

Market Progress Evaluation Report Executive Summary
Architecture + Energy Program, No. 1

prepared by

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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

