



*Building Commissioning Association*  
*Market Progress Evaluation Report, No. 1*

*prepared by*

**QUANTUM CONSULTING INC.**

*report #E04-124*

February 18, 2004



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***BUILDING COMMISSIONING ASSOCIATION  
MARKET PROGRESS EVALUATION REPORT #1***

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## **1. EXECUTIVE SUMMARY**

This report presents the results of Quantum Consulting's (QC's) evaluation of the Building Commissioning Association (BCA) through November 2003. The purpose of the evaluation was to assess the association's progress toward its goals, including:

- BCA becoming self-supporting by December 2003
- Certification being broadly recognized and used by commissioning firms as a qualification for hiring of new commissioning authorities, and by owners as a qualification in selecting qualified providers
- A majority of BCA members in the Northwest being certified by the end of 2003
- At least 15 individuals new to commissioning completing the apprenticeship program in the Northwest by 2003.

The evaluation comprised four broad tasks:

- Document the history of the organization since the last report
- Evaluate the certification program for providers being developed by BCA
- Evaluate BCA's accelerated internship program
- Assess BCA's progress toward financial self-sustainability and develop an opinion on the financial status of the organization for the next three to five years.

### **BCA'S GROWTH AND DEVELOPMENT**

BCA-Northwest (BCA-NW) was formed in May 1998 with Alliance support and an explicit expectation that the association would become self-sustaining after two years. Assumptions underlying the anticipated shift to self-sufficiency turned out to be overly optimistic, and the Alliance subsequently extended its funding of BCA through 2003.

In April 1999, BCA became a national organization, although most of the leadership continued to come from the Northwest for several years. As commissioning in other regions of the country expanded, so did their share of the BCA membership base and subsequently its leadership. The election of the first non-PNW president coincided with the completion of the first Alliance evaluation of BCA in early 2001, and the new president incorporated many of the evaluation findings into BCA's new strategic direction.

- BCA retained a professional association management firm to handle membership processing, management of training sessions, and other administrative functions.

- BCA shifted from a trade association (where firms hold membership) to a professional association (where individuals hold membership.)
- BCA started regional chapters and met its internal goal of having all six operating by the end of 2003.
- BCA implemented an accelerated internship program in the Northwest to help ensure an adequate supply of trained providers and build BCA's membership base.

BCA membership has grown steadily and now stands at over 400, including more than 70 in the Northwest. BCA has also been building relationships with organizations such as ASHRAE, U.S. Green Building Council, and the New Building Institute, and has been included in the NIBBS Whole Building Design Guide. In addition, BCA could receive a boost from energy legislation expected to pass Congress in early 2004 that would make BCA the certifying authority for energy efficiency tax credits for commercial buildings.

### ***CERTIFICATION PROGRAM***

Since 2001, BCA has been developing a certification program to set the professional standards for quality building commissioning. The Alliance has funded development of the program, including the use of a certification consultant to ensure a credible process that conforms to established certification practice. Throughout, BCA has sought member feedback to help define qualification criteria, examination contents, and program fees.

The proposed qualifications have drawn the most member comments, particularly the requirements that applicants have commissioned a given square footage of buildings or dollar value of projects. The BCA certification committee has provided point-by-point responses to the issues raised by BCA members, noting that some remain under discussion while others reflect an approach previously agreed upon by the membership. A second survey recently posted on the BCA website asks for additional input with regard to the project cost and square footage requirements.

While the goal of establishing certification by the end of 2003 has not been met, significant progress has been made. Once qualifications are finalized, there will be a beta test of the application process and the examination, and the program will be officially launched in early 2004. BCA has also begun marketing the certification to the provider community, but we recommend that additional steps be taken to build owner awareness and recognition of the "BCA Certified" designation, with funding for such activities covered at least in part by certification fees.

### ***ACCELERATED INTERNSHIP PROGRAM***

The accelerated internship program was funded by the Alliance to address a shortage of qualified building commissioning service providers in the Northwest that developed as commissioning became more widely used over the 1999-2002 period. The five-month program was designed to match firms offering building commissioning services with individuals seeking a commissioning career. It combined specialized training for interns,

supervised work experience, and a salary subsidy of to help offset the initial cost of hiring these relatively inexperienced workers.

While it proved to be difficult to find applicants with the backgrounds desired by commissioning providers, 12 participants for the program were ultimately selected and trained out of an original target of 15. The training was generally well received, but only 5 of the 12 trainees have been placed in internships with two sponsor firms throughout the Northwest.

Overall, the program achieved mixed results. On the plus side, a curriculum is now available that can be re-used in the Northwest or elsewhere, and valuable lessons were learned about the importance of having a training site that facilitates hands-on instruction. On the negative side, the program has not significantly increased the pool of providers. The reluctance of BCA members to step forward and sponsor interns is disappointing, especially in light of their many previous complaints regarding the shortage of qualified workers. On balance, the biggest problem in placing the participants was probably the economic downturn of the past two years which reduced the amount of construction activity and thus the need for commissioning agents.

### ***BCA'S PROGRESS TOWARD SELF-SUFFICIENCY***

Assuming the growth in membership continues at the current pace, BCA will achieve a basic level of self-sufficiency in 2004. By basic we mean that revenues from dues will cover the cost of running the organization, conducting annual and board meetings, and communicating with the membership. Many of the resource-intensive development activities have been largely completed; moreover, the certification and training programs should become self-sustaining in the coming years, particularly as certification draws more attendees into training courses. But to the extent that BCA hopes to continue to expand its scope and expand the range of services it offers to its members and to the building owner and design/construction community, finding external funding sources to support new initiatives will remain a high priority.

### ***CONCLUSIONS AND RECOMMENDATIONS***

In many ways, BCA has taken remarkable strides and is now positioned as the pre-eminent voice of a growing national commissioning provider industry. However, the organization still faces challenges in its efforts to define the practice of commissioning and ensure the continued growth and influence of BCA.

#### ***Certification***

To date, development of the certification program has followed a thorough, logical path that will ensure a defensible, stringent standard for good commissioning practice, thereby lending credibility to both BCA and the overall commissioning industry.

- Certification has been seen by those developing the program and by the BCA leadership as self-sustaining, but not as a source of net revenue to the association. However, there are likely to be a number of unanticipated costs associated with

implementing the certification program in the future, and we recommend that BCA set the fee at a level that will comfortably cover both anticipated costs and contingencies.

- In addition, we believe that BCA should actively promote the value of certification to the owner community, and we believe it is appropriate to include the cost of promotion in the certification fee.
- With regard to the qualifications for certification, we recommend that the finalization of these requirements be put off until the issues raised regarding the square footage and dollar requirements can be addressed and concerns of the full membership assuaged. BCA appears to have recognized the importance of this issue and is taking pains to respond to comments and gather additional input.

### *Apprenticeship*

While the accelerated apprenticeship program has fallen short of the expectation that it would significantly increase the pool of commissioning providers, it has created the infrastructure that will allow the program to be re-introduced in the future. If it is repeated, we offer the following recommendations:

- Secure a commitment from sponsor firms before initiating recruitment of trainees.
- Define requirements for interns more clearly and in line with market expectations, allowing sponsors to provide at least some input to the criteria that will be used to recruit interns. If an engineering background is required, that should be made clear, with recruitment sources and the time allowed for recruitment adjusted accordingly.
- Ensure that the training has a greater hands-on component to provide trainees with a better idea of real-world commissioning situations. Since the instructors are eager to do this, the main problem will be identifying a facility where sessions can be held. A college or university campus building during summer break may be a possibility.

### *Progress Toward Self-sufficiency*

Given the current and anticipated membership and dues levels, we believe that BCA is approaching at least a basic level of self-sufficiency.

- Dues revenues appear to be poised to cover the basic cost of running the organization, conducting annual and board meetings, and communicating with the membership.
- In addition, the certification and training programs should be able to become self-sustaining in the coming years, particularly as certification draws more attendees into the provider training courses.
- To the extent that BCA hopes to continue to expand the range of services it offers to members and building owners and the design/construction community, it will need



to follow through on plans to raise funds through advertising, the sale of work products such as contracts and specifications, events such as conferences or exhibitions, and other activities.

- Since these potential revenue sources are still highly uncertain, finding external sources of funding to support new initiatives remains a high priority.

### *The Alliance Role in BCA*

We believe the Alliance can continue to use BCA to achieve its goals of enabling the widespread adoption of building commissioning in the Northwest and gaining the associated energy and non-energy benefits. The following activities recommended in support of BCA could all be delivered through the Northwest regional chapter:

- Support BCA in establishing a method to provide technical assistance to PNW owners. We envision supplementing the assistance provided to public agencies through the Commissioning in Public Buildings program with the technical expertise of the BCA.
- Fund the provision of contract documents for PNW owners through BCA. BCA has plans to offer contracts, specifications, and other work products as a source of revenue. The Alliance could negotiate with BCA to provide such documents at an Alliance-subsidized, reduced rate for PNW owners; the owners would have access to the documents, BCA would have an added revenue stream.
- Fund owner training. It is recommended that multiple trainings for building owners be conducted through the Northwest regional chapter, since BCA has already developed content for this course.
- Promote certification. As part of the owner training, as well as the overall marketing effort, we recommend that the Alliance support the promotion of the value BCA certification provides to building owners. We believe this is an important aspect of the certification program that is currently not being addressed.

BCA also has an overall need for funding that extends beyond regional boundaries. Specifically, BCA needs seed money to pursue funding opportunities, and it may be a good use of Alliance resources to assist BCA in obtaining funding from such alternate sources. The Alliance could, for example, fund a grant proposal writer, with the understanding that proposals developed would have to have a Northwest component.

Given that the BCA has already provided an effective voice for the assurance of consistent high quality in commissioning, it seems appropriate for the Alliance to support the association's further development - particularly now that the regional structure makes it easier to do this in a way that targets the Northwest. The Alliance's 2004-05 commercial budget provides substantial funding to BCA to market the certification program, develop and deliver seminars aimed at building owners, and develop financial and information materials for BCA members.

## **2. INTRODUCTION**

This report presents the results of Quantum Consulting's (QC's) evaluation of the development and growth of the Building Commissioning Association (BCA) through November 2003. The purpose of the evaluation was to assess the association's progress toward meeting its goals and progress indicators, as defined in the documents setting forth the terms of the Northwest Energy Efficiency Alliance's (the Alliance's) funding for BCA. These included:

- The association becoming self-supporting through revenues from memberships, products, and services by December 2003
- Certification being broadly recognized and used by commissioning firms as a qualification for hiring of new commissioning authorities
- Certification being broadly recognized and used by owners as a qualification in selecting qualified providers
- A majority of BCA full members (individuals) in the Northwest being certified by the end of 2003
- At least 15 individuals new to commissioning completing the apprenticeship program in the Northwest by 2003.

The Alliance originally took on this project to supplement other commissioning initiatives, both to develop a standardized definition of commissioning and good commissioning practice and to help ensure that sufficient providers would be available to meet the growing demand for commissioning services. In a 2000 staff recommendations memo, it was stated that the Alliance would support BCA in the following activities:

- delivering marketing and education for decision makers and architects and engineers in both public and private sectors in the Northwest
- development and distribution of an owner's guide to commissioning
- development and distribution of commissioning specifications and protocols.

To assess whether the goals set forth for the BCA have been met, the present evaluation comprised four broad tasks:

- Document the history of the organization, focusing on changes that have taken place since the last report and their past and future impact on BCA
- Evaluate the certification program for commissioning providers being developed by BCA

- Evaluate BCA's accelerated internship program
- Assess BCA's progress toward financial self-sustainability by analyzing current and projected revenues and expenses to develop an opinion on the financial status of the organization for the next three to five years.

Previous evaluation work of the BCA was included in Market Progress Evaluation Report No. 3 for the Commissioning in Public Buildings Project<sup>1</sup>. This document represents the first dedicated evaluation of the BCA. It was undertaken at this time because there have been several significant changes to the BCA, notably the change from a firm-based trade association to an individual-based professional organization, development of certification and internship programs, and the growth of regional chapters -- all of which will be discussed in this report. In light of these changes, we sought to determine how far BCA has come in its development as an influential player in the market for commissioning (Cx) services.

In evaluating the impact of Alliance funding on BCA we found it difficult to isolate the Alliance's role from the overall growth of the association. It is likely, however, that BCA as an organization would not exist today - certainly not at its present level - without Alliance support over the past several years. The Alliance has funded many of BCA's training activities to ensure a supply of consistently trained commissioning providers, and has made possible the transition to a national organization that has been essential for the attainment of BCA's goals within the PNW.

In funding BCA activities, the Alliance has faced the problem that supporting BCA overall means supporting a national organization with benefits that extend well beyond the Northwest. This problem has recently been mitigated by the regional structure developed for BCA, including the regional chapter for the Northwest. From the Alliance's perspective as a provider of funding, the regional chapters not only enable BCA to improve member involvement, become more responsive to regional issues, and improve communications with its members, they also make it possible to target resources directly to the region rather than to the national organization.

For the current evaluation we tried to assess both the Alliance's impact on the BCA's activities in the PNW and its impact on what is now an international organization. In doing so, we used data collected from review of BCA documents; interviews with the Alliance project manager, past and present BCA leadership (executive directors, presidents, other officers), BCA members and others individuals outside the Pacific Northwest who have been active in the commissioning field; and participants in BCA's internship program.

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<sup>1</sup> Alliance Report E03-107, February 2003. At <http://www.nwalliance.org/resources/reports/107.pdf>.

### **3. BCA'S GROWTH, AND DEVELOPMENT**

The idea for an association of building commissioning providers grew out of discussions at the early national conferences on building commissioning in the mid-1990s, when it was recognized that an association was needed to develop a standardized definition of both commissioning itself and good commissioning practices and to help ensure that sufficient providers would be available to meet the growing demand for commissioning services. The broad outline for an association began taking shape at informal meetings in the Northwest in 1996 and 1997, where participants reached consensus on some of the key parameters that would define the organization. Recognizing the need for an association that would help ensure a supply of high quality commissioning providers, the Alliance first provided seed money for a working committee to lay the groundwork for an association, and subsequently provided funds to help cover the first two years of association development and operations.

The Building Commissioning Association-Northwest (BCA-NW) registered in Oregon as a not-for-profit corporation in May 1998. With an initial focus exclusively in the Pacific Northwest (PNW), BCA-NW was funded by the Alliance as part of the multi-state Commissioning in Public Buildings infrastructure project managed by the Oregon Office of Energy. An explicit expectation set forth in the original contract was that the association would become self-sustaining after two years, with the income previously provided by the Alliance to be replaced "through a balance of membership enrollment and program income" as well as "matching funds for market development activities." Assumptions underlying the anticipated shift to self-sufficiency turned out to be overly optimistic, and the Alliance subsequently extended its funding to assist BCA in specific training and education activities through the end of 2003. To put the various issues discussed in this report in context, a timeline of BCA activities and milestones is presented in Exhibit 3-1.

**Exhibit 3-1 -- BCA Timeline**

		General	Certification	Internship	Members
1998	Q1				
	Q2	BCA-NW registered and incorporated in Oregon.			
	Q3				0
	Q4	BCA-NW receives funding as part of the Alliance Commissioning in Public Buildings project.			14
1999	Q1	BCA hires an Executive Director.			18
	Q2	BCA-NW becomes national BCA.			34
	Q3	Alliance signs separate contract with BCA.			40
	Q4	Northeast meeting for BCA members.			49
2000	Q1	Survey of BCA members completed.			64
	Q2				70
	Q3				78
	Q4				90
2001	Q1	First BCA training session for Cx providers.			105
	Q2	Initial BCA Evaluation Results provided to Board. New direction for BCA announced at Annual Meeting.	Certification Committee created.		120
	Q3	Cameron, Melby brought on to manage BCA.		130	
	Q4	Second BCA training session for Cx providers.		140	
2002	Q1	Strategic plan developed at two-day retreat.			150
2002	Q2	Third BCA training session for Cx providers. Board approves transition to individual membership.	First certification survey. RFP for consultant issued.		170
	Q3	Southeast Regional Chapter organizational meeting.	Certification consultant selected.		200
	Q4	Shift to individual membership takes effect.		220	
	2003	Q1	Northwest Regional Chapter organizational meeting. BCA Training session for Cx providers - Seattle.	Second certification survey. Test questions developed.	Recruitment begun for sponsors. Recruitment begun for interns.
Q2		BCA Training session for Cx providers - New York.	Qualification criteria developed.	Training for interns held.	300
Q3				Stipend provided for hired interns.	380
Q4		BCA Training session for Cx providers - Orlando.	Beta test scheduled.		407

As BCA became established as an independent entity and developed an agenda that extended beyond the public sector, a new contract was written to have Alliance funding flow directly to BCA rather than through the Commissioning in Public Buildings Program. Concurrent with this change in contract – though not directly related to it – was BCA’s decision to expand its scope from the PNW to the entire country. In April 1999, BCA-NW became BCA, because “it had become evident to the BCA-NW Board of Directors that a professional association such as BCA needed to have an open membership and not be regionally confined.<sup>2</sup>” This change in scope was announced at the 1999 National Conference on Building Commissioning (NCBC) in May, and was

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<sup>2</sup> BCA website, *About the BCA, How We Got Started.*

reflected in the language of the subsequent direct contract between the Alliance and BCA - rather than BCA-Northwest.

Although nominally a national organization at that point, most of the leadership of BCA continued to come from Washington and Oregon for the first several years, since the development of commissioning there was further advanced than elsewhere in the country. As commissioning in other parts of the country expanded, so did their share of the BCA membership base and subsequently its leadership, as reflected in the election of a member from Atlanta -- Michael Weiss -- to BCA president in 2001. The election of the first non-PNW president coincided with the completion of the first Alliance evaluation of BCA; evaluation results and recommendations were presented to the BCA Board in early 2001, and the new president incorporated many of these findings into BCA's new strategic direction. Recommendations and their disposition included the following:

- *The Alliance should focus on facilitating BCA's contact with national agencies and funding sources in other regions that can provide BCA with the support it needs.* The Alliance has in fact devoted considerable effort to providing contacts with other organizations, but these have not yielded the hoped for level of external funding.
- *Given BCA's [then] current finances, some outside source is going to have to provide seed money that BCA can use to secure additional funding.* Finding additional sources of financial support continues to be a problem; the association management firm retained by BCA was hired to manage day-to-day operations, and does not have the expertise or contacts to pursue fund-raising opportunities.
- *Assuming that resources can be found, we recommend that BCA turn the management of the association over to an association management firm.* BCA retained a professional association management firm to act as its Executive Director in the second half of 2001. Details of this arrangement are described below.
- *A workshop on association management and how to make the best use of volunteer resources should be considered for a future event that is likely to be attended by many BCA board members and committee chairs.* BCA has addressed the issue of managing volunteers by forming a standing committee specifically to coordinate volunteer efforts. While the fundamental problems associated with relying on volunteer time from busy professionals remains, most committees appear to be functioning smoothly and handling their assigned tasks.
- *BCA should provide unified, consistent, and visible leadership in developing a core definition of commissioning that can be used nationwide, both in code development and in the general marketplace.* BCA is working with the federal government, the U.S. Green Building Council, the New Buildings Institute, and others to ensure that properly defined commissioning is included in appropriate standards and energy efficiency legislation.
- *BCA should move forward with a certification program, both because this has been identified by building owners as something they would look for and because BCA needs to establish*

*itself as the certifying authority.* As discussed in greater detail in Section 4 of this report, the certification program is moving toward implementation.

- *To the extent that BCA succeeds in its efforts to control the definition and practice of Cx, it needs to develop rigorous procedures for addressing both the improper use of Cx as a term and the inevitable instances of malpractice that will arise.* Issues of malpractice, disciplinary actions, and de-certification are being addressed as part of the certification effort.
- *BCA should explicitly define itself as a professional association and should build its membership base on individuals, not firms.* As described below, the transition to a professional association has been successfully made.
- *Member outreach should be expanded, with more frequent updates to the website, regular newsletters, and perhaps an annual report or other publication that summarizes the state of the association, the industry, and the market. To the extent possible, BCA should make itself the source of information on Cx, through links, downloads, etc.* From 1999 through 2001, BCA published and posted to its website four newsletters; in less than two years since then it has published and posted seven. The website remains limited in functionality and content, but a contract to redesign and update the site has been put out to bid and awarded to the association management firm retained by BCA.
- *While it is not desirable to open the BCA board up to other than full members (in keeping with its status as a professional association) it may be appropriate to create an Advisory Board comprising sponsoring organizations and associate members to provide the BCA Board with input from the perspective of other market players.* This has not been done, but there are a number of BCA members, including some on the Board or in leadership positions at regional chapters, who work for building owners and therefore can represent the owner's perspective.
- *BCA should move quickly to establish its leadership in the potentially huge California market.* California providers will be included in the regional chapter serving the Southwest, which currently has more than 70 BCA members. The Southwest chapter is currently in the process of obtaining provisional status. In addition, BCA has conducted several training sessions for commissioning providers within California, including one in 2002 and two in 2003.

Using the findings from the Alliance evaluation report, the new President introduced a number of changes to make BCA a more truly national organization, including the introduction of changes to the membership and dues structure, development of regional chapters, and the introduction of a certification program.

The key aspects of BCA's new direction were presented to the general membership at the 2001 annual meeting. There was some resistance, particularly with regard to individual membership, but members confirmed the new BCA direction with a voice vote. Since then, in addition to the actions described in the above bullets, the following major changes have been implemented:

- First, BCA retained Melby, Cameron, and Hall (Melby), a Seattle-based professional association management firm, to act as its Executive Director. Melby now conducts the tasks formerly handled by the Executive Director, including membership processing and renewal, recruitment and scheduling of training sessions, accounting, the BCA newsletter, and other administrative functions. This shift to a professional management firm addressed several of the key issues raised in the evaluation and has been very helpful in ensuring the smooth operation of the association and several of its current programs. However Melby does not have extensive utility or building industry contacts that enable it to conduct fundraising and networking activities – both of which will become increasingly important in the coming years to help ensure additional external funding for BCA.
- A second major change to BCA has been the recently completed shift from a trade association (where firms hold membership) to a professional association (where individuals hold membership.) Some modifications were made to the BCA Board’s proposed membership structure in response to member input: while membership is assigned to the individual provider, firm membership was retained so that firms can utilize the BCA website to help potential customers locate their firm. An individual “professional” member pays a membership fee of \$160; a \$500 “provider” firm membership entitles (and requires) the firm to have one individual professional member; firms also have the option of listing additional locations on the website for a \$250 fee. Only individual providers, not firms, are eligible for certification.
- As membership has become truly national and even international in scope, BCA has pursued the development of regional chapters. All six proposed chapters are now operating, meeting BCA’s goal of accomplishing this by the end of 2003. The regional chapters appear to be growing into active grass-roots organizations that provide the BCA leadership with a valuable mechanism for obtaining feedback and staying in touch with the general membership.
- Finally, BCA implemented an accelerated internship program in the Pacific Northwest with Alliance support, with the dual goals of helping to ensure an adequate supply of trained providers and building BCA’s membership base. This initiative is discussed in Section 5.

As this report is being finalized the Alliance has made a decision to provide targeted funding through 2005 for BCA to continue marketing and professional development activities in the Northwest.

BCA’s membership has continued to grow steadily, and, as shown in Exhibit 3-2, now stands at over 400 members, including more than 70 (17.5% of the total) in the Northwest.



**Exhibit 3-2**  
**BCA Membership By Type and Region**

<b>By Status:</b>	
Professional	169
Provider	140
Individual	82
Sustaining Education	8
Sustaining	6
Sustaining Nonprofit	2
<b>Total Members</b>	<b>407</b>
<b>Additional Firm Listings</b>	<b>10</b>
<b>Membership</b>	
<b>By Region (percent)</b>	
Northwest	17.5%
Southwest	19.9%
Central	9.6%
Southeast	23.0%
Mid-Atlantic	9.8%
Northeast	15.8%
International	4.3%
<b>Total Members</b>	<b>100.0%</b>

As it grows, BCA has been building cooperative relationships with other, related organizations such as ASHRAE and the U.S. Green Building Council. It has been included in the NIBS Whole Building Design Guide and the New Building Institute's Advanced Building Guidelines.

In addition, the potential exists for BCA to receive a major boost from energy legislation that is expected to pass Congress in early 2004. The Energy Reform Act would provide tax breaks for high efficiency buildings, and BCA would likely be the organization that would certify inspectors who qualify buildings for the credit. Although the energy bill failed to pass in late 2003, it is expected to pass in early 2004. While neither the energy bill's passage nor its final provisions are certain, this legislation has the potential to significantly expand BCA membership and training, since organizations would have to be qualified by BCA to do the tax credit inspections, which would mean they would have to become BCA members and take a training course on the process. In preparing for this legislation, BCA has also developed a close working relationship with ResNet, the organization that would monitor the verification of efficient residential construction for buildings up to four stories. BCA may agree to let ResNet also handle the verification of small commercial buildings, in return for which ResNet would turn the large residential multifamily sector over to BCA, thereby opening up a largely untapped market sector to commissioning.

## 4. CERTIFICATION PROGRAM

For the past several years, BCA has been aggressively pursuing development of a certification program that would set the professional standard for high-quality building commissioning and recognize individuals who met these standards. Baseline market research on the Northwest commissioning market conducted by SBW in 1998 identified certification as one of the factors owners said would encourage them to pursue commissioning<sup>3</sup>.

To this end, BCA formed a certification committee, which sought and obtained funding from the Alliance for the development of the certification program. During the first eighteen months of its tenure, the committee discussed what the components of the certification program should be, explored a number of professional issues around certification, researched other industry certification programs, and sought input from the membership. In 2002, a request for proposals for professional services was issued to find a certification consulting firm to assist BCA in building a program that would have widespread industry credibility and conform to established criteria within the professional certification community. A contract was signed with Knapp and Associates International (Knapp), a Princeton, NJ-based consulting firm that specializes in assisting professional organizations in the development of certification programs.

### 4.1 Member Input to the Certification Process

Throughout the development of the certification program, BCA and the certification committee have sought feedback from the BCA membership. In the spring of 2003, a survey was e-mailed to all BCA members seeking input on the process. Survey results are worth analyzing both because they reflect member attitudes toward various aspects of certification and because the survey results were used to help develop qualification criteria for the certification process. The survey questions are included in Appendix A.

Of the 85 responses that were analyzed<sup>4</sup>, 97 percent believed that BCA should be implementing a certification program. In addition, most respondents agreed that:

- A Certification Board shall consist of BCA members elected by the BCA Board and will be solely responsible for reviewing and approving applicants. Term limits will apply. (95 percent)
- A point system will be used to determine certification eligibility. Points will be awarded for education, experience and results of an examination. (95 percent)

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<sup>3</sup> “Building Commissioning Practices in New Construction and Existing Building Markets in the Pacific Northwest”, by SBW Consulting, Oct 1998. <http://www.nwalliance.org/resources/reports/ES17.pdf>

<sup>4</sup> Over 100 responses were returned, but only 85 were received in time to be included in the analysis.

- Proof of education must be supported by official transcripts, or other BCA-approved authentication method. (90 percent)
- Proof of experience must be supported by resume, references and samples of commissioning work, all in BCA-specified format. (95 percent)
- The examinations will be proctored by a third party, independent agency and the test scores transmitted to the Certification Board. (90 percent)
- Separate fees will be charged for application, examination and recertification. Fees will be set as determined by the Certification Board and approved by the BCA board. (92 percent)
- Under certain pre-defined conditions a member's certification can be revoked (decertification). (92 percent)
- BCA training will not be required but will count for experience. (92 percent)
- The examination should be consistent with BCA-endorsed training and BCA essential attributes. (95 percent)
- Current members holding a valid certificate should be posted on the BCA website. (92 percent)

Compared to the above statements, there was only slightly less consensus on whether certification should be offered to individuals only (85 percent) and whether applicants must be BCA members or employed by BCA member firms (87 percent). In contrast, fewer than 70 percent agreed that re-certification should be required at 5-year intervals. While alternate time frames for re-certification were not presented in the survey, the certification committee decided on a 3-year interval for renewal.

Regarding testing content, 77 percent of respondents agreed that the certification program should be "focused on an applicant's experience and education, along with an examination that tested on universal commissioning attributes such as ethics and process, but does not include separate disciplines." There was some inconsistency in that 38 percent of respondents agreed with another statement that the certification program should include separate disciplines, an issue BCA will need to address in the future.

Survey respondents were also asked about the relative importance of various certification criteria.

- First they were asked: "Assuming the certification program uses the currently recommended evaluation system of education, experience and examination, answer the following: If the point system were to have a fixed weighting of each of the three evaluation categories, what would you recommend?"
- Then they were asked "If the point system were to allow a trade-off between the three evaluation categories, what range of exchange would you recommend? "

As shown in Exhibit 4-1 below, experience was considered most important, followed by the exam and education, regardless of whether these were used on a fixed basis or with the possibility of trade-offs between categories.

**Exhibit 4-1**  
**Relative Importance of Certification Criteria**

Categories	Fixed Weighting (average %)	Weighting with Trade-offs	
		Min. Weight (average %)	Max. Weight (average %)
Education	26	17	28
Experience	41	28	42
Examination	32	24	35

When asked to rate the value of various areas of study and education levels in determining a candidate’s suitability for certification, respondents showed a marked bias toward engineering as a requirement for a commissioning agent, as reflected in the average weighting assigned to areas of study and education levels in Exhibit 4-2 below.

**Exhibit 4-2**  
**Ratings of Weights for Fields of Study and Degrees**

<i>Rank the following areas of study with a weight rating, from 0 (should not be considered) to 5 (highest weight)</i>	Average Rank
Engineering	4.0
Facilities Operation Management	3.5
Testing and Air Balance	2.7
Project Management	2.6
Construction Management	2.4
Technologies (Trades)	2.3
Architecture	2.0
<i>Rank the following form of education with a weight rating, from 0 (should not be considered) to 5 (highest weight)</i>	Average Rank
Professional Engineering License	3.9
Bachelors Degree	3.6
BCA or BCA-approved training	3.4
Masters Degree	3.2
Doctors Degree	2.8
Related certification (e.g. Certified Energy Manager, Construction Document Technologist, etc.)	2.3
Associates Degree	2.0

Note that engineering was rated well above all other areas of study in significance, while a professional engineering license was rated higher than any other degree or training. However, despite these results, there is little explicit recognition given to an engineering degree or to a professional engineers license in the qualification criteria for becoming certified – other than the preference given to all graduates in a “building sciences” field, defined in the certification criteria to include “mechanical engineering, electrical engineering, construction science, construction management, architecture, and other majors/fields of study designed to train people for careers in the building industry.”<sup>5</sup>

#### ***4.2 Certification Fees***

Respondents were also asked what fee they would be willing to pay for a commissioning certificate. Given choices of \$250 to \$1500, the average of responses was \$635. For re-certification after five years, respondents were willing to pay an average of \$306 when given choices ranging from \$100 to \$1000.

To date, certification has been seen by those developing the program and by the BCA leadership as financially self-sustaining, but not as a source of net revenue to the association. However, as always there are likely to be a number of unanticipated costs associated with implementing the certification program which BCA should consider when setting the fees.

In addition, while we agree that it is not appropriate for BCA to count on certification as a revenue source to sustain its operations (since this would call the objectivity of the process into question), we think it is appropriate – and necessary -- for part of the certification fee to cover the cost of promoting certification to the user community. As noted below, we believe strongly that BCA should actively promote the value of certification to the owner community, since doing so directly benefits those who go through the certification process.

#### ***4.3 Development of Certification Requirements***

Using the results of the survey and input from commissioning and certification experts, a process for certification was designed and a structure for the examination was determined. BCA has also been working with a Washington, DC law firm that specializes in professional certification programs to assure that the program conforms to legal standards.

For two days in May of 2003, prior to NCBC and the 2003 BCA annual meeting, test-writing volunteers from the BCA membership, along with the members of the Certification Project Management Committee (PMC), met in Rancho Mirage, CA, to begin crafting the certification examination. Several hundred test questions were formulated, reviewed by experts in psychometrics, edited, and again reviewed by the PMC. Since then there has been further refinement of the questions, and there will be a

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<sup>5</sup> Candidate Bulletin of Information, Certified Commissioning Professional Program, (Draft 5), September 2003, p. 8

review of all results following the beta test. While no final decision has been made, it is anticipated that the examination will be administered in the early spring of 2004 at the BCA Chapter level and again in May in conjunction with the National Conference on Building Commissioning.

In addition to working on the test itself, the PMC spent significant time developing criteria for candidates to qualify for the examination and subsequent certification. Even within the committee, there has been disagreement regarding the appropriateness of the qualifications required to advance to the candidacy; in addition to the proposed rule-based method outlined in documents sent to BCA members for review (as described below), other associations use a points-based system that requires applicants to attain a given score through a combination of education and experience. The use of a points system is more flexible in that it allows a trade-off to address areas where an applicant's qualifications may be somewhat weak. According to Knapp, the problem with point-based systems is that they encourage people to argue about point values assigned for a specific item. The goal of a rule-based system is to avoid that, while providing the flexibility supported by survey respondents through alternate combinations of education and experience.

With input from Knapp, a draft application form was created along with a special candidate bulletin that explains the process in greater detail. These two documents were made available on the BCA website for review and comment by BCA members and other stakeholders, and will be posted to the BCA website once approved and in their final form.

The guidelines for qualification have drawn significant response, some of it quite impassioned. BCA members appear to be most concerned about the requirements that applicants have commissioned a given square footage of buildings or dollar value of projects. There is a feeling among many of the BCA members who have not been in the business as long as others that these requirements represent an attempt by an established clique to lock others out of the profession. The proposed guidelines, it is believed, could "benefit only a few members but hurt the business potential of the majority of members."<sup>6</sup> Moreover, providers in smaller cities and rural areas point out that the project sizes and associated dollar values in their region make it very difficult to attain the requirements even for experienced providers who have been in business a number of years. The basis for the square footage and dollar total requirements was not explained in detail in the candidate bulletin.

Given the sensitivity and importance of these requirements, it is clear that the certification committee should take great pains to allow feedback on this particular aspect of the certification criteria and to reassure members that feedback will be considered before the process is finalized. In fact, some members say they received the materials either not at all or without enough time to respond, in part because many e-mail addresses appear to have been invalid. In the Northwest, about 20 out of 60 e-mails

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<sup>6</sup> BCA Northwest chapter website: [http://www.bcxa.org/Northwest/Hot\\_Topics/](http://www.bcxa.org/Northwest/Hot_Topics/)

were rejected, according to one BCA member who saw the list of rejected email. Others said they received the materials with only a few days to respond.

There are, of course, unique challenges associated with certifying practitioners of a new and growing field, since many of the relative newcomers to commissioning will, by definition, lack the required depth of experience. Requiring those commissioning agents to acquire additional experience before being certified is absolutely reasonable and the certification development consultant has said that minimum standards for the amount or scope of projects are standard practice in certification. Moreover, a certification program that does not require both skill and experience is unlikely to enjoy much credibility.

However, we strongly recommend that the finalization of these requirements be put off until the issues raised can be addressed and the concerns of the full membership assuaged. Failure to do so could easily undermine the BCA's goals of becoming the premier association for commissioning providers. It is clear that the establishment of requirements that few members can hope to meet would likely cause many of those who cannot qualify relatively quickly to look elsewhere for a way to validate their credentials. This would be no idle threat; there are several certification programs already being offered, including those by the University of Wisconsin, the Test and Balance Institute, and the American Association of Energy Engineers. As it stands now, BCA clearly has the edge in providing a meaningful certification program that has been systematically developed; however, if too many BCA members decide that there is little likelihood that they will be able to attain certified status in the relatively near future, they will almost certainly leave the organization.

As this evaluation is being finalized, the certification committee has provided point-by-point responses to the issues raised by BCA members, indicating that some remain under discussion, while others reflect an approach previously agreed upon by the full membership. To the criticism that committee members were setting the standards to benefit their own business, the committee replied that "several committee members may not be eligible under the proposed requirements, yet voted to approve them."

With regard to concerns from retro-commissioning agents, who could find it impossible to meet the new building commissioning requirements, the committee noted that "the certification process focuses on the new (or renovated) building process. Retro-commissioning would be a good candidate for future certification programs."

As part of the effort to finalize requirements, the certification committee has also posted a second member survey on the BCA website asking for additional input, specifically with regard to the project cost and square footage requirements for certification. The committee notes that: "Some members have responded that they feel the thresholds have been set too high. The certification committee needs to verify if this concern is limited to a few members or is more wide spread. Further, if the concern is more wide spread, then the committee needs input on what a more appropriate level would be. The following survey was developed to get input on this and other key issues noted in the membership response."

In providing this response to member concerns and in seeking additional member input, the committee appears to be making every effort to ensure that the certification criteria balance the need for high standards with the needs of BCA members.

#### *4.4 Certification Next Steps*

Once this issue is resolved, the final steps prior to officially launching the program in early 2004 will be:

- performing a beta test of the application process and examination of a select group of people, chosen from the PMC and test-writing group who will become the initial recipients of the certification,
- selection of a five-member Building Commissioning Certification Board from among the initial recipients,
- selection of a testing firm to assist with administration of the examination and on-going test development services (an RFP has been sent out),
- adopting re-certification requirements,
- creation and announcement of the testing schedule with locations, and
- finalizing the format of the application and candidate bulletin following member comment.

BCA is also beginning to tackle the issue of marketing its certification. BCA is currently preparing to market the availability of certification to the provider community – which should be relatively easy since the certification program is being anxiously awaited. BCA leaders expect an immediate surge in applications, with a subsequent leveling off after the first year. Several hundred providers are projected to be certified by the end of 2004.

What BCA does not appear to be addressing is the need to market the benefits of certification to the owner community. We believe this development of the BCA “brand” is very important, since it will ultimately determine the value associated with certification, and we think that steps need to be taken to build owner awareness and recognition of the “BCA Certified” designation. As noted above, funding for such activities should be covered at least in part by certification fees.



## **5. ACCELERATED INTERNSHIP PROGRAM**

The accelerated internship program was developed to address a shortage of qualified building commissioning service providers in the Northwest that developed as commissioning became more widely used over the 1999-2002 period. The program was designed to offer a way for firms offering building commissioning services to match their need for more employees with individuals seeking a commissioning career. It is a five-month program that combines specialized training for interns, supervised work experience, and a salary subsidy of \$1000/month per intern to help offset the initial cost of hiring these relatively inexperienced workers. The Alliance sponsored the development of the training curriculum, paid the trainers' fees, and covered the monthly stipend for the interns who were hired.

Interns first attended a week-long, in-depth classroom training program in the Seattle area. The classroom curriculum, developed and presented by BCA members with extensive experience as building commissioning practitioners and educators, was intended to provide trainees with the skills necessary for success in the field. Upon successful completion of the program, the interns received a special certificate and assistance with placement at an established commissioning company if necessary.

The sponsoring commissioning companies are asked to provide a supervised work experience for five months involving the intern in hands-on building commissioning services. The company negotiates a salary with the intern during this period to supplement the stipend provided as part of the program. The goal is to have the interns permanently hired by the sponsoring company when the internship is completed, although there is no obligation for the sponsor to do so.

Originally expected to begin in February of 2003 with the classroom training to be held in April, implementation of the internship program encountered delays both in finding a training site and recruiting participants. In its January 2003 monthly report, BCA noted that "staff is having difficulty securing a site for the training, since the equipment needs are pretty specific."

Of the initial target of 15 participants, initial efforts resulted in only about a dozen applicants and few of those had the engineering background preferred by sponsoring firms. BCA subsequently expanded the pool of potential applicants through an announcement to Sheet Metal and Air Conditioning Contractors National Association members in the Northwest and through the Washington Society of Professional Engineers. Twelve candidates for the program were eventually selected.

After continuing difficulty securing a location, the McKinstry Company provided a conference facility for a training site, with free testing facilities and equipment, and food service at cost. The 12 participants in BCA's Accelerated Internship program completed their five-day training session in Seattle on June 20, with a program that featured a blend of technical applications and exploration of the commissioning process.

At the end of the training, attendees were asked to evaluate the instructors and course content. While the overall quality of the training was perceived as very good by attendees, both the trainees and the instructors regretted the lack of a facility that would provide a more “hands-on” learning experience. Attendees had the following comments:

- *“We need more hands-on testing workshops.”*
- *“Five straight days of slide presentations was trying....Slides are a good tool but we’re the type of people that learn with our hands and by doing.”*
- *“Bringing in the VFD simulation apparatus was intriguing. More of these type of equipment props would enhance the training program.”*

Trainees also noted the importance of having the course content provide a context for the work they would be doing on the job. One noted that his actual field experience, at least initially, usually involves working on a single specific test, and it is very useful to see an individual procedure in the broader perspective of an entire system being commissioned.

Like the trainees, instructors said they were frustrated at being unable to use more hands-on learning in the course, noting that what they really need is a facility like the PG&E Energy Center in California, where students can make real adjustments to building controls without affecting other occupants.

According to BCA Executive Vice-President Lynn Melby, five of the 12 trainees have been placed in internships with two sponsoring firms in the Northwest. The additional seven who completed the course are still available for five-month internship positions with sponsoring firms.

Both of the firms hiring interns say they are pleased with their performance and expect to keep them on staff. On the other hand, no other firms have stepped forward to sponsor an intern. Even though there is no obligation to hire an intern permanently, potential sponsors appear to be reluctant to hire an intern for five months and then let them go. Several firms contacted attribute their reluctance to sponsor an intern to the fact that the softer economy has eased the shortage of commissioning providers, so that they had no current need for extra people. And even one of the trainees permanently hired after the program says that he spends only about half his time doing commissioning work rather than HVAC system design.

While a reduced need for added staff was most often cited as the reason for not sponsoring an intern, another issue that the program faced both in recruitment and placement is the extent to which an engineering background is strongly desired by potential sponsor firms. Instructors, the BCA staff responsible for the program, and several companies said that those who did not hire interns might have been more likely to recruit someone with a stronger engineering background. Unfortunately, this was not made explicit during program planning and therefore did not become a requirement during the candidate recruiting process.

Overall, the internship program has achieved mixed results. On the plus side:

- A curriculum was developed that can, with some modifications, be adapted either to re-use in the PNW or roll-out elsewhere in the country.
- Five interns were trained and placed, with all five retaining their positions after the original five-month internship period, representing a modest net addition to the base of commissioning skills and capabilities in the region.
- Valuable lessons were learned about the importance of an appropriate training site that facilitates the use of hands-on examples and projects for trainees.

On the negative side, the program appears to have fallen short of the expectation that it would significantly increase the pool of commissioning providers. Specifically:

- The reluctance of BCA members to step forward and sponsor interns is disappointing, especially in light of the numerous complaints previously issued regarding the shortage of qualified workers, the difficulty of managing workload, and the need – in particular – of entry level training to provide technicians and other field staff to handle many commissioning tasks that may not require as much experience or education.
- The training, while good, was not seen by trainees as particularly useful for their actual work situation, and a more hands-on approach is strongly desired.

On balance, the biggest problem may have had less to do with the program itself and more with the fact that the construction market and the urgent need for commissioning workers cooled between the time the program was first planned and the time it was implemented. While there does not appear to be an immediate need to repeat the program in the PNW, it may be appropriate to do so at some time in the next several years if the economy recovers and demand for commissioning services accelerates. If the program is repeated, we would make the following recommendations:

- Secure a commitment from sponsor firms before initiating recruitment of trainees.
- Define the requirements for interns more clearly and consistently with the market's expectations, allowing sponsors to provide input to the criteria that will be used to recruit interns. If an engineering background is required, that should be made clear, so that recruitment sources and the time allowed for recruitment can be adjusted accordingly.
- Ensure that the training has a greater hands-on component, both to reduce Powerpoint fatigue and to provide trainees with a better idea of real-world commissioning situations. Since the instructors are very willing to do this, the primary problem will be identifying a facility where the session can be held. A college or university campus building during summer break may be a possibility.

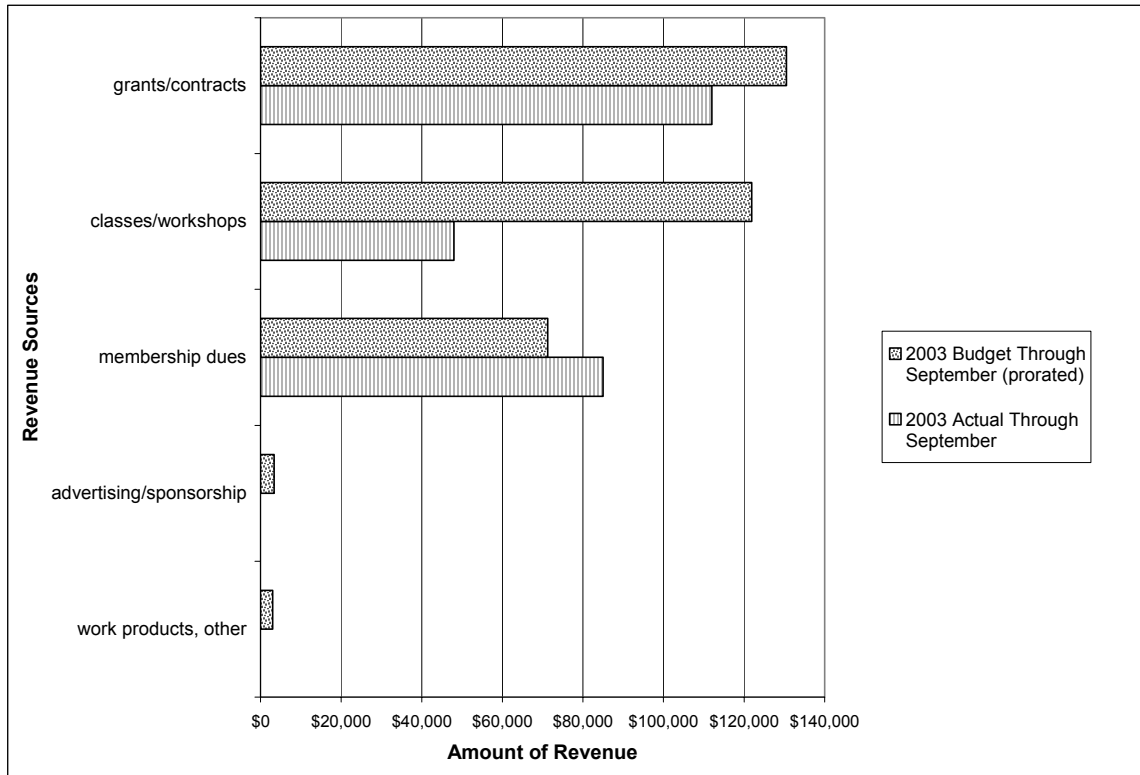
## **6. BCA'S PROGRESS TOWARD SELF-SUFFICIENCY**

As noted in the introduction to this report, it has been the goal both of BCA and of the Alliance that the association become self-supporting. Specifically, one of the project progress indicators was that "The association will become self-supporting through revenues from memberships, products, and services by December 2003." As of December 2003, progress in membership and BCA's ability to become self-sustaining has been impressive. While revenues are still below the amount needed to deliver the full range of services BCA members require they are very close to covering the basic cost of running the organization, conducting annual and board meetings, and communicating with the membership. They should be sufficient for such activities by mid-2004 assuming the current rate of membership growth is sustained.

Total membership in all categories has risen to over 400 currently and continues to grow at a rate of 5-10 new members per month - due in part to the shift to individual-based membership. Membership is well distributed geographically, with at least 39 members in every region, and 18 outside the U.S. Moreover, BCA leaders believe the potential for membership growth remains tremendous - assuming the level and quality of services provided to BCA members can be brought to and kept at the highest levels. The certification program should contribute substantially to the flow of new members, if the issues identified previously can be resolved.

With the growth in membership has come an increase in income from dues. The roles of these and other funding sources for the 2003 BCA annual budget, prorated for the first nine months of the year, are presented and compared to the actual revenue mix through September in Exhibit 6-1.

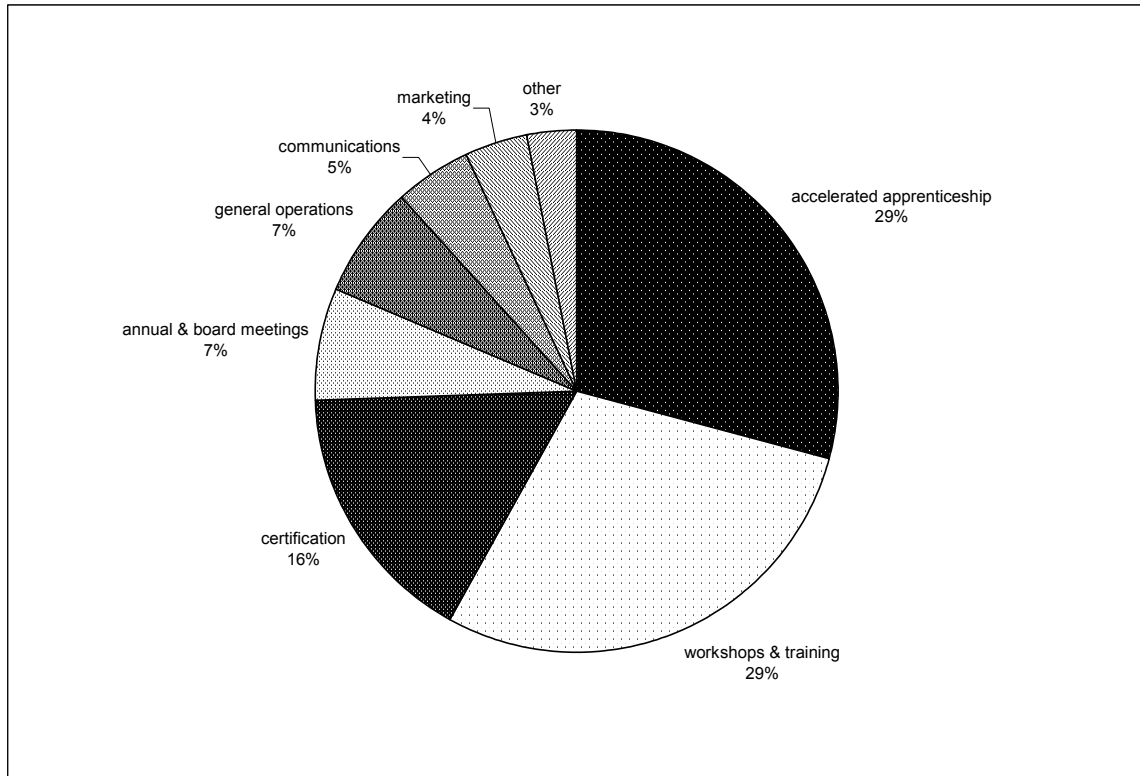
**Exhibit 6-1**  
**2003 BCA Funding Mix - Budget vs. Actual through September**



Note that grants and contracts were expected to provide the largest share of revenues, followed by classes/workshops and membership dues. However, through September 2003 both income and expenses associated with training sessions have been lower than anticipated, since several scheduled courses were not held. In addition, it was anticipated that more apprenticeship training and placement would take place. As a result, income to date has been approximately 45 percent grants and contracts, 35 percent membership dues, and 20 percent classes and workshops.

The budgeted expenditures by category for 2003 are presented in Exhibit 6-2.

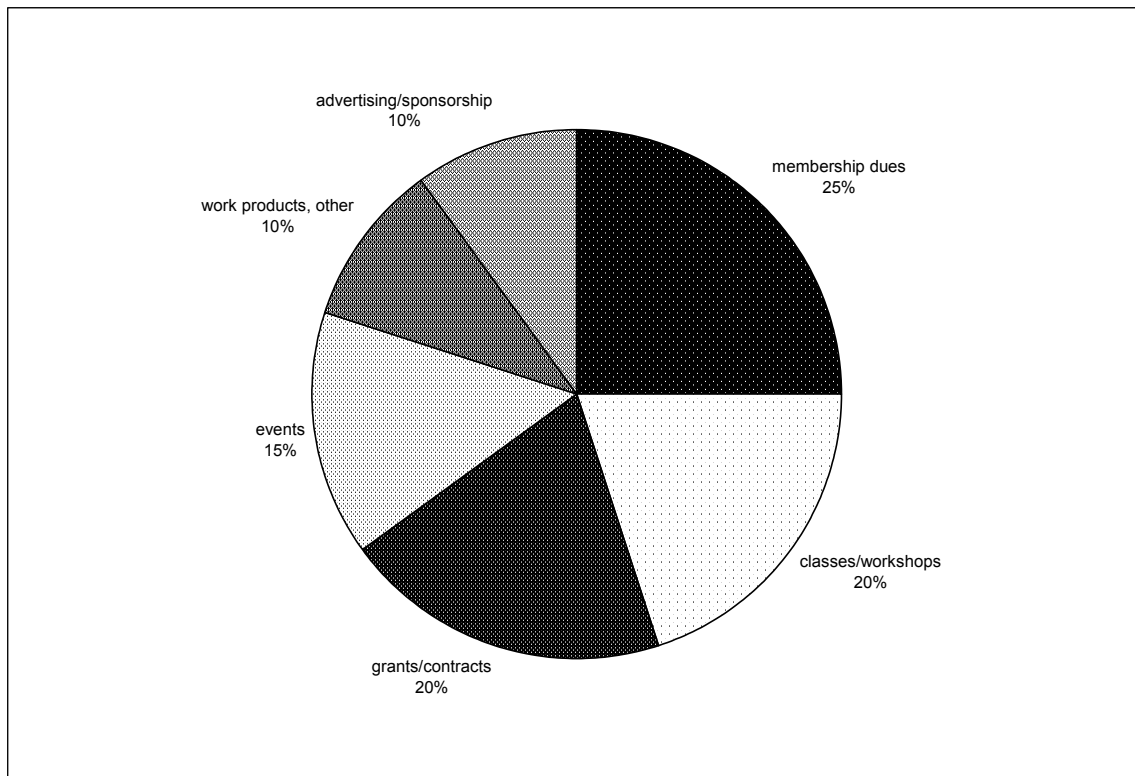
*Exhibit 6-2  
2003 Budget By Activity*



Note that the two programs funded by the Alliance, the accelerated apprenticeship program and the certification program, were expected to account for 45 percent of 2003 expenditures. The basic operation of the BCA itself (i.e., general operations, board and annual meetings, communications) accounted for only about 20 percent, indicating that most of these costs are in fact being covered by membership dues.

A report on funding sources presented at the BCA annual meeting in May 2003 envisions a more diverse future funding mix, illustrated in Exhibit 6-3. The goal is to have membership dues account for 25 percent of the budget in the long term (down from 35 percent in 2002, and up slightly from the current year, where grants and contracts dominate), with 20 percent coming from grants and other funding sources (e.g., the Alliance in the past), 20 percent from classes and workshops, 10 percent from advertising, 5 percent from the sale of contracts and other work products, and 20 percent from events and other sources.

*Exhibit 6-3  
Desired Future BCA Funding Mix*



Since Alliance grants and contracts currently account for almost twice the desired share of revenue, it is of particular importance for BCA to find and develop additional sources of funding. In the short term, that will mean seeking out funding in the form of grants from utilities, government entities, and other public or quasi-public bodies.

Membership dues appear to be on track to account for about one-fourth the BCA budget in 2005 and to cover the basic cost of operating the association. With membership over 400, annual dues revenues are approximately \$107,000. A somewhat conservative 10 percent projected rate of growth would bring dues revenues to about \$130,000 in 2005, or a little over 25 percent of a \$500,000 budget, representing the approximate share of the current budget devoted to annual and board meetings, communications, marketing, and general operations. Therefore, to the extent that non-operations activities such as the apprenticeship, certification, and training programs generate their own revenues or are funded by outside sources in future years, membership dues should cover the basic operation of the BCA.

BCA plans to generate a greater portion of its future revenue from training sessions – both those oriented to commissioning providers and those targeted to owners. While five of the sessions for providers were planned for 2003 in locations around the country,

one of those was canceled and one was postponed until next year. To date, these have not been major moneymakers, but they have allowed BCA to cover its costs and, in some cases, make a small profit. Over the next several years, the goal of having five sessions per year should be attainable, since there will be a direct linkage between course attendance and qualification for the certification test. At approximately \$25,000 in revenue per session, that would mean up to 25 percent of overall revenues and, if BCA is able to make a profit of \$2,000 per session, would contribute \$10,000 to general operating expenses. BCA has also begun to expand its training and seminars for owners, with three sessions this year that have generated a modest profit.

Among other revenue sources, the certification program will likely be self-sustaining; the benefit is that this will help sustain the organization by supporting some of the BCA staff who will be implementing the certification effort. Other sources of income are less certain. The BCA plan calls for advertising, work products, and events (such as organizing trade shows or conferences) together to contribute as much as 30 percent of revenues, but, as shown in Exhibit 6-1, they currently generate negligible revenues.

Both advertising and the sale of contract documents, commissioning specifications, and other work products can yield revenue only if there is a means to market them - which will require an upgrade of the website to make advertising and other products available. An RFP for web site development has been issued and the contract awarded to Melby, Cameron, and Hall, which should make it possible to start generating revenue from these sources. We would anticipate, however, that it will be several years before advertising and work products can generate as much as the combined 15 percent envisioned for the future.

Since much depends on BCA's ability to exploit these potential revenue sources, it is virtually impossible to develop a projected budget for the association several years out. On balance, however, we believe that BCA will achieve a basic level of self-sufficiency in 2004. By basic we mean that revenues from dues will cover the cost of running the organization, conducting annual and board meetings, and communicating with the membership.

This should be possible because many of the more resource-intensive development activities that have taken up much of the BCA budget have been largely completed; in addition, the certification and training programs should be able to become self-sustaining in the coming years, particularly as certification draws more attendees into the provider training courses. But to the extent that BCA hopes to continue to expand its scope and expand the range of services it offers to its members and to the building owner and design/construction community, finding external sources of funding to support new initiatives will remain a high priority.



## **7. CONCLUSIONS AND RECOMMENDATIONS**

In many ways, BCA has taken remarkable strides and is now positioned as the pre-eminent voice of a growing national commissioning provider industry. It is preparing to roll out the certification program, has completed the first accelerated internship program, and has built membership to the point where dues generate a significant revenue stream that covers most of the actual operating costs of the association. However, the organization still faces a number of challenges in its efforts to define both the practice and the profession of commissioning and ensure the continued growth and increasing influence of BCA within the commissioning industry as well as for building owners, developers and design professionals.

### ***Certification***

To date, development of the certification program has followed a thorough, logical path that will ensure a defensible, stringent, standard for good commissioning practice, thereby lending credibility to both BCA and the overall commissioning industry.

- Certification has been seen by those developing the program and by the BCA leadership as self-sustaining, but not as a source of net revenue to the association. However, there are likely to be a number of unanticipated costs associated with implementing the certification program in the future, and we recommend that BCA set the fee at a level that will comfortably cover both anticipated costs and contingencies.
- In addition, we believe that BCA should actively promote the value of certification to the owner community, and we believe it is appropriate to include the cost of promotion in the certification fee.
- With regard to the qualifications for certification, we recommend that the finalization of these requirements be put off until the issues raised regarding the square footage and dollar requirements can be addressed and concerns of the full membership assuaged. BCA appears to have recognized the importance of this issue and is taking pains to respond to comments and gather additional input.

### ***Apprenticeship***

On balance, the accelerated apprenticeship program's greatest weakness may have been the fact that the construction market and the urgent need for commissioning workers cooled between the time the program was first planned and the time it was implemented. While the program appears to have fallen short of the expectation that it would significantly increase the pool of commissioning providers in the PNW, it has created the infrastructure that will allow the program to be re-introduced as the need arises in the future.

If the program is repeated, we would make the following recommendations:

- Secure a commitment from sponsor firms before initiating recruitment of trainees.
- Define requirements for interns more clearly and in line with market expectations, allowing sponsors to provide at least some input to the criteria that will be used to recruit interns. If an engineering background is required, that should be made clear, with recruitment sources and the time allowed for recruitment adjusted accordingly.
- Ensure that the training has a greater hands-on component to provide trainees with a better idea of real-world commissioning situations. Since the instructors are eager to do this, the primary problem will be identifying a facility where sessions can be held. A college or university campus building during summer break may be a possibility.

### *Progress Toward Self-sufficiency*

Increases in membership and BCA's progress toward becoming self-sustaining have been impressive; membership now exceeds 400 and continues to grow steadily, with significant potential for rapid expansion as the certification program takes hold. Given the current and anticipated membership and dues levels, we believe that BCA should achieve a basic level of self-sufficiency in 2004.

- Dues revenues appear to be poised to cover the basic cost of running the organization in 2004, including conducting annual and board meetings, and communicating with the membership.
- In addition, the certification and training programs should be able to become self-sustaining in the coming years, particularly as certification draws more attendees into the provider training courses.
- To the extent that BCA hopes to continue to expand the range of services it offers to members and building owners and the design/construction community, it will need to follow through on plans to raise funds through advertising, the sale of work products such as contracts and specifications, events, and other activities. While much depends on BCA's ability to exploit these potential revenue sources, it is too early to develop even a projected budget for these.
- Since these potential revenue sources are still highly uncertain, finding external sources of funding to support new initiatives remains a high priority.

### *The Alliance Role in BCA*

We believe the Alliance can continue to use BCA to achieve its goals of enabling the widespread adoption of building commissioning in the Northwest and gaining the associated energy and non-energy benefits. The following activities recommended in support of BCA could all be delivered through the Northwest regional chapter:

- Support BCA in the provision of technical assistance to PNW building owners. We envision supplementing the assistance provided to public agencies through the Commissioning in Public Buildings program with the technical expertise of the BCA, which can be offered through the Northwest regional chapter.
- Fund the development and promotion of contract documents for PNW owners through BCA. BCA has plans to offer contracts, commissioning specifications, and other work products as a source of revenue. The Alliance could negotiate with BCA to provide such documents at an Alliance-subsidized, reduced rate for PNW owners; the owners would have access to the documents, BCA would have an added revenue stream.
- Fund owner training. It is recommended that multiple trainings for building owners be conducted through the BCA's Northwest regional chapter, since BCA has already developed content for this course.
- Promote certification. As part of the owner training, as well as the overall marketing effort, we recommend that the Alliance support the promotion of the value BCA certification provides to building owners. We believe this is an important aspect of the certification program that is currently not being addressed, but that could be easily integrated with other initiatives.

BCA also has an overall need for funding that extends beyond regional boundaries. Specifically, BCA needs seed money to pursue funding opportunities, and it may be a good use of Alliance resources to assist BCA in obtaining funding from such alternate sources. The Alliance could, for example, fund a grant proposal writer, with the understanding that proposals developed would have to have a Northwest component.

Given that the BCA has already provided an effective voice for the assurance of consistent high quality in commissioning, it seems appropriate for the Alliance to support the association's further development - particularly now that the regional structure makes it easier to do this in a way that targets the Northwest.

## **Appendix A**

### **BCA Certification Program Member Survey and Results**

## BCA Certification Program Member Survey - Part I.

Part I. is designed to repeat discussions held at the 2001 National Conference to allow full membership input on these topics.

I.1	<b>Agree</b>	<b>Disagree</b>
The BCA should develop and administer a Commissioning Certification Program	97%	
Comments:		

If you feel that the BCA should not develop a certification program it is not necessary to complete the remainder of the survey, however, if the program does proceed by indication of the majority, your input on the following will be included.

I.2	<b>Agree</b>	<b>Disagree</b>
The Certification Board shall consist of BCA members elected by the BCA Board and will solely be responsible for reviewing and approving applicants. Term limits will apply.	95%	
Comments:		

I.3	<b>Agree</b>	<b>Disagree</b>
Certification will be offered to individuals. No company level certification.	85%	
Comments:		

I.4	<b>Agree</b>	<b>Disagree</b>
Applicants must be a BCA member or employed by a BCA member company.	87%	
Comments:		

I.5	<b>Agree</b>	<b>Disagree</b>
A point system will be used to determine certification eligibility. Points will be awarded for education, experience and results of an examination.	95%	
Comments:		

I.6	<b>Agree</b>	<b>Disagree</b>
Proof of education must be supported by official transcripts, or other BCA approved authentication method.	90%	
Comments:		

<b>I.7</b>	<b>Agree</b>	<b>Disagree</b>
Proof of experience must be supported by resume, references and samples of commissioning work, all in BCA specified format.	95%	
Comments:		

<b>I.8</b>	<b>Agree</b>	<b>Disagree</b>
The examinations will be proctored by a third party, independent agency and the test score transmitted to the Certification Board.	90%	
Comments:		

<b>I.9</b>	<b>Agree</b>	<b>Disagree</b>
A separate fee will be charged for application, examination and recertification. Fees will be set as determined by the Certification Board and approved by the BCA board.	92%	
Comments:		

<b>I.10</b>	<b>Agree</b>	<b>Disagree</b>
Recertification will be required at 5-year intervals.	69%	
Comments:		

<b>I.11</b>	<b>Agree</b>	<b>Disagree</b>
Under certain pre-defined conditions a member's certification can be revoked (Decertification).	92%	
Comments:		

<b>I.12</b>	<b>Agree</b>	<b>Disagree</b>
BCA training will not be required but will count for experience.	92%	
Comments:		

<b>I.13</b>	<b>Agree</b>	<b>Disagree</b>
Examination should be consistent with BCA endorsed training and BCA essential attributes.	95%	
Comments:		

General Comments:		

## BCA Certification Program Member Survey - Part II.

The following questions will be used to guide the Certification Committee and Consultant in developing the final program.

### Commissioning Disciplines:

Building commissioning incorporates a skill set that can cross the boundaries of many different professional disciplines. Some professional certification programs provide for certification in various areas of expertise. In answering the following, keep in mind the difference in the cost of developing and administering a program with a single vs. multiple disciplines, as this cost will be passed on to the applicants.

II.1	Agree	Disagree
A meaningful certification program could be developed that focused on an applicants experience and education, along with an examination that tested on “universal” commissioning attributes such as ethics and process but does not include separate disciplines.	77%	
Comments:		

II.2	Agree	Disagree
The certification program should include separate disciplines.	38%	
Comments:		

If a program were created based on process and ethics but with separate disciplines similar to Professional Engineers, what disciplines should be included?

II.3	Agree	Disagree
Whole building	49%	
Mechanical systems	77%	
Electrical systems	74%	
Envelope	49%	
Industrial/Process	51%	
Other (list):	41%	
Comments:		

Comments on Disciplines:

## Evaluation System Weighting:

Assuming the certification program uses the currently recommended evaluation system of education, experience and examination, answer the following:

If the point system were to have a fixed weighting of each of the three evaluation categories, what would you recommend?

I.4	Weight %
Education	26%
Experience	41%
Examination	32%
Total:	100%

If the point system were to allow a trade-off between the three evaluation categories, what range of exchange would you recommend? (If you don't think a trade-off is appropriate in any one category you can make the min=max for that category)

II.5	Minimum Weight %	Maximum Weight %
Education	17%	28%
Experience	28%	42%
Examination	24%	35%

### Education:

II.6	Agree	Disagree
In regards to a college degree, the area of study should be a consideration.	87%	
The level of degree attained (BS, MS, PhD) should be a consideration.	46%	
Comments:		

Rank the following areas of study with a weight rating from 0 = Should not be considered, to 5 = Highest Weight

II.7	Rank
Architecture	2
Construction Management	2.4
Engineering	4
Facilities Operation Management	3.5
Project Management	2.6
Testing and Air Balance	2.7
Technologist (Trades)	2.3
Other (list):	18%



Rank the following forms of education with a weight rating from 0 = Should not be considered, to 5 = Highest Weight

II.8	Rank
Associates Degree	2
Bachelors Degree	3.6
Masters Degree	3.2
Doctors Degree	2.8
Professional Engineering License	3.9
BCA or BCA approved training	3.4
Related certifications such as Certified Energy Manger, Construction Document Technologist, etc.	2.3
Other (list):	8%

Comments on Education:

**Experience:**

Professional references are individuals who are familiar with your work and professional career but not necessarily a specific commissioning project. Project references are individuals who are familiar with your project work.

How many professional references should be required?

None  One  Two  Three  \_\_\_\_\_ 2.5\_\_\_\_\_

How many project references should be required?

None  One  Two  Three  \_\_\_\_\_ 2.5\_\_\_\_\_

What are appropriate samples of commissioning work for initial certification?

II.9	Agree	Disagree
Commissioning Plan	77%	
Functional Test Procedures	90%	
Final Report	82%	
Case Studies	31%	
Other (list):	26%	
Comments:		

II.10	Agree	Disagree
Activity in the BCA or other organizations supporting commissioning should count as experience.	59%	
Comments:		

II.11	Agree	Disagree
Other commissioning related activities should count as experience.	21%	
Presenting on commissioning.	64%	
Writing articles on commissioning.	67%	
Other (list):	5%	
Comments:		

Comments on Experience:

**Examination:**

In answering the following, keep in mind the difference in the cost of developing and administering each type of test, as this cost will be passed on to the applicants. Rank the following test methods (0 being the least desirable method to 5 being the most desirable)

II.12

Test Method	Relative Cost	Rank
On-line testing over the Internet. Multiple-choice for low cost, write-in at higher cost. Not proctored, offered anywhere an Internet connection is available, available any time. Lowest flexibility for test content rigor.	Low	1.6
On-line testing over the Internet. Multiple-choice for low cost, write-in at higher cost. Proctored, offered anywhere an Internet connection is available and within reasonable distance to most major cities, available during working hours, 6 to 7 days per week. Medium flexibility for test content rigor.	Med	3.5
Computer-based testing offered at testing centers (such as Sylvan Learning Centers). Multiple-choice for low cost, write-in at higher cost. Proctored, available at most major cities, available during working hours 6 to 7 days a week. Medium flexibility for test content rigor.	Med	3.7
Conventional testing offered at major metropolitan hubs or universities. Proctored, locations and schedules limited. Highest flexibility for test content rigor.	High	2.6

Comments on Examination:

**Recertification:**

What type of continuing education credits would be appropriate for recertification?

II.13	<b>Agree</b>	<b>Disagree</b>
Comments:		

What are appropriate samples of commissioning activities for recertification?

II.14	<b>Agree</b>	<b>Disagree</b>
Case studies	72%	
Commissioning articles	67%	
BCA Board participation	54%	
Presentations on commissioning	69%	
Other	21%	
Comments:		

Comments on Recertification:

**Decertification:**

Decertification is a complex topic. Without potential decertification, the program may be perceived as lacking credibility. At the same time decertification presents a potential burden to the organization in terms of resources and liability.

What types of activities would be considered an infraction sufficient to warrant review by the Certification Board for possible decertification? Choose a ranking of severity from low to high or not an infraction.

II.15

	<b>Not an Infraction</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
Found negligent in BCA peer review	3%	11%	42%	44%
Professional misconduct	3%	8%	19%	69%
False representation	3%	3%	22%	72%
Causing harm to building occupants/systems	5%	0%	19%	75%
Loss of related professional lawsuit	20%	29%	49%	11%
For failure to re-certify	17%	37%	26%	20%
Other (list):				

II.16	<b>Agree</b>	<b>Disagree</b>
Recertification after decertification should be allowed.	62%	
Comments:		

Comments on Decertification:

**Cost of Program:**

Keep in mind that the price charged for the certification program will directly affect the rigor of the certification program when answering the following questions.

What fee would you be willing to pay for a commissioning certificate? (Price includes all fees such as application fee and testing fee)

II.17 (all values U.S. Currency)

\$250	\$500	\$750	\$1,000	\$1,500
	635			

What fee would you be willing to pay for re-certification? (Assume a 5 year renewal)

II.18 (all values U.S. Currency)

\$100	\$250	\$500	\$750	\$1,000
	306			

Comments on Cost:

**Technology Solutions:**

Rank the following application package delivery methods from 1 (best) to 3 (worst)

I.19	Rank
Application packages should be available by request through conventional mail only.	
Application packages should be available for download off the BCA website and by conventional mail.	
Application packages should be available for download off the BCA website only.	
Comments:	

I.20	Agree	Disagree
The method used to distribute this survey was effective and should be continued for future member input.	87%	
Comments:		

I.21	Agree	Disagree
Current members holding a valid certificate should be posted on the BCA website.	92%	
Comments:		

Comments on Technology