take action to apply energy efficiency concepts in their designs. The interviews with workshop participants and A+E award recipients indicated that over 50% take actions to apply energy efficiency concepts they learned from the A+E program in their designs.*
- *Entrants indicate that interest in the awards influenced their design submittals and other projects. Over 90% of the participants reported that the A+E Program had either direct or indirect effect on projects completed after participation. No entrants reported that the award influenced their design; however, one nonparticipant indicated that interest in the award on the part of a building owner had influenced his firm to design for and prepare and submit an entry.*
- *Non-Alliance sources provide at least 15% in matching funds for operating the program by the end of Alliance funding. Contacts were made with potential funders in 1998, but no sources committed to funding.*

¹⁶ The Alliance did not define "balance," we interpret balance to mean proportional entries relative to commercial building square footage in the four state region.

4. Conclusions and Recommendations

Despite this progress, there remains substantial opportunity to improve the performance of the A+E program and facilitate its progress toward its goals. The following findings and recommendations suggest ways to expand the reach and impact of the A+E program and speed its progress toward transforming the commercial building design market.

FINDINGS AND RECOMMENDATIONS

The findings and recommendations follow from this evaluation research. We have organized them into four topic areas: reconsideration of what is award-worthy, expanding the program, getting program results to those who can use them, improving the quality of program data, and using A+E to address market barriers in commercial building design.

What is Award-Worthy?

Over the years, using the definitions of energy efficient design practices to guide their selection process the A+E program has made awards to some outstanding examples of energy efficient and sustainable design. Architects we spoke to also report that awards have been given for designs that incorporate energy efficient features but either do not go beyond code or are not otherwise particularly noteworthy.

Some of the people we spoke with believe that awards should go to “truly special” buildings. An opposing viewpoint was expressed by a number of the architects who have and how have not participated in the A+E program but actively incorporate energy efficient and sustainable features in their buildings. According to these architects, the design market can be best transformed by designers who seize on the myriad of small opportunities for increased efficiency and sustainability in every building, independent of client commitment. Respondents holding this view believe that an educational program that only promotes stellar energy efficiency examples will create an impression among designers that energy efficient and sustainable design can only occur in the perfect project for the perfect client.

Another set of findings concerns the need to obtain greater involvement in the A+E program by clients and consultants. One way to do this, suggested by a number of participants, would be to involve them in the awards ceremony to a greater extent than has occurred to date. Some suggestions offered by the architects we spoke with are:

- *Create several types of awards.* One type would recognize outstanding examples of energy efficient design. This award might be given less frequently than annually, if necessary due to a small pool of qualifying buildings. A second type of award would recognize the many small things that can be done to enhance efficiency and sustainability. This award might include recognition of particularly creative solutions to design problems, and would follow the model set forth in the 1998 program. A third type of award might recognize all buildings appropriately involved in the program, an approach also implemented in 1998.
- *Continue to use the submittal requirements developed for the 1998/99 programs in 2000.* These appear to be easier for architects and consultants to prepare. However, submitters should be queried about their experience to determine if the requirements can be further modified for 2000.
- *Publicize different award categories and the philosophy used to define them.* If some award categories are preset as suggested above, it will be important to publicize the different award categories and the philosophy around recognizing different categories to set expectations for attendees as well as submitters, and to inform the national community of the achievements of award recipients.

Expanding the Program Targets

Our analysis of the mailing list we were provided with found that the A+E program currently targets AIA members in the Pacific Northwest region, though the program proposal indicated they would target architects, engineers and owners. The market assessment identified other market participants in the commercial building design market who are viewed by architects as critical in bringing about energy efficient and sustainable practice.

In addition to a limited target market, architects in Seattle view the A+E program as a Portland-based program. The award program was held in Seattle two years of the first six and a workshop was held in Boise in October 24. Over the years submissions and winners have come from architects throughout the region, yet Oregon projects dominate the awards and Oregon firms dominate the attendance list. We offer the following recommendations as a means for expanding the program.

- *Expand on current efforts to reach out to mechanical and electrical consultants through advertising the A+E program in engineering*

4. Conclusions and Recommendations

- association newsletters, through presentations to consulting firms, and through coordination with and presentations to the engineering associations.
- Continue to reach out to other AIA chapters and engineering associations in the region, offering to include them as co-sponsors of the A+E program (at no cost) and offering technical assistance to help their members prepare award submittals. Also consider including owner and developer organizations; one to consider would be Building Owners and Managers Association (BOMA).
 - If the award suggestions made herein are adopted such that all appropriate submittals are recognized, send invitations for program workshop and award presentations directly from the AIA/Portland Executive Vice President to the owners, consultants, contractors and subcontractors for all projects submitted to the A+E award program. Inform the architects that this outreach is part of the A+E program.
 - Publish a list of consultants who have been on award-winning teams or who have attended A+E workshops, updating it periodically. Make this list available to architects throughout the region and inform consultants that this list exists.
 - Expand the steering committee to include representatives from other utilities and associations in the region. Meetings can occur through telephone conference calls. The expanded committee could be involved in just one or two meetings a year. For example, one meeting could be held at the outset of the program year to focus on the program structure and content, and another meeting held during the project solicitation period to flush out additional ideas for identifying projects and providing technical assistance where needed.

Getting the Results to Those Who Can Use Them

The advertorial¹⁷ is well received by A+E award winners. Many were unaware of the amount of press and publicity they would receive after winning the award. While some found the award mainly a personal accomplishment, others noted that the

¹⁷ The A+E Program places an “advertorial” in a major architecture magazine each year publicizing the award winning buildings.

advertorial contributed to their marketing capability. The advertorial also has been a significant tool for gaining national prestige for the program.

The architects we spoke with frequently noted that the pictures used for the advertorials did not tell them much about the energy efficiency solutions used in the building and that the text accompanying the pictures did not give them what they really need: the numbers (i.e., how much was the additional cost, if any, and what benefit did they get for that cost).

In addition to wanting more technical information in the text, respondents also noted that the audience needs to expand beyond architects if the program is going to change design practice. In particular, information about the feasibility and financial and nonfinancial benefits of energy efficient sustainable design needs to reach owners, consultants, and contractors. Given these considerations we offer the following recommendations.

- Expand the reach of the advertorial. Currently the advertorial is run in one architecture magazine. Other venues that might consider this event newsworthy should be explored, such as: *CEO Magazine*, *Engineering News Record*, and *Energy User News*. Trade publications associated with the businesses of the building owners might also be interested in a news story or in a shorter version of the advertorial featuring a single building.
- Include “the numbers” and other information characterizing costs, benefits and performance factors for the projects – both energy and non-energy factors – relative to standard practice. Measured savings data are not necessary.
- Develop case studies of award winning projects and publish those for use by architects and consultants. These case studies should include “the numbers” as well and would be especially valuable if they included operating costs.

Program Data

Program data are important as a means for conveying the progress of the program. The current data sources on the program need attention. The mailing list we were given to review is slightly larger than the Pacific Northwest AIA membership list. The numbers of attendees to the workshop are confusing to interpret.

Better tracking of participants is critical. Accurate tracking is necessary to demonstrate that professionals are interested in A+E and energy efficient

4. Conclusions and Recommendations

sustainable design. It also provides a tool for program coordinators to use when they need to identify potential participants for future programs. We offer the following suggestions:

- Have a consistent sign-up sheet available at every A+E event even those affiliated with other organizations. The sign-up sheet should include a place for attendees to note their name, profession, firm affiliation, job title, mailing address, phone number, and e-mail address.
- Expand the mailing list to include more mechanical and lighting consultants and other design firms.
- Consider revising the data sets to readily permit comparisons of participants' names and firms with mailing list names and firms, and to count unique firms as a measure of outreach into the market. Inputting these into a relational database would be valuable. Given that most of the current data are in spreadsheets, use of a database such as Microsoft Access may be the easiest solution as spreadsheets can be uploaded into Access after the database design is specified.

Using A+E to Address Market Barriers

The A+E program directly targets two market barriers in the new commercial design market: performance uncertainty and organizational practices for architects and consultants. If the recommendations above are implemented the program can more effectively target these two barriers and can expand to address additional barriers, such as hassle costs, search and information costs, and lack of awareness for other market participants (e.g. owners and contractors).

The A+E program could be the most effective program for addressing these barriers, though it is not the only way. The A+E program is well known and respected by the architecture community in the Pacific Northwest and would likely be recommended by architects to owners, consultants and contractors if the recommendations were implemented and the program truly expanded to reach more broadly into the commercial building design community.

4. *Conclusions and Recommendations*

APPENDICES

4. *Conclusions and Recommendations*

APPENDIX A

Methodology

Appendix A



METHODOLOGY

STAFF INTERVIEWS

The A+E program has one staff person who is responsible for the coordination of the program. She reports directly to the Executive Vice President of AIA/Portland. The Executive Vice President has had overall responsibility for the A+E program since its inception and provides the critical institutional memory for the program from AIA/Portland.

The program manager and executive director work closely with the steering committee. The current steering committee is composed of seven members. Two are new to the steering committee in 1999 replacing an outgoing member from their organization who served on the steering committee in 1998. Five of the seven have served on the steering committee since program inception. The seven members represent five organizations: Seattle Lighting Design Lab (1), Portland General Electric (2), Northwest Power Planning Council (1), the Alliance (1), AIA/Portland (1), AIA/Portland/Oregon Office of Energy (1).

We conducted interviews with the two AIA/Portland staff members and with three of the five long-term members of the steering committee. The interview guides for the staff and steering committee interviews are provided in Appendix D.

ANALYSIS OF A+E DATA SETS

We requested and were provided with a program mailing list, lists of past submittals and past program attendees for the program. We analyzed the mailing list, the list of award submittals from 1993 to 1998, and the lists of program attendees in 1996, 1997, and 1998.

As described in Chapter 2, the mailing list contains 2,653 names, of which only 28 are not identified in the listing as AIA members. Our analysis of the list found that these 2,653 individuals work in just under 900 unique firms, of which around 500 are readily identifiable as architectural firms. (About 900 people have no firm affiliation listed.) We subsequently learned that there was another list of about 2,500 names. This list was not available until late in the evaluation and will be analyzed in the 1999 program evaluation. Our analysis of the 2,653 names is only valid if there is no systematic bias in the list.

The 1996 and 1997 program attendance lists do not identify the profession or affiliation of 16 attendees. The 1997 and 1998 lists identified 10 attendees as helpers or interns. These “unidentified” attendees, helpers, and interns likely are comprised primarily of architects or architects in training, but it is uncertain whether they currently are practicing architects. Given the indeterminate professional activities of these 26 attendees, the number of architects attending the workshops during the last three years is somewhere between 51 and 77. Table A-1 provides the affiliation or role of the attendees by year.

**Table A-1
AFFILIATION OR ROLE OF ATTENDEES**

AFFILIATION/ ROLE	1996	1997	1998	TOTAL UNIQUE
Architects	18	6	17	37
Unidentified	4	12		16
Helpers/Interns		1	10	10
Submitters	4	7	7	14
Engineers	2	3		4
Builders/ Developers	2	1		3
Lighting/ Energy Consultants	2	2		4
Utility/ Government	2	2		4
Manufacturer’s Rep	1			1
Total	35	34	34	91

The lists of attendees noted some architects as involved in projects that had been submitted for award consideration. However, the lists did not identify all such people. We made a determination of who on the attendance lists had also submitted projects by comparing the attendance lists with the lists of award submittals.

Based on our experience at the 1998 A+E program and our review of the list of attendees, it appears that people attending only the awards ceremony, if any, are not recorded on the attendance lists. In addition, the attendance lists did not

include a list of people who attended the A+E workshop held during the 1998 AIA Idaho Conference. Instead, program staff had a list of conference attendees.

We analyzed the lists of program attendees and of award submittals to determine the number of architectural firms that have participated in the A+E program. Table A-2 presents the results.

Table A-2
ARCHITECTURAL FIRMS PARTICIPATING IN A+E

PARTICIPANT STATUS	NUMBER
Submitting Firms	52
<ul style="list-style-type: none"> • Award Winners 	31
<ul style="list-style-type: none"> • No Award 	21
Nonsubmitting Firms	26
Total	78

PARTICIPANT INTERVIEWS

We had a two-fold goal for the participant interviews: one, to solicit their assessment of the A+E award program, including workshops, and two, to obtain information characterizing the design market, architects' potential influence on the market, and support architects might need to increase the penetration of energy efficient sustainable design practices.

Identification of Participants

We identified architects to interview from the lists of program attendees and the lists of award submittals. By comparing the two sets of lists, we were able to identify people who had attended the program and not submitted projects, people who had both attended the program and submitted projects, and people who had submitted projects but not attended the program.

We completed interviews with 24 of the 37 identified architects who attended the A+E program during the last three years and not submitted projects. Regarding the 13 architects we did not interview: 8 people could not be reached at the identified phone number, having changed their phone number or place of employment; 4 people did not return repeated phone calls; 2 people were not present at the time they previously had set with us for the interview and did not return a phone call requesting to reschedule; and 2 people who attended in 1996 were unwilling to complete the interview, stating they could barely remember the event.

Interviews were completed with 15 of the 31 award-winning designers (one of whom was not an architect, having won an award for a design and commissioning project). This number of completes met the interview goal set at the outset of the evaluation project.

Interviews were completed with 2 of the 21 submitting architects who did not win an award, falling short of the interview goal of 5 non-winning submitters. The disposition of the remaining 19 non-winning submitters is as follows: 9 people could not be reached at the identified phone number, having changed their phone number or place of employment; 5 people did not return repeated phone calls; 2 people refused to be interviewed; 2 people were out of town during the interview period; and 1 person was not present at the time he previously had set with us for the interview and did not return a phone call requesting to reschedule.

Interview Guide

The interview guide for the participant interviews is given in Appendix D. Questions are grouped into the areas of:

- Information on the respondent and respondent's firm (Section I);
- Assessment of the A+E program, including the submittal process and benefits obtained from the award (Section II);
- Exploration of the design market, the influence architects have on the energy efficiency of the final design, and support architects might need to increase the energy efficiency of their designs (Section III);
- Discussion of building design approaches (Section IV); and
- Suggestions "outside the box" of the current A+E program for what A+E or the Alliance might do to support architects in increasing the energy efficiency of their designs (Section V).

We asked all respondents the questions about the design market and their approach, architects' influence on the energy efficiency of final designs, and support architects might need to increase their energy efficient design work (Sections III, IV, and V). We asked people who had submitted projects for their assessment of the submittal process (in Section II). Those people who won an award were also asked about the benefits they received from winning the award (in Section II). Those who attended the program were asked questions soliciting their assessment of the program (in Section II). For individuals with time constraints that precluded answering all the interview questions, questions assessing the program and, in some extreme cases, the respondent characteristics (Sections I and II), were reduced or eliminated.

Characterization of Respondents

The majority of participants have been licensed architects for more than 15 years. The minimum time for which a respondent had been licensed was 5 years and the longest time was 37 years. Table A-3 summarizes the responses.

Table A-3
LENGTH OF TIME LICENSED TO PRACTICE ARCHITECTURE
(N=37)

TIME SINCE LICENSURE	PERCENT
5 To 10 Years	16%
11 To 15 Years	22%
16 To 20 Years	32%
21 To 25 Years	8%
26 To 30 Years	19%
Over 30 Years	3%

Respondents designed buildings in all sectors: commercial, institutional, industrial, and residential. Four respondents were self-employed. The respondent from the largest firm reported that the firm employed 400 people in its Seattle office and 800 employees nationwide. Table A-4 presents the number of employees in the unique firms represented among respondents.

Table A-4
NUMBER OF EMPLOYEES IN RESPONDENTS' FIRMS
(N=34)

NUMBER OF EMPLOYEES	NUMBER OF FIRMS
1 to 10	15
11 to 50	12
51 to 300	4
Over 300	3

NONPARTICIPANT FOCUS GROUPS

The goal of the focus group discussions was two-fold. First, we wanted to identify reasons why non-participants had not participated in the A+E program. Secondly, we wanted to gain a better understanding of the architectural market for commercial building design in order to assess the optimum strategy for reaching nonparticipants and increasing the incorporation of energy efficient design into commercial buildings.

Identification of Nonparticipants

We identified nonparticipants from the A+E mailing list. From this list we deleted past participants in the award and workshop portions of the A+E program. The resulting list was further differentiated in Portland between those nonparticipants who had participated in other energy efficiency related activities and those who had not. This analysis identified 913 Seattle area architects and 481 Portland area architects who were non-participants and 76 Portland area architects who had demonstrated some interest in energy efficiency by attendance at other events or by participation in the Committee on the Environment, but were nonparticipants in A+E.

Selection of Focus Group Participants

We invited the Portland area architects who had demonstrated some interest in energy efficiency to attend the focus group. For the other two groups, we wanted to

invite the employees of the architectural and design firms with whom it would be most appropriate to talk. Several factors complicate this task:

1. Firms use different titles for similar work
2. Design decisions are made by many different members of a firm; we wanted to identify the person most likely to be able to speak to the overall process and to how energy related design decisions are made
3. Not all design decisions are made by architects

Therefore, we developed a screener to enhance the probability that we would invite design decision-makers. While we anticipated the “project architect” would be the most generic term for these people, we did not want to presuppose the title conventions used by firms. We used as a screener the three key questions outlined in the following box.

Screener Questions

1. **Is this firm active in commercial building design?**
 - a. Yes
 - b. No (Thank them for their time and terminate.)
2. **Are you one of the architects or designers active in commercial building design?**
 - a. Yes
 - b. No & other names available from list (ask if the other person from firm is available is active in commercial building design and if so to speak with them)
 - c. No & no other names available from list (Thank them for their time and terminate)
3. **Have you ever been the project architect or in a position to influence the project design of a commercial building project?**
 - a. Yes
 - b. No (Thank them for their time and terminate)

The screener was effective. For the three groups, most of the participants were project architects. In one group a design engineer and two design directors responded and in two groups one program manager responded.

Two project managers and one engineer answered affirmatively for question 2 “whether they are one of the architects or designers active in commercial building design.” In retrospect, given that the target market for the A+E program is primarily architects, it would have been useful to also determine whether the contact was a practicing architect.

Moderator’s Script

The focus group script included five major sections. We began with introductions of the participants to one another and the moderator. This was followed by a discussion of how design decisions are made and who makes those decisions on commercial building projects. As part of this discussion, the architects talked about the integration of team members into the design decision process.

We then asked focus group participants to discuss how energy efficiency solutions are incorporated into their designs and whether they consider energy efficient buildings different from standard commercial buildings. Along with this we discussed whether there were differences between sustainable design solutions and energy efficient design solutions and whether clients perceived these differently.

The third section of the discussion focused on how architects like to learn about new techniques and tools. We discussed different environments for learning – from conferences to publications – and asked for examples of effective learning environments. Finally, in the fourth section we discussed the Architecture + Energy program. We discussed whether they had heard of A+E and what they had heard, what they thought of the advertorial of award winners printed in *Architecture* as a marketing or information tool, and whether they had considered or would consider participating.

APPENDIX B

Participant Market Assessment Results

Appendix B



PARTICIPANT MARKET ASSESSMENT RESULTS

CONSTRAINTS TO THE PRACTICE OF ENERGY EFFICIENT DESIGN

We asked 41 A+E program participants a number of questions through which they described the constraints they face in designing with a goal of energy efficiency. Explicit or implicit in all responses was the understanding that “architecture is a service business” and client satisfaction is attained by meeting clients’ stated goals and “not by pursuing one’s own agenda” should it conflict with client goals. For most clients, energy efficiency is not a goal. Some clients do hold energy efficiency as a stated goal, and yet these clients break into two groups: those that remain willing to adopt energy efficiency features once they know the costs and implications for others aspects of the design and those that are unwilling when they learn these things.

Clients’ goals include minimizing capital costs, minimizing professional (including design) costs, meeting program requirements (i.e., having the facility meet the needs of the people using it), reducing facility performance risk and risk to market value, minimizing the time it takes until the facility can be occupied, and, in to varying degrees, creating an aesthetically pleasing building.

Clients who will own and operate the building are concerned with long-term operating costs. However, these clients include public-sector owners, such as schools, who have a limited budget for first costs. Developers who plan to sell the building or lease it and pass through energy costs are not concerned with long-term operating costs. One respondent emphasized that banks and financial institutions provide constraints that the owners and developers must respond to. When asked what influence she thought architects wield with owners to increase energy efficiency in their buildings, she answered, “Let’s use a scale of 1 to 5 where 1 equals no influence by architects, and 5 equals complete influence by architects. Owners are a 3, developers are a 1, and bankers are a 0. It’s frustrating.”

Most respondents thought that, to be done well, energy efficiency had to be a guiding concept in design from the outset and not something added on once the design was underway. They recognized that an integrated design team is necessary to attain highly efficient buildings. Some respondents use an integrated approach on most or all projects. These respondents included those that had a serious corporate commitment to energy efficiency and some respondents working for large

firms, typically firms specializing in certain markets that require an integrated approach in order to achieve their clients' program requirements.

Respondents identified constraints that preclude the use of an integrated design approach, or that limit the extent of the multi-disciplinary interaction and problem solving. These constraints include the cost of bringing a number of professionals together repeatedly; the time required for team problem-solving; lack of knowledge (e.g., about energy efficiency) among other members of the team; and lack of willingness to work flexibly in an interdisciplinary approach, forgoing claims to intellectual turf. Respondents who have used an interdisciplinary approach noted that such an approach has no bearing on whether energy efficiency will be a client, and therefore a team, goal.

With few exceptions, respondents thought that an energy efficient design was one that exceeded the requirements of building energy codes, perhaps "far exceeding code." Again with few exceptions, respondents thought that sustainability was a broader concept than energy efficiency. They identified materials usage; full life cycle, including embodied energy, costs; impact on the site; and other considerations. Typically, respondents endorsed a sustainable perspective and aligned their work more with sustainability than with energy efficiency.

POTENTIAL INFLUENCE OF ARCHITECTS ON DESIGN EFFICIENCY

Respondents were asked the influence that they thought architects as a profession could have on the energy efficiency and sustainability of final designs. Overall, respondents were optimistic about their ability to influence their clients' decisions. Respondents who had received awards were more optimistic than those whose participation in the A+E program was limited to attending the workshop and ceremony.

Reasons given for their optimism revolved around four interrelated themes. One, several respondents said that it is precisely the architect's job to point out the alternative ways in which the client's goals can be attained and the advantages and disadvantages of the alternatives. These respondents said that their clients come to them for their creativity and advice. Two, some respondents said that their firm is committed to these principles and they are successful because they begin advocating these principles and their application to the project at the outset, perhaps even during the "best and finals" interview preceding the contract award. Three, many respondents noted that the architect makes thousands of decisions in the course of project design that the client does not know about because they are simply part of the architect's job. When one is committed to energy efficiency and

sustainability, there are a number of opportunities to design-in appropriate features even for clients that do not interested in these issues. Four, some respondents said that the number of clients interested in these issues is increasing.

Nonetheless, most respondents explicitly stated it is unlikely that they will create interest in energy efficiency in a client who, at the outset, has no interest in the subject. Some clients come interested (whether or not they will agree to added costs), some clients come with little awareness but with an open mind to the issues the designers raise, and some come with a closed mind. In particular, developers who will not pay building operating costs typically are not interested in energy efficiency and sustainability and cannot be persuaded of their importance when their implementation would add cost, time, or have any other ramifications for the developer's goals.

SUPPORTING AND INFLUENCING ARCHITECTS

Even respondents who are optimistic about architects' potential influence on the energy efficiency and sustainability of the final designs elaborated on the conditions that architects need to exert an influence. About three-quarters of all respondents addressed the need for technical information. They identified the information as a critical support to their work, without which their influence is limited. The respondents varied in the extent to which they had this information available. Most did not have access to the information they wanted. A few had access, which they or their firms had acquired because of their own commitment to the issues. Clients rarely agree to pay architects to conduct the research necessary to support energy efficient design. The type of technical information these architects desire is discussed below.

Technical Information

The technical information sought by respondents can be grouped into five areas: (1) cost-benefit information; (2) information on technical design issues; (3) identification of simple, inexpensive energy efficient and sustainable features; (4) information they can show to clients; and (5) information they can use with engineers and other design consultants.

Cost-Benefit Information

Nearly every respondent said that they needed information on the cost-benefit or payback of energy efficiency features. "We know how to do daylighting, but we don't

have good data to work with.” For this they want “hard numbers” in readily understood formats that “owners, developers, CEOs, and CFOs can understand.” And they want it to be persuasive to their clients, such as data from proven applications in existing buildings. Without this information it is very difficult to persuade the client to take any steps that add to project costs or that might be perceived as risky, risking either building or measure performance. “The more you can document, the more you can persuade clients.”

There is a need for “more, better, and more accessible data.” Many people spoke of wanting matrices or charts that would compare design alternatives, their costs and savings, and any other tradeoffs. They want technical data for their own use, such as manuals or workbooks. They need life cycle cost estimates for features. They need projections of future energy prices, as owners are responding to the current low energy costs. Some respondents distinguished between short-term and long-term benefits and wanted information on each, while one respondent who specializes in energy efficiency noted that he persuades clients, in part, by identifying the short-term gains that come with the long-term savings.

Technical Design Information

Respondents spoke of needing information on technically executing potentially complex techniques or using new systems. For example, one respondent said that some European designers are using natural ventilation, a technique uncommon in the U.S. Designing a natural ventilation system requires computational fluid dynamics modeling. Another respondent replied simply that architects needed “tools. Both the principals and staff need to have them.”

One respondent said it was as important to know what doesn’t work in a given application as well as what does: “not everything works in every case.” Another person hoped A+E could “provide support to test ideas or to guide us to professionals who can do modeling or share past experience.” This idea was echoed by the comments of another respondent who spoke of the need for “experts in the field” – consultants – to whom architects could go for assistance. He succinctly stated the problem. “It is: one, hard to find the experts; two, expensive to use the experts; and three, the end result is often intangible – it is hard to get hard, concrete data. Perhaps in the future experts will be willing to go out on a limb to suggest something based on experience, to provide a good recommendation from a reputable firm. But now, architects are only willing to provide their clients with information; they are unwilling to make a professional recommendation based on the information. We could really use an expert in the field to provide this service.”

Identification of Simple Measures

Respondents mentioned the benefit of having a relatively simple educational program that would talk about energy efficient design “in concrete ways. For example, the use of vestibules, the placement of windows, and the type of mechanical system.” Respondents said that there are “simple things one can do that give a lot of bang for the buck.” These features should have wide applicability. In particular, institutional clients usually are concerned with operating costs but often are constrained by limited funds for building costs. A number of respondents said “there are things architects can do on all projects without a lot of effort.” Respondents would like to see architects have greater knowledge of the rather simple, specific features and principles that they can employ.

Information for Clients

Respondents wanted assistance in communicating with clients on energy efficiency and sustainability. For example, some people said they wanted attractive brochures they could give to clients that would explain the concepts, their importance and value to the client, and illustrate ways of achieving them. Another person spoke of wanting a “primer on the concepts.” It would be useful to architects to have training in how to present the ideas to clients. One respondent whose firm has a commitment to efficiency and sustainability notes that the members of his firm still struggle with how to make the concepts meaningful to each new client and applicable to their project.

Information for Working with Other Design Professionals

Respondents wanted information that would help them work with other design professionals, such as engineers. They would find useful a directory of engineers that are knowledgeable about, and have experience with, energy efficiency and sustainability. They would like a manual or primer that would help them explore ideas with engineers. Most importantly, respondents thought engineers as well as owners need “hard numbers” on the financial implications of the features in order to be convinced to use them.

When asked what is the best way to influence architects to design more energy efficient and sustainable buildings, more than half of the respondents (n=23) identified educational formats and forums they thought would be effective. These forums included seminars and discussion groups, published information, demonstrations, and an information clearinghouse. About equal numbers of responses addressed the need to educate owners on the benefits of energy efficiency

(n=14) and the effectiveness of an award program (n=13). Other responses addressed educating engineers and rebates, codes, incentives, and taxes.

Educational Formats and Forums

Seminars and Discussion Groups

Many respondents spoke of continuing education programs. Programs that are interesting, relatively inexpensive, and that offer credits in niches that are hard for architects to fill (such as health and safety) would be well attended, respondents thought. Comments on this type of educational forum included: “the more seminars, the better,” “run more seminars,” and “do a lecture series.” One respondent suggested that A+E build on the interest people have in sustainability by making presentations on energy efficiency at sustainability and related conferences.

A number of respondents working in large firms suggested holding lunch programs or other discussion sessions in the office. Staff could invite engineers and consultants that they frequently work with. Topics could include the presentation of an award winner or another good project, information on a technique, or discussion of an integrated design approach. Attendees should have the opportunity to ask questions and hash out ideas. If such a session could also garner continuing education credits for the attendees, so much the better.

One person suggested that both architects and client staffs could be targeted by “workshops, articles, and motivational experiences, such as inspirational speakers saying “this is not hard to do, the payback is there, it is necessary and important to do.” Several respondents thought that architects would be inspired by exciting architectural examples, such as the double skin high rises in Europe, or the indigenous-influenced design of a prominent Australian architect.

Four respondents thought that energy efficient and sustainable design should be taught in schools of architecture, since the principles should guide a project design from the outset.

One person suggested having a quarterly peer review of projects while they are in schematics. This could be done for important projects, and should use a credible panel. He cited precedence for this from his involvement with AIA’s Urban Design Committee. His idea is similar to that of another respondent who suggested that the award program include projects in the design phase, in order to increase the dialogue on projects prior to their construction.

Published Information

A number of respondents focused on written and video information. Books, brochures, trade journal articles, and videos were mentioned. “Technical reports that are timely and coherent would be good,” on all types of systems and design issues related to energy efficiency and sustainability. Three respondents thought that A+E should have a Web site. One award-winner elaborated that the site could identify firms that specialize in green architecture, perhaps with past A+E winners at the top of the page. Another respondent said there was a need for published information on “good case studies, such as from Europe. So we can show owners it works. This would reduce their risk.”

Demonstration

Several respondents hoped to see demonstration projects, such as could be accomplished by a tour of past award-winning facilities, perhaps one facility every quarter. As one person phrased it, this would give them a chance to “kick the tires.” Several respondents mentioned the region’s lighting labs and described the usefulness of such “hands on” experience. Another respondent suggested that one or two people from a firm could be involved in a specific building and then share the experience with the rest of the firm’s members.

Information Clearinghouse

Several respondents mentioned that the A+E program or the Alliance could publicize available resources. Examples given included technical books; publications prepared by other organizations, such as trade groups; information on material sources; and information on local demolition and recycling businesses and programs.

Educating Owners and Developers

Fourteen respondents thought that owners and developers need to be educated to the value of energy efficiency and sustainability. “Sixty percent of architects are not ‘leading edge’ and will only do it if the client requests it.” “Trying to reach all the architects [including the late adopters] will take longer than if you go to the owners.” “We need owners to request it. When it’s in the RFQs [request for qualifications] and we have to do immediate turn-around and show we have the capability, that’s when we will be doing sustainable design.” “Awards have their value, but as a service industry, our job is to respond to clients.” “The [A+E] award

program amplifies an architect's influence. But clients are more persuaded by architects to do something if they have already heard about it from other sources." "The job of influence is easier if clients have an awareness of its importance." "Go directly to builders and owners and promote the concept. Market transformation. Create a demand for it."

Two people addressed the need for bankers and project financiers to be educated about the financial benefit of energy-efficient design.

Awards Program

Thirteen respondents mentioned the value of having awards for good energy-efficient designs. "Awards are a great encouragement." "The award program is good. It motivates designers." "Architects respond to peer pressure and money pressure. They love recognition. Awards are a good approach." "Awards and workshops help architects and engineers to make energy efficiency part of their practice. Receiving an award validates one's ability to clients."

These comments included some questioning and further suggestions. "The award program is a good opportunity to educate architects. The question is, how to convince architects to attend?" "Recognition should be at a national level. They should try to get the national organization to do more." "The award program should give more publicity to the owner, to involve them. Perhaps get BOMA co-sponsorship for the awards." "They should publicize the stinkers, too. An Orchid and Onions program.... This educates the owners, the public, and the architects." "Public pressure will influence architects."

Educating Engineers

Eight respondents addressed the need to educate engineers and other design professionals about energy efficiency and sustainability. "It's incredibly important to get engineers on board with green." "Architects and engineers take as much convincing as the owner/developer. They need the financials." "Structure the award program so that it forces architects and engineers to cooperate. Broaden the dialogue." "Work with mechanical and electrical engineers." "The program needs to reach electrical and mechanical engineers." "Educate the contractors. They are more amenable [to new information] than the clients. They want to keep a competitive edge." "Educate the engineers so they appreciate our concerns more."

Rebates, Codes, Incentives, and Taxes

Seven respondents said that rebates are the most effective way to get their clients' interest. Several respondents noted that developers lost interest in any energy efficiency measures when the utilities stopped offering rebates. One respondent mentioned the importance of having once done efficient design work covered by a rebate to the owner. Four people spoke of the need to make the building energy code tighter or have laws for developers: "contractors don't do anything unless they have to." However, some did not like a prescriptive approach. One person suggested the code include, for example, a list of ten measures from which owners could pick two or three things to do. One person suggested rewards for innovations and two people thought higher energy prices, perhaps accomplished through energy taxes, would be needed to induce change.



APPENDIX C

Nonparticipants Market Assessment Results

Appendix C



NONPARTICIPANT MARKET ASSESSMENT RESULTS

The nonparticipant market assessment results are presented in six sections. The first section describes the general characteristics of the focus group participants. The following sections present the key findings on project design decision making, incorporating energy efficiency into project design, how architects learn new tools and techniques, comments on the A+E recognition award and workshop program, and recommendations for the A+E program.

FOCUS GROUP PARTICIPANTS

Nine participants attended one and ten participants attend two of the three focus groups, for a total of 29. Tables C-4 through C-6 at the end of this section display information for each participant addressing their level of experience and type and size of architectural firm with which they work.

Overall, the average size of the firms for the Portland nonparticipant group was smaller than that for the Seattle group or for the energy-experienced Portland group. The average length of time the participants had been practicing architects was longer for both of the nonparticipants groups that had no specific energy efficiency experience. The Seattle group had the largest number of members with more than five years experience and the energy efficiency experienced group had the fewest members with more than five years experience.

Table C-1
EXPERIENCE AND FIRM SIZE FOR FOCUS GROUP PARTICIPANTS

GROUP	AVERAGE YEARS PRACTICING ARCHITECT	AVERAGE SIZE OF FIRMS
Seattle (n=10)	16.7	25.8
Portland (n=9)	12.3	18
Portland -EE (n=10)	9.5	26.4

All of the participant firms were involved in commercial building design and these included a wide variety of project types. A few firms had a specialization. These ranged from medical, to retail, to convention centers and stadiums, to high-tech. Most of the firms focused on a variety of project types, and most of the smaller firms included residential buildings in their mix of projects.

PROJECT DESIGN DECISION MAKING

The focus group participants were primarily project architects – our intended target as their role is to actively coordinate project designs. The design process is clearly one that varies in specificity both by firm and by client. However, the general outline of the design process did not seem to vary. According to those attending the focus groups, clients drive the process through their description of what they want. This description is then translated by the main client contact (whether principal, partner, or project architect) into a “program.” Along the way, others develop details of the design. These include other architects assigned specific tasks, specifiers assigned to develop the specifications for the implementation of the design, and engineers who develop the HVAC or lighting plans. Most importantly, the focus group participants noted that the building and zoning/planning codes parameters define what can be built on a given piece of property.

- *“What is the program exactly? ‘Space required for a garage, a living room, and a big bedroom.’ There is a program. Another program is, ‘I want a 40,000 square foot house on a lake.’ There is a program.”*

According to the discussion participants, “the program” defines whether energy efficiency is at the top or bottom or off the list, as well as the number of and type of rooms, functional requirements, etc. An overall conceptual design emerges from the program that guides the individual design decisions, such as where to place the closets or the fixtures to use. A program can be very simple, or it can be a detailed setting forth of the owners’ sense of their image and their view of how their clients and employees will experience the environment.

A vital aspect of this process is that design is a group process, not an individual one. The design process includes the principal or partner who sold the job as well as the staff architects. Always, there is the client, the landowner who wants the building designed.

- *“It is a group decision. First, we sit with the owner and work out a scope of the working program. Quite often what we do is go straight from that program to make decisions about design or systems, things like that. We go*

right from the program and start to make choices. The project architect will make those choices, but there are others in the firm, partners or associates, that make decisions. It is a group decision.”

- *“The question is who makes the initial design decisions. The project designer, the principal, depending how strong that principal is, makes the initial design decisions in-house, in the office. I see a lot by the project architect as well. At least 2-3 people bring some ideas to the table and if you have people who are interested in environmental decisions, if you have people who are interested in pure what-does-it-look-like design decisions, everybody sort of weighs in with this. A lot of times the project manager gets involved and he is banging the gavel about construction costs.”*
- *“We generally pull together a Design Team that includes all the group architects in the office, the owner and their representatives, the mechanical and electrical. You build the program and design. There is usually one architect, a principal or partner, who will lead the design effort; but everyone contributes. It is as much on the part of the owner as it is the architects to develop a whole program and the design of the project.”*
- *“Decision-makers are broad, because first you sit down with code, the zoning code, and look at the envelope of what is possible and what are the restrictions. That is the first place you start, and then what are the owner's program and desires.”*

Once the program is established, there remain multiple decisions to be made. In a few firms the architect whose stamp goes on the project takes specific care to oversee all “design decisions,” but in most firms – even those with an architect seemingly overseeing all design decisions – thousands to millions of decisions are made by various team members.

- *“We had the opportunity to work with a "signature" firm, as an associated firm. It is interesting where he supposedly makes all the decisions, but even in that sort of atmosphere we are preparing documents from development on. There are so many decisions that it is ridiculous; you can't run everything through him.”*
- *“... and another group is doing the specifications... When you are talking about decisions...there are a huge amount of decisions being made.”*
- *“In my own experience recently, a project manager above me is making client contact and such, there is a project designer who was making the*

aesthetic decisions, if you will, and then the project architect being myself, and a technical architect and staff also doing other things.”

- *“I am going to call the engineer about decisions regarding the heating equipment. I am not going to try and make decisions on that kind of stuff. I am going to call the budget person, a cost consultant to help me work out the budgeting for the type of building that we are starting to define. Then there is the whole group of consultants: the interiors people, the landscapers, the civil engineers, the electrical engineers, the mechanical engineers. They are all part of the decision-making process.”*

Although numerous people are involved in a multitude of decisions, the owner of the building or the developer of the project has the final say. The result of this is that the architects are often unwilling to propose ideas that they think the owner will not accept or will consider risky.

- *“Something I experienced recently was, very shortly after those design decisions were made, they were crossed out by the owner. This happens very frequently.”*
- *“I tell people trying to market cool products to me, ‘There is not a whole lot of incentive for me to be creative and recommend your product. If it, in fact, doesn't work, it comes back to me.’ If I specify what we've always used and it doesn't work, nobody is going to come back to me and say, ‘Why did you do that?’”*

INTEGRATED DESIGN TEAMS

Few of the participants felt the design process worked as well as it could. A few who had practiced in other countries were particularly critical of their experiences in the U.S.

- *“My experience from England is that the consultants get involved with the architects an awful lot earlier in the process than they do over here. The same can be said for Australia. The design team starts early on in the concept stage, when they are moving blocks around in spaces, rather than waiting until you are six months into the design phase and you have a building that you've invested all this effort and energy into. You now hand it off to the engineer and the engineer goes, ‘No, sorry. I can't make that work.’ It is easier to involve the engineers at the onset of the project. That is something we like to see and encourage everyone to do. It may be a one-*

hour meeting or a conversation on the phone, but get some conceptual ideas.”

Many of the participants view integrated design as the ideal design situation.

- *“Ideally, you have all the consultants right at the table from the get-go. We try to get our finger in everything, especially the lighting. The mechanical system, once the basic system is chosen, we really don't get involved with how it delivers, the locations and all that stuff. The system parameters are done as early as we can; otherwise, we are redesigning. That is no way to make money, redesigning.”*

However, few of the participants have been able to be practice with an integrated approach. Key impediments to integrated design are:

- The cost to have additional meetings,
- Timing on when specific consultants are brought into the project, and
- Pre-established relationships between the owner and consultants.

Some of the comments address these difficulties.

- *“You make design decisions about shapes, where shafts can go, and all that stuff starts to impact whether it can work. You throw enough money and time at it, you can make anything work; but whether it works efficiently, does it go like that or does it go like this? We can solve a problem a number of different ways. It would be great to have fax, phone conference, email, Internet, bring everybody in the office and start messing around with it. It seems like there is not enough of that.”*
- *“The consultants, more often than not, are very hesitant to do that up front. You bring in a mechanical engineer and he is ready to start sizing, he asks about BTUs and loads. When we ask what if it was this shape and what does that do, it is difficult for consultants to come in and be helpful in that process.”*
- *“We don't necessarily hire the entire project team. We often work on projects where the client hires the mechanical. That relationship between consultants is totally different [than when we hire].”*

Participants in the Seattle group contrasted integrated design to design-build projects. In a design-build project the owner typically has a group of consultants they like to work with.

- *“The client may have existing relationships with mechanical, electrical and structural engineers that they would like to continue.”*
- *“Some projects like shopping centers have people who do all the mechanical work, so they want the mechanical person to continue. The mechanical person is picked before I’m picked because they want that continuity.”*

Since the design-build projects tend to be similar, the team members can reduce their costs by repetition. Sometimes, design-build teams develop a working structure where they can improve the project, but typically they work in isolation.

- *“[I’ve had an experience with] a real team effort It is a design-build firm and a remarkably functional system. The contractor-designer has a store plan with the layout of the departments and stuff. They work with the same electrical contractor. We pretty much do the exteriors.”*

The approach that most meets these architects’ view of an “integrated team” occurs in a traditional design strategy where the owner asks the designer to hire the consultants.

- *“Owners that say, ‘We want you to put the whole team together’ are looking...for a better system.”*

In those situations where the architect hires the design consultants, the architect and consultants may have good working relationships that make it easy for them to call on each other throughout the design process, thus integrating the design. However, few situations appear to exist where such teams also hold energy efficiency as an important goal. Even among the architects we spoke to who were most committed to energy efficient design and who had attended energy events, only a couple had formed long term relationships with consultants who were also committed to energy efficient design.

- *“We got the Montana Governor’s Award for the most energy efficient hospital, but we never used that mechanical engineer again.”*
- *“We are wrapping up the schematic design on a 40,000 square foot elementary school. We have the electrical engineer /lighting designer (same person), ...[and] the mechanical engineer [who have] been involved for the last two weeks. We have skylights in the project and we are looking at*

daylighting.... We have dimmable ballasts and light sensors to dim the lights down or up. All this is being incorporated into the design of the building. It is not after the fact: ‘Gee, we have skylights, gee, can we take advantage of daylighting?’ We are looking at this stuff now. That was an early design decision. Sometimes, for whatever reason, you don't get to that point.”

ENERGY EFFICIENCY

Decisions about energy efficiency solutions occur at multiple-points in the design process.

- *“A lot of the energy-type issues end up kind of trickling down, if you will. The person who is doing the drafting, the person that is doing the project management, probably make those decisions and the principal of the firm probably isn't all too concerned about it. So we may find ourselves more closely linked to mechanical and electrical issues than the principal of the firm is.”*

The key energy using decisions, outside of siting the building and using the siting as an energy advantage – decisions which the architect makes in association with the owner, occur in the work done relative to the mechanical and lighting systems. Architects rarely feel they are sufficiently trained to design the mechanical systems and so they rely on consultants. Thus, architects typically have little influence on the energy use of buildings' mechanical systems. The mechanical issues addressed by the architect are primarily focused on assuring the building can house and support the system.

If the lighting system is assumed to be basic, the architect frequently may do lighting design. Lighting consultants will be used for complex systems. Thus, typically architects either determine the lighting energy use by default, so to speak, going with standard practices, or have little influence on energy use as the lighting consultant drives the system decisions.

- *“We allow a certain amount of room in the ceiling based on size, but they come back and modify that. We go to mechanical engineers fairly early on and say, ‘What kind of equipment will you put up here?’ We pick locations and put those loads into structural calcs so we know we can handle it, ... and we don't have to go back and re-design everything. For most of the stuff I do, the mechanical is a small part. They are the experts, typically. Lighting is a fairly simple sort of thing in most of what we are doing;*

dropped ceilings that we are throwing some sort of pattern in. We typically do the lighting calcs in-house and layout patterns; but then again, we are not doing exotic lighting either.”

- *“What role do we as architects play in the design of the mechanical and electrical systems? It varies from person to person and office to office, but a lot of times with work that I do, I really rely on the mechanical and electrical engineers for their knowledge and what they bring to the table. I learn something every time along and I can ask them a few more questions and get a little further, but I really rely on them as far as designing systems. I'll get into the lighting catalogs and pick things out from there or figure things out in those. Sometimes I am looking at what systems are out there, but most of the time it is going to be consultants.”*
- *“Design decisions do and do not include such things as electrical and mechanical systems. For instance, many architects feel they can and should be able to do the lighting lay-out for a project.”*

We noted that some architects have the belief that lighting is a low energy using end-use, not requiring special attention.

- *“Why do we do lighting? Because there is an aesthetic value there, the looks. Lighting doesn't affect energy as much [as other systems].”*

Most architects in the focus groups felt they knew something about lighting solutions, but they typically did not think the owners would accept new lighting solutions.

- *“You can go through a building and find out a lot of things to take advantage of daylight. Yet, the strategies may fall on deaf ears, because they are not going to install lighting before they have tenants move in, and the tenants will have their own interior designer or architecture firm working on laying that out.”*
- *“If [the project] is of sufficient size you can have a lighting designer come in and help you out, and that can make a lot of difference in what you are doing. I think everybody here, if they had the opportunity to do nicer designs in terms of daylighting, getting larger glass and some of these other things, [would] try to sell the clients on the fact, that this will actually benefit them in the long run. We have a hard time because we don't have a lot of studies and reports or anything else. It is almost like clients have to be totally sold 200% before they are willing to give up that extra dime.”*

For most projects, energy is a very low priority for the various decision-makers. The architects in the focus groups believe that, for most projects, there has to be some commitment from the owner to pursue energy efficiency goals in order for the architect or consultants to investigate and propose different options.

- *“An owner does not develop the programs – or even somebody hired by the owner as a consultant to develop a program – that comes in and says, ‘We want this building to beat the Oregon energy code by 15%. We want to use recycled materials.’ The owner comes in and says, ‘I want a conference room and I need open office space for this many people. I need 15 classrooms. Show me what you’ve got.’”*
- *“[Energy efficiency is not a goal] unless it is a marketing tool and a personal reflection of that company’s goal, or as a developer they are trying to sell the building as high technology, energy efficient, recycled. The client says that and then two weeks later it is as though those words never left their mouth: ‘Did I say energy efficiency? Oh no, I wasn’t serious about that.’”*
- *“Energy isn’t usually something on the list you talk about, couple of months into a project, ‘By the way, what do you want to do about energy?’”*
- *“For clients who come in and want to have a showcase dental office that will make it into all the designer magazines to show their friends, you can show them all the environmental features that you want. But if it won’t get them in the magazine then you won’t sell them that idea. For clients with a clean slate, architects can present the idea of energy efficient resources, recycled materials, and mechanical systems that will benefit them in the long run.”*
- *“It will cost the client \$5,000 to make this energy efficient building. You can still look at the issue of taking the \$5,000, investing it, and using that to pay for the energy.”*

For those architects most familiar with energy issues, the difficulty of gaining cooperation and involvement by knowledgeable engineers is a limiting factor to energy efficient mechanical system solutions.

- *“Energy issues [are] actually a frustration of mine as a designer, because I keep trying to involve my mechanical and electrical consultants more in the decision-making process, and they keep waiting to be told what to do. There are all these things that you know are out there to do....I really want to*

evaluate the different types of systems that are possible, and do the payback [analysis].... A lot of the projects that come into your office don't have the fee structure to handle those extra analysis costs, but those are really valuable services. I haven't learned how to sell them well enough."

In those situations where there is financial support for a mechanical engineer who has specialized knowledge or training in energy efficiency, more innovative energy efficiency solutions tend to develop.

- *"We used the DOE-2 formula on a building I am working on. I guess there is a two-step process. There is a general review and there is a very elaborate review, which we couldn't afford to do. But just with the general review we had 17 different criteria. We tried this and this, this and this. We used a base model and we applied each of those different criteria. This is beyond the simplified process. This is a lot more involved and PGE paid for it, which is nice. It is useful for us as architects to see the paybacks when I start throwing in the expensive glass or another inch of insulation on the ceilings, or thicken the walls. There are all kinds of different stuff we threw at it. A lot of them were mechanical and electrical things, and a lot of architectural elements. It was a very useful process."*

Another architect whose firm has a commitment to energy efficiency felt he had a team that could do the extra calculations. Being able to do this, they have been able to sell many innovative energy efficient solutions.

- *"Maybe ... I've been lucky with the clients I have, and I've also got a group of good engineers that I'm working with who are always pushing the envelope. In most cases, once I talk to them about potential paybacks, benefits of using energy efficient systems..., even the [clients with small] jobs have come around and said, 'Okay, show me what this pencils out at.' We do the numbers and on the majority of the jobs I've worked on, those numbers have shown that they can payback in a relatively reasonable amount of time, and that is from 7 to 15 years."*

The architects express a critical need for more information than they currently have. As one described, his ability to sell low-E glass to a client was because he had information on costs and benefits that he had collected himself.

- *"It is an easy sell for me to sell low-E glass, because I can say, 'Here is what it is going to cost you.' I know what that costs from most of the suppliers, and I can say, 'This is what it is going to save you in energy, and this is what the payback is.' It is a very easy sell because I have that information,*

because I've gone out and done that. I've gone through typical buildings, priced windows, priced the options, and say, 'Here are all the options.' It would certainly be easier [if I had the data], especially if I believed it. I believe my numbers because I've run the numbers."

Because architects often decide the lighting design, it is critical that architects be aware of energy efficient lighting solutions.

- *"Obviously, the site is integrally related to the lighting. North light, south light – it depends where the site is. It is funny you even mention lighting because, having just worked very closely with a lighting designer, their knowledge can be pretty amazing, above and beyond what we can do sometimes. I found that working with lighting designers, like any other consultant, can be extremely helpful. It doesn't mean that we are not able to lay-out lighting ourselves, but there are sometimes new tricks of the trade that come out."*

In all three groups there was a strong support for the need to have resource tools that provide cost and benefit information on a variety of different energy solutions. It is the lack of a source book or of a way to quickly demonstrate to the owner or the mechanical or electrical consultant the cost benefit calculations for energy efficiency solutions that architects feel most limits their ability to influence the design process. Simply the search and hassle costs of developing the information appear daunting to most, much less applying the information to the design and selling the owner on it.

- *"The problem with answering the question [of what solutions are possible] is nobody has the answers in one place. They haven't got them in a manual. You have to do the research yourself, [such as on] how much energy it takes to make the building supplies and where you can save money to use recycled building products. There is no central source for that. If you have a really enlightened client who wants to pay you extra to do that, you can do it. It is the only possible way we can make a buck in this business, no matter how much we would love to be politically correct about this. It is really frustrating."*
- *"If you called a [seminar] '10 Things Your Electrical and Mechanical Engineers Won't Tell You That Will Save Your Client Tons of Money,' we would all be there."*
- *"[It would be useful to have] a packet that the power company would distribute to all the architects. They should come in like a rep and say:*

“This is the material that outlines a lot of cost savings that can go into buildings from new to remodeled. If you sit down with your client or contact us and bring a client in, we can sit down, go through and do a little seminar about ways of doing that.”

Nonetheless, even with such a service, if the costs of the recommended solutions are greater than the owner is willing to invest, the chances are slim the owner will agree to them.

- *“The City of Bellevue gives free services for any project in Bellevue. They give you a primer on mechanical systems and choices that could be made these days. It was all well and good to have all that talk about sun-shading devices and variable speed fans in the mechanical systems, and computerized system monitoring; but when it came down to when we brought that forward to the client they said, ‘That is all well and good, but how much will it cost?’ They didn’t want to see that, even though the intent of the building was to be a very efficient, forward-thinking, technological structure. You can make a decision and then the client can say, ‘No.’ They wanted a forward thinking building and then – then they found out how much it cost.”*

And for some of the architects there remains continued performance uncertainty about energy efficient solutions. Even though they are aware of the solutions, they are uncertain that the cost benefit calculations are accurate. Some have experienced problems with energy efficient equipment, others have an overwhelming skepticism based on notions of embedded energy involved in manufacturing and transporting products that are designed to save energy. These performance uncertainties could also be addressed in resource materials, but currently remain as persistent doubts.

- *“I sometimes argue that it probably takes more energy to manufacture the insulation than you are saving by using it, but we never look at that as part of the picture. Really, when we go from R-30 to R-38 and put that much insulation in there, are we really going to save more energy than it costs to make it and get it out here?”*
- *“There is a whole energy cost cycle there. Most of the time we look at energy as how much electricity is going in the meter and how much heat is coming out of the exhaust stack, as opposed to being developed and kept in the building, and what is the U-value of my windows. This is a great energy efficient building; I’ve got a great U-value. But if the entire building is made out of titanium, and I am not trying to quote anybody in particular,*

but the amount of energy that went into building that titanium would power 50 other buildings for 10 years.”

- *“There were engineers doing lectures with PGE about energy efficiency, [talking about] the Fox Building in New York. It is a high-rise skyscraper building and they are putting solar panels on the top or photovoltaics to run 50 billion watts of flashing light bulb signs around the bottom of the building and they talk about it being energy efficient. It is kind of a joke.”*
- *“Is this energy efficient for financial gain or a cheap building to operate, or is this energy efficient to save energy? A very energy efficient building that is a nightmare to maintain can cost more to run than a slightly less efficient building that is very easy to maintain. From my standpoint as an engineer, the one that uses slightly more energy but is easier to maintain is an overall bonus to the owner, versus the one that uses slightly less energy but is very difficult to maintain. If it is not maintained then the very efficient operation of that building becomes less efficient.”*
- *“Sometimes these energy efficient active systems just don't work. Ten years ago we put in high efficiency ballasts for fluorescent lights. Now we are going in and taking them out, because they didn't pan out.”*
- *“We are getting problems with moisture with more energy efficiency. All the affordable housing is based on track records of what they've given before for square foot. We've never been able to put any system in except for electric for heat in those projects, unless they are for sale [rather than rent].”*

Most architects in the focus groups considered energy efficient buildings to be exceptional, different from the ordinary code-compliant building.

- *“Typical buildings built to the code are just typical buildings now. To say ‘energy efficiency’ is something different. It is a little bit more. I think not only of the REI building, but also of a Miller-Hull building up near Northgate that is a credit union that has sunshades, lighting schemes. I don't know about the materials they used, but certainly they went to a big point of using energy efficient lighting.”*
- *“An energy efficient building would be one that took energy into the design consideration, as a fundamental.”*

Among for the architects who feel that they are committed to energy efficient solutions, several felt that the Oregon energy code provides a barrier to implementation of the best energy efficient solutions.

- *“Once you get past the stage of the designers on board and the owners on board, everybody wants to do something sustainable or something with energy efficiency. Then you run into code. I would call that something that really hampers doing energy efficient projects. The energy code in itself is good, the idea of the energy code. But the simplistic three-step process, the prescriptive path, simplified tradeoffs, and then the more complicated approach, the integrated approach. We can't pay an engineer any more fees than the prescriptive path.”*
- *“There are some problems still in the code. One that I faced recently was that we designed a very efficient apartment project. Because of the way the air circulated in the room and it was more than 35-feet deep. There is a code about how far your windows can be from the interior space. We had to put holes in the walls around the perimeter of the windows, and they manufacture these windows because they are aware of this code. Here we are making a building so tight and energy efficient that the air stagnates, so we have to put permanent holes in the walls and a fan that runs to pull air into the building. Something is wrong there. It doesn't jive. Maybe we should back off on the energy efficiency a little bit.”*
- *“The energy code is very unapproachable and I can't understand it. I've been involved in a project where we went through a DOE-2 thing. We spent a lot of money, the client spent a lot of money, and the client in the end was very disappointed because it was nothing other than just good design. After the prescriptive is what? We went through the simplified trade-off and it is my understanding that you give the facts to the engineer, they pump it into this black box and you get the answer. It is not intuitive to me.”*

Sustainable Building Design

Practically every architect in the three focus groups saw sustainability as different from energy efficiency concerns. To most of the architects, energy efficiency is part of sustainability, but only part of it.

- *“Energy efficiency is what is in the meter and what is going out the exhaust stack. Sustainable is where the workers were born to create the energy and the food grown to mine the rock.”*

- *“And then the energy efficient building, the building itself, and how it will be environmentally friendly, the energy required to produce the products in the building as well. You are going beyond ‘energy efficiency.’”*

Most of the architects believe there is deeper interest in sustainable architecture, even if the numbers of clients committed to energy efficiency and sustainability are similar. The deeper interest stems from the ability to justify design decisions on other criteria than strict financial payback.

- *“There are clients in this area that realize that energy efficiency in the Northwest here is really not an issue, though there is the sustainable issue.”*
- *“One factor is that because of the energy code, there is a fairly high threshold in Oregon of operational success in buildings relative to other states. So people aren't as worried about energy efficiency because they know there is a standard out there that has to be met that is relatively high.”*
- *“Energy is very cheap in this state so there is a very, very long payback.”*

In answering a question about what sustainability is, the focus group participants typically started talking about how to do sustainable design. It is a process of trying to ensure that the products and solutions in the building work from a long-term perspective.

- *“The columns [used in the REI building] were blown down wood instead of harvested wood....It goes back to when you actually start building the building and turn the switch, turn the building on, if you will, to how much energy it took to create the objects that are being put into the building. I raise REI up as an example when we are talking about energy efficiency. That is taking it to the nth degree. The entire building is energy efficient and the whole process as far as the life cycle costs, the kindness to the environment.”*
- *“To a certain extent sustainable design has been going on for years and nobody has ever put a label on it. If the building is maintenance friendly, it is a more sustainable building than one that costs a lot of money and a lot of energy to maintain....Now we can bring in energy, materials, recyclability of the building, as well as maintaining the equipment.”*
- *“[Addressing sustainability involves asking:] Where does it come from? What does it take to ship it here? What is it made out of? Does it have any*

recycled materials in it? Can it be recycled when you are done with it? Does it give off anything? When you put it in, what happens?"

As with energy efficiency information, the firms that are attempting to develop resources materials on sustainable materials are finding it difficult to find information on how to make decisions for lighting and mechanical systems that would qualify as sustainable.

- *"Our Green Team, we sort of split up things, information to disseminate to the masses in our firm. It came to me to get information on green mechanical systems. I must admit, I am having trouble finding anything, mostly because I don't know where to go. I ask our engineers and they might come up with some, but I haven't found any yet."*
- *"We've set aside binders that have the word 'sustainable' on the side. You take out products and put them in that binder as sustainable products. We learned a lot about sustainable wood for one of our projects, so that information is in there. I take care of the lighting library in our office. There is not one product in the sustainable electrical division 16 binder."*

Sustainability has some of the same performance uncertainty concerns as energy efficiency. This is both a reflection of the doubts architects have about the claims for sustainability as well as their sense that experience has shown or is showing that claims can fail to materialize.

- *"There are some things happening in the laws with paint and Volatile Organic Compounds. Now they are more environmentally friendly, but I understand the paints are crappier, so you have to apply more, use more of other resources to get what you did have. There are secondary and tertiary effects that don't rear themselves until you are down the road."*
- *"And then I cynically say, 'I don't know if it [the REI building] is all true, but it sure looks good.'"*

NEW APPROACHES AND TECHNIQUES

The architects typically express an interest in learning.

- *"In architects' training, we don't just draw nice pictures of buildings. We have structural engineering training, basic mechanical engineering, electrical, HVAC, and a whole bunch of other stuff that is rolled into one."*

When we come out of school we don't know diddly, but we start to learn it after we start working."

- *"Architects are trained to know a little about a lot of things and not learn too much about everything. We learn enough about it that we bring in engineers and consultants who allow us to explore ideas for different projects."*

How willing architects are to explore new ideas and new techniques may be closely linked to their perception of their clients' willingness to pursue new ideas.

- *"You get a feel for the client after a while and whether they are looking for something that is out of the ordinary, above run of the mill or below it. You kind of get an idea and it will start steering your decisions."*

But willingness from the client also must include willingness on the part of the architect. Among these nonparticipants there were concerns about using new ideas and innovative concepts. Mostly these are performance uncertainties, but it is also a desire to minimize risk. Architects believe that the owners expect the architect to make the right decision.

- *"So anybody trying to introduce new and creative things in the market, well...I've been bitten many times where I've gone and said, 'Oh, this is really cool stuff,' and a year later nobody wants to touch it. They are coming to me and saying, 'Well, you said--.' If it is new products, the architect has nothing in here to gain by being creative. He has a lot to lose."*
- *"A lot of the passive stuff you can't put a number on. You tell them it will be roughly in this area and they will say, 'Whatever.' They won't really believe you can save them money. ... The owner can't go out and see three different places it has been done before. They don't want to stick their necks out."*

The architects noted a variety of ways they learn about new ideas and concepts. Many of these are internal to the firm or individual ways. One or two participants in each group discussed how their firm had individuals dedicated to collecting and processing information on specific topics that are stored in the company library.

During the focus groups we asked for a show of hands for all participants who felt that a specific learning environment was an effective way to learn new tools or techniques. Table C-2 displays the responses across the three groups.

Table C-2
FOCUS GROUP PARTICIPANT VIEWS OF EFFECTIVE LEARNING ENVIRONMENTS

LEARNING ENVIRONMENT	SEATTLE (N=10)	PORTLAND (N=9)	PORTLAND ENERGY EXPERIENCED (N=10)	TOTAL (N=29)
Conferences	9	6	10	25
Web Sites	6	1	8	15
CDs or Videos	0	1 videos 3 CDs	0	1 videos 3 CDs
Participation In Professional Organizations/Associations	5	2	4	11
Membership In Topical Groups	3	0	2	5
Workshops	6	1	4	11
Publications	10	8	8	26
Competitions	0	0	0	0
Recognition "Awards" Programs	2	2	8	12

The participants felt that conferences and publications were the most effective environments for learning new tools and techniques.

- *"What convinces me that something will be useful? A lot of it has to do with areas where a person needs to learn more. I send them to a lot of ICBO seminars because they deal with code issues and stuff like that."*
- *"Habitat for Humanity last year had a seminar out at Wilsonville and they had a bunch of regional people in. You picked different seminar classes, had a lunch and everything. They talked about ways of super-framing for insulation, different heating systems, sustainable architecture, materials, and listening to things. That was pretty effective because you could go around and each person could have a sphere of influence or ideas, so you went around and learned a little bit about what they learned."*

The discussion of publications provided an interesting mix of responses by the three groups. As can be observed in Table C-3, the Portland nonparticipants with energy

efficiency experience considered a wider variety of sources for information on new tools and techniques than the other nonparticipant groups. During the discussion, this group spontaneously generated publications, while the other two groups took some probing.

Table C-3

PUBLICATIONS CONSIDERED EFFECTIVE FOR LEARNING NEW TOOLS AND TECHNIQUES

FOCUS GROUP	PUBLICATIONS READ FOR NEW TOOLS AND TECHNIQUES
Seattle Nonparticipants	<i>The Record & Architecture</i>
Portland Nonparticipants	<i>Architecture, Architectural Record, Manufacturers catalogs, Stone Magazine</i>
Portland Nonparticipants with Energy Efficiency Experience	<i>Metropolis Magazine, Environment Design and Construction, Environmental Building News, Solar Today, Fine Home Building, The Record, Trade Journals, Popular Science, Rocky Mountain Institute, Green Clips by e-mail.</i>

Fifteen thought that Web sites were effective, though most agreed that one needed to know something before they could find the Web site. Essentially Web sites are tools for finding out more about something one already knows a little bit about, especially products.

- *“If I can't find product information I go to a Web site and find things there quicker and faster.”*
- *“It is a good source of finding out where to find a lot of information, but the information isn't necessarily on the Web site.”*
- *“If you are trying to look for new information, if you know what it is, if you are trying to look for something, if somebody said, ‘Go to this Web site,’ fine.”*

Participation in professional organizations/associations and workshops each received 11 votes. These venues were most often seen as related to conference attendance. Focus group members gave several workshop examples, a number of which focused on sustainable and energy efficiency building solutions.

- *“The Portland Committee on the Environment puts on a workshop once a year.”*
- *“PGE had a recent daylighting workshop.”*
- *“I went to one by Architectural Reproductions on plaster use and some different creative stuff there.”*
- *“We did a straw bale demonstration product, monitored it for moisture. It is great to see it and feel it.”*
- *“The Buildwise Bellevue process was very good with Tom Palladino. He runs the seminars.”*

Recognition awards were seen as effective by 12 of the 29 focus group participants, however most (8) were in the group of Portland nonparticipants with energy efficiency experience. And for each of the groups, at least one or two participants mentioned the A+E award as an effective way to learn new tools and techniques. The following comment was from a Seattle architect.

- *“Certainly from the A+E Awards out of Portland. I followed those. I learned more about what firms were doing that kind of work.”*

Several of the participants added that visits by vendors to their office for “brown bags” or just to discuss their products were very effective.

- *“But you keep your ears open. If somebody comes by and wants to sell raised floor air distribution systems rather than the traditional, I listen. If someone comes back and says they are unhappy with mechanical distribution from above, is there another way, I tell them to listen to this guy.”*
- *“A woman from a local lighting company came out and gave us lunch a couple of days ago. It was very informative. She showed us a lot of new lighting fixtures.”*

Most added that the process of working and informally talking with other architects are key ways they learn new things.

- *“I consider myself the environmental/green advocate in my firm. It has taken a year for me to figure out a way to bring it to the table and how to even begin. It occurred to me recently through some casual conversations that you can begin anywhere by specing a few items that have recycled*

content and get the other people in the firm into the mindset of thinking about what this means.”

- *“As far as learning new things to incorporate into your building, the very best way is to get somebody on your project who can work with you on that project, because we are all short of time.”*
- *“We do a lot of stuff in-house that a lot of architectural firms would not do. We are also very team-oriented. I am not big on hierarchy, of having people in slots. I don't think it is a very good way to learn....As a team everybody knows and everybody gets to do everything.”*
- *“When you learn outside of your work life-like [in this focus group], then you can take it back to the office and market it, because you've learned about it outside of your billable hours. That is how you incorporate these things into your projects in the future.”*
- *“Individual meetings between groups, people, discussions. How many people here just get together with others for a drink after work and sit down and discuss this stuff and bounce ideas around.”*

A+E PROGRAM

Recognition awards were considered to be an effective learning tool by 11 of the 29 architects. The reason they enter awards is primarily for the marketing value and the potential to demonstrate to clients that they have specific competencies.

- *“A lot of architectural firms will enter the AIA awards. It is the image of the building.”*
- *“If the firm is striving to be nationally recognized it is absolutely essentially, and for our firm it is an expense you simply gobble up because it is what you have to do to survive.”*
- *“If you get to the point where you can enter one of those things, you've gone through a lot of hoops and gyrations ... and you want to be recognized for what you've done.”*
- *“The competition, plus new clients will look at that and establish a base of competence.”*

- *“If [the award topic] is something that was a specific goal of the project: I recently worked very closely with a lighting designer and because of collaborative effort we pulled off a very, very nice lighting design. When I saw the yearly lighting design awards come through I called her up immediately and said, ‘Should we enter?’ and she said, ‘I was thinking the same thing.’*

Going after specialized awards, can also be driven by the building owner’s interest in the topic or has an overriding interest in gathering awards or specific awards.

- *“There is a competitive edge. I have one client who is in competition with this other client that got an energy award. He said, ‘I want one too.’ That is true. It actually happened.”*
- *“You have clients who want you to go to every award out there so they can have these awards sitting around their office because they like them. ..those folks [would] like an energy award too.”*

The architects generally saw the A+E award as a specialized award, that should recognize innovative solutions.

- *“By its nature it seems specialized.”*
- *“Something that showcases the integration of the technology into the architecture so they become more integrated, like some kind of heating system that gets the job done and becomes part of the architecture.”*
- *“A natural ventilation system that is not part of the code at all. If it is there or not there, it doesn't matter.”*
- *“Something innovative, a different way of using a widget that makes this building envelope more efficient.”*
- *“One thing we are doing this year, we are using the A & E Awards to see if we walk the walk this year. There is a set of criteria. Can we even put a project in there this year?”*
- *“It reinforces good energy habits.”*
- *“It is a sustainability thing.”*

It also has the reputation of a very Pacific Northwest award, which is at times a good thing, but at other times puts it lower down on the radar screen for some firms.

- *“The Pacific Northwest because that is the only award I've seen.”*
- *“This is a different level. There are international awards, national awards, and this is a step down.”*

The A+E awards also have negative associations in some of the architects minds. First there is the need to prepare the submittal and the presentation materials, then there is the view that the award may be too specialized and not really be focused on the most critical questions of energy and architecture, that of integration. To a few of the architects the bifurcation of the architecture and energy with the plus sign, implies that these are separable.

- *“A lot of work, paperwork, and preparing, seeing if you measure up. How much money we are going to spend, if it is worth it; if it we have a chance in hell, if we have something really hot that is going to go. Who is going to get stuck gluing boards all night long to get ready for tomorrow?”*
- *“Made me think making architecture that is maybe energy efficient, and somehow that they are separable, you can do architecture, you can do energy efficiency. Maybe in this case they are looking for good architecture that is also energy efficient; in other words, it is kind of a misnomer. The point of its purpose is to look at integrated design and [A+E] is not doing it by name.”*

Each of the focus groups reviewed the advertorial for the 1998 A+E Award winners. Most agreed that the advertorial is a good marketing piece for clients, and most thought it would be noticed and that they had noticed it in an architectural magazine.

- *“If you see someone has received a reward for energy efficiency in the photograph there, a nice looking building, you can see that you can have both. That is what really attracts the attention.”*
- *“Certainly the awards always show fairly normal looking buildings. I always think there is going to be some weird and wacky passive solar thing getting the award.”*

- *“It is a learning tool in that any time you look in there and you see a building that is not offensive and it won an energy award, it is like, wow, okay.”*
- *“We have a project in there. I would say it is a good trophy that you can send to clients.”*
- *“It is great for marketing to clients, especially when you are looking at a sustainable client.”*
- *“Architecture magazines really are never actually read. They are looked at. ... It is the type of thing where I would flip through it, see the photographs, logos, photos, this looks nice, where is it, who did it.”*

There were some concerns, however, that the advertorials just don't convey much except the outside of the building, there is no technical information, no numbers to prove that the winners were winners, and very rarely does anything appear to be innovative. Additionally, a few in each session noted that just because the award is in a architecture magazine, does not mean that the clients are going to be impressed.

- *“But the picture shows a building from the outside. What is it that is energy efficient about that?”*
- *“If I were to judge the seminar by looking at the awards and didn't see anything innovative, there is no carrot there.”*
- *“This is useful at the level of marketing. It is very valuable to have, but what is lacking for architects, owners, and others interested, are case studies based on this, so you would actually get the comparative data.”*
- *“Everybody focused on a specific task reads trade publications, and if this kind of stuff came out in different trade publications that would be more helpful. The we would hear, ‘How come you didn't put my building in for the A & E Award?’”*
- *“It depends on how you are going to use it. If you have all your awards down in the lobby that is good, but if you client is coming in and they've heard of Sunset Magazine and they've haven't heard of Architecture and Energy, then having that up there isn't going to influence them one way or the other.”*

- *“I have a client. He came in and said, ‘I don't care about any award from a group of architects given to architects. Everyone is patting himself or herself on the back. It doesn't mean anything to me, but if you can get recognition in the field, if it is a medical building in medical journals that says, ‘This is outstanding,’ that means a lot.”*

RECOMMENDATIONS

The architects had several recommendations for improving the A+E awards as they understood them. One issue was the fact that most felt they knew nothing about the criteria for the awards. Even those who were very interested in the awards were uncertain what would qualify a project for an award. The idea that code compliant buildings were all energy efficient was both a surprise to them and something they thought should be discussed more clearly in the awards materials.

- *“I look at it and see it is for energy. That means it is something above and beyond the normal and I say, ‘Oh, we really haven't done that,’ and it goes in the trashcan. If [my building] does, in fact, meet [the requirements], then they need to make that more obvious to me and maybe I would look at it a little more seriously.”*
- *“One thing that would help-I wasn't involved directly in the submission-but essentially the process was, ‘Here is the application,’ and now we have to go through and dig out all this information. It is really up to the mechanical-electrical engineer to pull it up. They have to go back to their records. Nobody wants to do that. It was pulling teeth to try and get the information. If the process was set up in the beginning of the project, the criteria was set, you could start collecting that information and simplify it for us”*

Many felt that the workshop sounded interesting, but that an eight-hour workshop was difficult to fit into their schedule. Finding a way to disseminate information from the A+E process to architects in shorter seminars might lead to more participation.

- *“That is the thing is we are all working professionals. You look at how much work we have on the boards. Is it going to take one of those precious weekend days to do this, or is the reward during a weekday worth it? Can we go to one day of a state convention and earn a years' worth of credits?”*

- *“Something that is eight hours, I can't make that; two hours, it seems like an interesting thing.”*
- *“I must get 20 seminar offerings in my in-basket a year. The only one I did this year was the new exiting code.”*

Several architects discussed other ways to market the A+E. In particular, the idea of linking the A+E to the state energy codes had appeal in each of the sessions. Such a linking would both get consultants and architects to attend and help inform designers about how to deal with the code. The problem would be how to name the session, as it currently stands A+E mainly attracts architects, yet a title with code in it could lead to architects only thinking engineers should go.

- *“If you did present an understanding of the state energy codes, you have to market it to architects, too. If you say, ‘The energy code and lighting,’ then every architect in here is going to expect an electrical consultant to go to the seminar. The same thing is true of the architect and building mechanical systems.”*

After reviewing the advertorial, many of the participants made suggestions for additions to the advertorial. One suggestion was to have a plaque for the building owner to install in their building. Other suggestions concerned increasing the technical information in the advertorial so that it would provide data for architects to use with clients and consultants on energy solution effectiveness.

- *“It would nice to see a little more [than just the advertorial], maybe something that could go to the owner, something that is name recognition for the building itself like a plaque.”*
- *“If you can show how we can save money and save energy, we will do it in a second. Can you put numbers on this sort of thing? It would help, sure.”*
- *“Yes, that would be very interesting to get a couple of case studies, something on there that has a narrative, a typical building would cost this to heat and this one only costs this much. If they were saying, ‘The cost for this was _____, versus the standards.’”*
- *“If you talk to an owner, initial cost and long term cost are the two things he wants to see. ... And you can't just turn to something and say, ‘Here is an example of what happened to this building.’ Actually you want 25 [recent] buildings of the specific building type.”*

Table C-4
EXPERIENCE OF SEATTLE GROUP PARTICIPANTS

TITLE	YEARS PRACTICING ARCHITECT	NO. OF ARCHITECTS IN FIRM	NO. OF PROJECTS PROJECT ARCHITECT	TYPE OF PROJECTS DESIGNED
Project Architect	10	15	10/yr	Mixed R, C&I
Principal	25	4	70-75 total	Institutional, R, commercial
Principal	23	6	10-12 at a time	Everything
Project Architect	8	10	2 total	Hotels
Project Architect	16	12	10/yr	Mixed, R, C&I, public
Project Architect	10	60	3/yr	Education, medical, C&I
Project Architect	30	10	100 total	Health, institutional
Principal	40	1	5-6/yr	Retail
Project Architect	5	140	2 total	Convention centers, stadium, office buildings
Project Manager	0	?	0	Warehouse, R, office
Average	16.7	25.8		

**Table C-5
EXPERIENCE OF PORTLAND GROUP PARTICIPANTS**

TITLE	YEARS PRACTICING ARCHITECT	NO. OF ARCHITECTS IN FIRM	NO. OF PROJECTS PROJECT ARCHITECT	TYPE OF PROJECTS DESIGNED
Project Architect	19	15	6-12/yr	Commercial renovations, R
Principal	19	8	20/yr	Affordable housing, commercial renovations
Project Architect	20	20	1-7/yr	High tech, medication offices, office improvements
Project Architect	19	18(of 150)	6-7/yr	Multi-family, schools, churches, commercial
Project Architect	5	18	4-6/yr	New commercial, office renovations, institutional
Project Architect	22	20	2-3/yr.	Educational
Project Architect	9	20	3-4/yr	Commercial, multi-family, R.
Project Architect	6	6	12-20	Churches, Master plan for schools, office planning, R
Project Manager	4	55	20/yr	Tenant improvements, Office buildings
Average	12.3	18		

TABLE C-6
EXPERIENCE OF PORTLAND ENERGY EFFICIENCY EXPERIENCED PARTICIPANTS

TITLE	YEARS PRACTICING ARCHITECT	NO. OF ARCHITECTS IN FIRM	NO. OF PROJECTS PROJECT ARCHITECT	TYPE OF PROJECTS DESIGNED
Project Architect	3.5	14	1-2/yr	Remodels, additions, offices, theaters
Design Director	22	25	12/yr (design director)	Institutional, commercial, multi-family
Engineer	15	0	Manage 20-30/yr	Educational, institutional
Project Architect	6	50	2-3/yr	Commercial, institutional, educational, retail
Project Architect	4	11	1/yr	Medical
Project Architect	5	20	1/yr	Commercial, institutional, R
Design Director	12	12	24/yr (design director)	Mixed-use, industrial, hospitality
Project Architect	15	8	3-4/yr	Medical, hospital
Project Manager	4.5	50	3/yr	Commercial, institutional, hospitality, interiors
Project Architect	18	100	3/yr	Office buildings, educational
Average	9.5	26.4		

APPENDIX D

Data Collection Instruments

Appendix D



**A+E PROGRAM STAFF INTERVIEW GUIDE
1998/1999 A+E EVALUATION**

Name _____

Organization _____ **Title** _____

Phone Number/ Address _____

I. OVERVIEW

1. What is your role relative to the A+E Program?

- a) What type of time commitment does it require?
- b) Who else is involved in program delivery?
- c) Do you have much contact with others involved in the A+E?

2. How would you describe the goals of the A+E Program?

- a) What are the objectives in 1998?
- b) # of entries
- c) # of workshops
- d) # of participants

3. Describe the development of the A+E Program?

- a) What are the key features in 1998-99 program?
- b) How did these features come about?
- c) What do they hope to accomplish?

II. PROGRAM IMPLEMENTATION

4. Describe A+E Program operation as it currently works.

- a) What are the most important features of the A+E program?
 - i. What makes these features important?
 - ii. How do these features function to change the use of energy efficient design practices?
- b) How is the program marketed?
 - i. How are potential participants identified?
 - ii. What materials are used for marketing?
 - iii. What techniques (direct mail, telemarketing, associations) are used for marketing?
 - iv. How well has this worked?

- v. Are any changes in this marketing strategy planned for the future?
5. What type of visibility does the A+E program have with architects and developers you speak with?
6. How has participation, by type, location of projects, or number of participants changed over the years of the program?
 - i. Type
 - ii. Location of projects
 - iii. Number of participants
 - iv. Location of workshops
7. How are the lessons learned from the awards process (including jury discussions) disseminated in 1997 and 1998?
8. What have been the key successes in A+E program implementation in the past year?
 - i. What have been key challenges in A+E program implementation this past year?
9. Do you see any potential weaknesses in program design or delivery?

III. WORKSHOP PROCESS

10. What is the workshop format and what do you hope to accomplish using this format?
11. How are the workshop topics identified?

12. How are the workshop locations identified?
13. How are workshop instructors identified?
 - i. What is required of the workshop instructors? (development of materials, preparation)
14. What do you see as the primary outcome of the workshops?

IV. MARKET RESPONSE

15. Are you aware of any groups that have requested information on the A+E Award Program in order to duplicate such an effort?
16. What methods have you used in the past to track program influence?
17. Are you aware of any instances where A+E participants have shared the information learned through the program with their colleagues?
18. Have you received any recognition from industry groups in 1997 or 1998? (National AIA, etc.)?
19. What plans do you have for increasing outside support for the A+E program?

V. CONCLUSIONS

20. What lessons have been learned from program delivery so far?
 - a) What are the strengths of the A+E Program?
 - b) What are the weaknesses of the A+E Program?

21. What changes would you like to make in the A+E program?

BEFORE CLOSURE, REQUEST:

- a) Copies of records for number of submittals and participants in awards program.
- b) Copies of records for number of workshop participants.



**A+E STEERING COMMITTEE INTERVIEW GUIDE
1998/1999 A+E EVALUATION**

Name _____

Title _____

Phone Number/ Address _____

I. OVERVIEW

1. What is your role relative to the A+E Program?

a) What type of time commitment does it require?

b) Do you have much contact with others involved in the A+E?

2. How would you describe the goals of the A+E Program?

a) What are the objectives in 1998?

b) # of entries

c) # of workshops

d) # of participants

3. Describe the development of the A+E Program?
 - a) What are the key features in 1998-99 program?
 - b) How did these features come about?
 - c) What do they hope to accomplish?

II. PROGRAM IMPLEMENTATION

4. What was your role in the implementation of the A+E program?
5. What type of visibility does the A+E program have with architects and developers you speak with?
6. What have been the key successes in A+E program implementation in the past year?
 - a) What have been key challenges in A+E program implementation this past year
7. Do you see any potential weaknesses in program design or delivery?

III. WORKSHOP PROCESS

8. What do you see as the primary outcome of the workshops?

IV. MARKET RESPONSE

9. Are you aware of any groups that have requested information on the A+E Award Program in order to duplicate such an effort?
10. Are you aware of any instances where A+E participants have shared the information learned through the program with their colleagues?
11. What plans do you have for increasing outside support for the A+E program?

V. CONCLUSIONS

12. What lessons have been learned from program delivery so far?
 - a) What are the strengths of the A+E Program?
 - b) What are the weaknesses of the A+E Program?
13. What changes would you like to make in the A+E program?
14. Do you recommend A+E to your clients or others you speak with?



**A+E PARTICIPANT INTERVIEW GUIDE
1998/1999 A+E EVALUATION**

Name _____

I. RESPONDENT CHARACTERISTICS

1. Dates attended: _____

2. Firm name: _____

3. Title: _____

4. Role: _____

5. How long with this firm: _____

6. What firm & role if current is different from that at time of program participation:

7. How long a licensed (or practicing) architect: _____

8. Number of employees in firm: _____

9. Which sectors served: Comm Instit Indus Resid

11. Geographic area served: _____

II. A+E PROGRAM

12. Which A+E programs have you attended?

13. Re: the workshop

Liked:

Disliked:

14. Re: the awards ceremony

Liked:

Disliked:

15. Overall: What was the value for you in attending?

16. Have you recommended it to colleagues? Would you?

17. Do you plan to attend future A+E events?

18. Overall: How to improve A+E program:

19. (Award submitters) Tell me about the application process. In particular, was the process more or less difficult than you anticipated or than used by other award programs?

20. (Submitters:) Approximately how many staff hours did your firm invest in completing the application?
21. (Submitters:) Did you have any difficulty getting the engineering information you needed?
22. (Submitters:) Would you submit a project in the future?
23. (Submitters:) Overall: How to improve application process:
24. (Award recipients:) What benefits have come to you or your firm from receiving the award?
25. Has the A+E program affected your design work? How?
26. Did it affect the way you designed any specific buildings?

III. THE MARKET

27. What influence do you think architects, as a profession, have on the client to increase the energy efficiency or sustainability of projects?
28. What prevents architects from having more influence, or what would have to change for you to have more influence?
29. What is the best way to influence architects to design more energy efficient sustainable buildings?

IV. BUILDING DESIGN APPROACHES

30. How often do you try to design a building to be energy efficient or sustainable?

[The following questions were dropped after about a dozen interviews in order to shorten the interview and reduce the burden on respondents.]

31. Do you think that “energy efficient building design” means an energy code compliant building or going “beyond” the code?
32. What about sustainable design. Is it something different than energy efficient design or the same? (elaborate)
33. What do you consider to be an integrated design team?
34. How many of your projects include this type of integrated team?
35. Consider an integrated design team in which the designer, builder, mechanical engineer and contractor, lighting designer, and electrical contractor meet together at the design formulation stage and throughout the project to collaboratively ensure the project comprehensively addresses client needs and energy efficient sustainable design. Do you consider this level of integration possible?
36. Have you ever implemented or tried to implement such an approach?
37. What are reasons that such an approach is not used?

V. BRAINSTORMING

38. Thinking “outside the box” of the A+E program, is there anything that the Alliance or the A+E program staff can do to assist designers in developing more energy efficient buildings?

ENERGY EFFICIENT EXPERIENCED FOCUS GROUP INVITATION LETTER

January 21, 1999

«fname» «lname»

«org»

«add1»

«city», «st» «zip»

Dear «pref» «lname»:

The American Institute of Architects/Portland and Northwest Energy Efficiency Alliance (also known as “the Alliance” or “NEEA”) are seeking your help.

We are contacting commercial building project architects and designers to learn how best to ensure commercial buildings are energy efficient. The Alliance has contracted with Gilmore Research Group and Research Into Action, Inc. to conduct focus groups with key designers and architects such as yourself.

While participation is voluntary, I hope that you will agree to take part. Hearing about your experiences with energy efficient building design is the best way for us to ensure the programs we support meet the needs of the design community. To ensure candor, our researchers will take necessary steps to protect the confidentiality of participants. Our interest lies in the group discussion, rather than in the answers of any single participant.

If you have any questions about the details of this project, please feel free to contact me or you may contact Alliance staff member Heidi Hermenet at 1-800-411-0834 ext. 231.

Thank you for your consideration and participation in this important process.

Sincerely,

Sandra Stevens, Hon. AIA
Executive Vice President

SCREENING QUESTIONS A+E PORTLAND SESSION A

May I speak with _____?

- a. Yes
- b. Not in or busy, and there are other names for the firm (ask if other person from firm is available)
- c. Not in or busy and there are no other names for the firm (ask when X will be available.) Schedule to call back at that time _____

When person is on the phone:

My name is _____ with Gilmore Research Services. I am calling on behalf of the American Institute of Architects-Portland and the Northwest Energy Efficiency Alliance. We are not selling anything, we are conducting research and are calling to invite qualified architects and designers to participate in a focus group. I have a few questions to see if you qualify for the focus group.

Is this firm active in commercial building design?

- a. Yes
- b. No (Thank them for their time and terminate.)

Are you one of the architects or designers active in commercial building design?

- a. Yes
- b. No & other names available (ask if the other person from firm is available is active in commercial building design and if so to speak with them)
- c. No & no other names available (Thank them for their time and terminate)

Have you ever been the project architect or in a position to influence the project design of a commercial building project?

- a. Yes
- b. No (Thank them for their time and terminate)

Based on your responses, I would like to invite you to participate in a focus group hosted by the Northwest Energy Efficiency Alliance. The focus group will discuss commercial building design practices. In consideration of your time you will receive \$100 for attending the discussion.

Would you be available to come to our facility in Portland on _____ at 6 or 8 p.m. for a two hour session?

- a. Yes
- b. No

We will send you a reminder and information on where the focus group will be held, directions, and other details in the mail. I would like to confirm your name and contact information

Name: _____

Phone: _____

Address: _____

(No P.O. Box)

e-mail address, if preferred _____

**SCREENING QUESTIONS
A+E SEATTLE SESSION & PORTLAND SESSION B**

May I speak with _____?

- a. Yes
- b. Not in or busy, and there are other names for the firm (ask if other person from firm is available)
- c. Not in or busy and there are no other names for the firm (ask when X will be available.) Schedule to call back at that time _____

When person is on the phone:

My name is _____ with Gilmore Research Services. I am calling on behalf of the American Institute of Architects-Portland and Northwest Energy Efficiency Alliance. We are not selling anything, we are conducting research and are calling to invite qualified architects and designers to participate in a focus group. I have a few questions to see if you qualify for the focus group.

Is this an architectural or an architectural and engineering design firm?

- a. Yes
- b. No (Thank them for their time and terminate.)

Is this firm active in commercial building design?

- a. Yes
- b. No (Thank them for their time and terminate.)

Are you one of the architects or designers active in commercial building design?

- a. Yes
- b. No & other names available (ask if the other person(s) from firm is available is active in commercial building design and if so to speak with them)
- c. No & no other names available (Thank them for their time and terminate)

Have you ever been the project architect or in a position to influence the project design of a commercial building project?

- a. Yes
- b. No (Thank them for their time and terminate)

Based on your responses, I would like to invite you to participate in a focus group hosted by the Northwest Energy Efficiency Alliance. The focus group will discuss commercial building design practices. In consideration of your time you will receive \$100 for attending the discussion.

Oregon Contacts: Would you be available to come to our facility in Portland on _____ at 6 p.m. for a two hour session?

Washington Contacts: Would you be available to come to our facility in Seattle on _____ at 6 p.m. for a two hour session?

- a. Yes
- b. No

Appendix D

We will send you a reminder and information on where the focus group will be held, directions, and other details in the mail. I would like to confirm your name and contact information.

Name: _____

Phone: _____

Address: _____

(No P.O. Box)

e-mail address, if preferred _____

A+E FOCUS GROUP DISCUSSION GUIDE FEBRUARY 1999 SESSIONS

I. INTRODUCTION (5-8 minutes)

Thank you all for coming out tonight. My name is Jane Peters. My company's name is Research into Action. I will be the facilitator for tonight's discussion. My job is to present the topics, help keep the discussion flowing, and make sure we understand what you are telling us. Tonight we are going to discuss your views on commercial building design and energy.

Have any of you ever participated in a focus group before?

Before we get started, I'd like to go over a few ground rules:

- What goes on in this group will be held in confidence by our firm and client. We do have observers behind the glass and we are audio-taping the session. But what is said here will not be made public; your name cards have no last names. So you don't need to worry about sensitive information getting out.
- We are looking for your frank and open responses to what we present. Don't feel you need to agree with us or please us. We are doing the research for the Portland AIA and the Northwest Energy Efficiency Alliance; so if you have strong feelings one way or another, please feel free to express them.
- Don't feel you have to talk just to me. We'd like this to be a group discussion, so feel free to share your views directly with each other, ask each other questions, and chime in if you have a comment.
- While we want everyone's active participation, we also need some order. Therefore, I need you to take turns and speak one at a time. I will try and make sure that everyone gets a chance to talk, so sometimes I will call on people to make sure everyone is heard. In this way we can all keep track of what's being said.

II. INTRODUCTIONS (10 minutes)

Let's start by going around the table.

Please tell everyone your first name, the name of the design firm you are with, number of architects in your firm, how long you have been a practicing architect, what type of projects you work on, and how many projects you are project architect for each year.

How many of you are members of AIA?

How many of you have been active in the local AIA chapter?

III. PROJECT DECISION MAKING REGARDING DESIGN

Thinking about design projects you have worked on, typically is there one key decision maker or are there several decision makers for design projects? (Probe: designers, principals, owners, project managers, developers or others?)

Who determines the design methodology or approach?

How are decisions about design methodology or approach made?

Are different decision makers responsible for such activities as design concepts, technology choices, design details, etc.?

Who are the different decision makers?

How about mechanical and lighting systems design decisions?

How are decisions coordinated?

How do competitive bid practices affect design decisions?

IV. PROJECT DECISION MAKING REGARDING ENERGY EFFICIENCY

Do you think energy efficiency is a design problem or some other type of problem?

Who on the projects you work on, thinks about energy efficiency in commercial building design? (What types of things do they think about?)

When in the design process does energy efficiency show up?

In what ways do you think implementing energy efficiency strategies affect the design of a commercial building?

What does or could assist you in implementing energy efficiency strategies in commercial building design?

What limits you from implementing energy efficiency strategies in commercial building design?

In what ways do you think energy efficient buildings are different from other buildings?

Who on the design team assures that the building design is code compliant?

Would you consider a code compliant building to be an energy efficient building?

Why or Why not?

What if I told you that yes, a code compliant building in Washington and Oregon is an energy efficient building?

How is the code helpful in designing energy efficient buildings?

How does the code impair your design process for energy efficient buildings?

What do you think of when you hear the term “sustainable design”

How is this different or similar to energy efficient building design?

Do you or your design firm market any services for energy efficient or sustainable design? (if yes, what services do you market?)

How important a service is this to the practice?

How important a service is this to your firm's marketing strategy?

How does this get covered in your fees?

V. NEW APPROACHES AND TECHNIQUES

How interested are you in learning new approaches and techniques to your practice?

How about new approaches and techniques for energy efficiency?

For sustainable design?

What motivates you or a firm to adopt new techniques or design parameters to the practice?

What limits you or a firm from adopting new techniques and approaches?

How do project managers and design firms learn about new approaches and techniques to design? (what type of tools do you use?)

I'd like you to briefly give me an assessment of how effective you have found each of the following methods for learning new approaches and techniques. (Each method will be listed on a flip chart.) As we go through them, if you know of any examples of the "tool" that was particularly effective, please tell me.

CONFERENCES

How many have found conferences to be effective or very effective? _____

What conferences have been particularly effective?

How many have found conferences to be ineffective or very ineffective? _____

Web Sites

How many have found Web sites to be effective or very effective? _____

What Web sites have been particularly effective?

How many have found Web sites to be ineffective or very ineffective? _____

CDs or videos

How many have found CDs or videos to be effective or very effective? _____

What CDs or videos have been particularly effective?

How many have found CDs or videos to be ineffective or very ineffective?

Participation in professional organizations/associations

How many have found Participation in professional organizations/associations to be effective or very effective? _____

What professional organizations/associations have been particularly effective?

How many have found Participation in professional organizations/associations to be ineffective or very ineffective? _____

Membership in topical groups

How many have found Membership in topical groups to be effective or very effective? _____

What topical groups _____ have been particularly effective?

How many have found Membership in topical groups to be ineffective or very ineffective? _____

Workshops

How many have found workshops to be effective or very effective? _____

What workshops have been particularly effective?

How many have found workshops to be ineffective or very ineffective? _____

Publications

How many have found publications to be effective or very effective? _____

What publications have been particularly effective?

How many have found publications to be ineffective or very ineffective?

Competitions

How many have found competitions to be effective or very effective? _____

What competitions have been particularly effective?

How many have found competitions to be ineffective or very ineffective?

Recognition “awards” Programs

How many have found Recognition “awards” Programs to be effective or very effective? _____

What Recognition “awards” Programs have been particularly effective?

How many have found Recognition “awards” Programs to be ineffective or very ineffective? _____

VI. A+E PROGRAM

Do you or your firm ever enter recognition awards programs?

Why or why not?

How do you choose which ones to enter?

Who prepares the submittals?

Are you familiar with the Architecture +Energy program?

What words come to your mind when you think of the A+E program?

Where/how did you hear about the program?

What is your impression of the A+E program?

Do you know anyone who has participated in the A+E Program either entering the recognition program or attending workshops?

****Have you seen the “advertorials” in *Architecture* and *Architecture Record*?****

What is your impression of the advertorials as “trophies”

As education?

Are you familiar with the criteria for project submission?

What do you think is required?

Time period for project completion?

Amount of information in the application?

Deadlines for submission?

Would you like to participate in the recognition program or the educational workshops?

What hinders your participation?

What would help you to be able to apply to the recognition program?

VII. SUMMARY

Introductions

Design Project Decision Making

Energy Efficiency

New Approaches and Techniques

A+E Program