The Building Commissioning Association: An Industry Partnership in Market Transformation

John Doyle, Building Commissioning Association
Kent Barber, Casault Engineering, Inc.
Karl Stum and Debby Dodds, Portland Energy Conservation, Inc.

ABSTRACT

Over the past 10 years, building commissioning has gained national recognition as a valuable and critical process for obtaining more energy efficient and healthful buildings. As more owners recognize the benefits of commissioning, the demand for these services should increase. In 1998, a professional organization, the Building Commissioning Association (BCA) was established with start-up funding from the Northwest Energy Efficiency Alliance (NEEA) and the support of the Northwest Commissioning Collaborative, an ad hoc group of utilities, government agencies, engineering firms and public organizations. The BCA, comprised of firms providing commissioning services and supporting organizations, is dedicated to promoting commissioning to building owners, and maintaining a high standard for commissioning services throughout the construction industry.

As an emerging professional niche, commissioning has a variety of practitioners from various trades and disciplines. This paper discusses how the players in the Northwest recognized that to transform a service market, the service must be seen as a known and consistent commodity developed in partnership with firms already active in the commercial buildings industry. An association, dedicated to providing the needed services, offers a focused forum for consistency to both providers and purchasers.

The paper provides background on the efforts of the BCA to create an industry awareness of what distinguishes effective commissioning and specifically presents the "Essential Attributes of Building Commissioning" to which BCA members agree to adhere. The paper also summarizes industry partnerships with utilities and state agencies, and describes programs and training underway to further integrate commissioning into the commercial buildings industry.

Building Commissioning Association Beginnings

The Building Commissioning Association (BCA) was formed in 1998 by several building commissioning professionals in the Pacific Northwest who wanted to promote building commissioning. Organized as a professional development nonprofit association, the BCA believes it is necessary to develop, within the commissioning industry, a common understanding of what constitutes effective building commissioning. The association also recognizes the need for this developing industry to establish essential practices that maintain high professional standards, and fulfill building owners' expectations.

The proposal to organize a professional association of building commissioning providers was first explored by attendees to the annual National Conferences on Building Commissioning. In November 1996, interested parties were invited to an informal session prior to the Second Northwest Conference on Building Commissioning in Portland, OR. At this meeting, almost fifty commissioning leaders expressed their interest in working together to help form the nation's first building commissioning organization. Additional support for organizing this type of association was given by utilities, state agencies and energy-efficiency groups.

The Northwest Commissioning Collaborative, an ad hoc group of utilities, government agencies, engineering firms and public organizations already active in the Northwest, continued to nurture this initial support by leading an informal series of meetings throughout 1997. Key players in the Commissioning Collaborative included the regional commissioning provider firms, the Northwest Energy Efficiency Alliance (NEEA) and its members, Portland Energy Conservation, Inc. (PECI), utilities, and state as well as local government agencies.

Formal steps to establishing a commissioning providers' association were supported by the Collaborative and representatives from several commissioning firms who pledged to make it happen. As part of the Commissioning of Public Buildings Program, NEEA provided seed money for starting and running the industry association during the first two years of operation. Following a series of organizational meetings, the Building Commissioning Association registered under the laws of the State of Oregon as a trade association, not-for-profit corporation in May 1998. The initial regional focus quickly expanded to include commissioning membership in 22 States, Canada and Hong Kong. The BCA is an important industry partner for all stakeholders vested in making commissioning business as usual in commercial buildings.

Building Commissioning Association Goals

The fundamental mission of the BCA is to promote building commissioning practices that maintain high professional standards, and fulfill building owners' expectations. The objective is to accomplish this mission while allowing for diverse and creative building commissioning approaches that foster the progressive evolution of the building commissioning profession and benefit a broad commissioning market base. It is the BCA's goal to institute building commissioning as a standard building industry practice by thus establishing building commissioning as a desirable service, and simultaneously furthering an understanding of the benefits of commissioning to the building construction and management industries.

Formal building commissioning, however, is a relatively new process struggling for wider recognition. Various contractors and professionals offer "commissioning services" that vary in scope and quality, and sometimes even have differing objectives. From its beginning, the BCA has understood that such inconsistency poorly serves the interests of building owners, contractors, and commissioning firms, alike. Creating an industry wide-awareness of what constitutes effective building commissioning is critical if building commissioning is to be widely recognized as a desirable process.

Defining the essence of effective building commissioning proved a long and difficult task for which the BCA founders enlisted the help of some of the many foremost

commissioning experts. As a result, the document emerged as the foundation for the Association's membership criteria, activities, and training. (See next section for more detail) The Building Commissioning Attributes document identifies what the BCA believes to be the "Essential Attributes of Building Commissioning", as well as "Valuable Elements" that significantly increase the value of commissioning for many building owners (BCA, 1998). The BCA asserts that this document describes the essence of effective building commissioning in a manner that can be easily understood and broadly applied. Industry feedback on the document tends to support this claim. The overwhelmingly positive response from building commissioning providers contributed significantly to the BCA's expanding beyond the Northwestern region of the United States. Also, the Building Commissioning Attributes were well received during a 1999 National Conference on Building Commissioning roundtable session as a potential building commissioning model for the entire building industry. Government Agencies have also responded strongly in favor of the BCA and its Building Commissioning Attributes. Examples of this include the following:

1. BCA membership is required for Commissioning Authorities on projects that receive funding from Seattle City Light
2. The State of Idaho is in the process of adopting the Building Commissioning Attributes as a part of its State Commissioning Guidelines
3. Commissioning in accordance with the BCA Essential Attributes is required for Washington State funding on public school projects that are larger than 50,000 square feet
4. The Swedish Medical Center in Seattle listed BCA membership as a qualification on a recent request for proposal
5. An increasing number of Owners and Public Agencies have expressed that they look favorably on BCA membership when selecting a commissioning provider.

In addition to defining the essence of effective building commissioning, the BCA is attempting to maintain high commissioning standards by providing training for commissioning providers. The Building Commissioning Association believes that the technical skills required for building commissioning must be obtained through substantial experience in related fields, however, it is in the process of developing a training program to show technically qualified engineers and technicians how to apply their expertise to building commissioning in accordance with the BCA Attributes. This furthers BCA goals by teaching quality commissioning methods and assisting to create a supply of qualified commissioning providers to fulfill market expectations and demand. The BCA is presently developing this professional training program for public availability in spring, 2000.

The BCA is also developing training programs to further the understanding of commissioning benefits among the building construction and management industries. The initial planning is underway for the development programs to teach building owners and designers how to maximize the benefits of building commissioning through their participation in the process. The BCA plans to have training available to building owners by fall, 2000, followed shortly thereafter by architect/engineer (A/E) and contractor training.

Professional and trade associations with goals similar to those of the BCA have proven to be of value to the building industry, however, the BCA is the only professional

association in the United States dedicated to building commissioning. As such, it focuses the commissioning industry and creates an identity for professional commissioning services. BCA Attributes also set a standard for commissioning services and the Association's peer review process gives owners recourse if BCA members do not provide commissioning services that measure up. Owners and project managers also consult the BCA and website membership roster to identify qualified candidates for commissioning work on their projects.

BCA Building Commissioning Attributes

The BCA's Building Commissioning Attributes document is the collaborative product of hundreds of hours worth of input from commissioning providers, state agencies, and building owners familiar with commissioning. The resulting document identifies what the Building Commissioning Association believes to be the "Essential Attributes of Building Commissioning," as well as commissioning elements that significantly add value for many building owners. The BCA considers the Essential Attributes to be so fundamental to effective building commissioning that all members agree in writing to provide their services in accordance with them, whenever they serve as a project's Prime Commissioning Provider. Members also agree to subject themselves to an Association peer review if a client charges that their performance is not in accordance with the Attributes.

The founders of the BCA recognized that having its members known as quality service providers would be fundamental to establishing the organization's credibility and successfully attaining these goals. This raised the extremely difficult question of, "what distinguishes *quality* building commissioning?" The materials that have been written to describe commissioning goals and protocol do not provide good answers to this question. Initially the BCA tried to identify quality commissioning, thereby determining Association membership requirements, by describing extensive criteria and protocol. Soon, however, it became apparent that highly complex criteria would be difficult to enforce as membership requirements, and describing commissioning protocol in too much detail might stifle the positive diversity and creativity that helps the profession evolve. Also, while the BCA has a commitment to promoting ideals, it recognized that usable commissioning criteria need to acknowledge the realities of commissioning contract limitations. The founders of the BCA arrived at the conclusion that a widely applicable description of fundamental commissioning services that would define Association membership criteria and address these issues would have to achieve the following objectives:

- Allow for any commissioning approach or format that that fulfills the owner's building commissioning expectations for systems performance and maintainability.
- Include input (and acceptance) from as many experienced commissioning experts as practical.
- Realistically address the fact that the contracting regulations of some agencies do not always allow commissioning to occur exactly according to the protocol that many commissioning experts prefer.
- Encourage the evolution and creativity that is important for the growth of the commissioning profession and the satisfaction of its clients.
- Document the membership criteria in a clear, enforceable manner, and insist without exception that all members provide their commissioning services in accordance with them whenever they serve as a project's prime commissioning firm.

In order to fulfill the preceding objectives, the BCA realized a focus on identifying the essential elements of effective building commissioning instead of prescribing methods of applying them. Initially two documents resulted: the BCA's *Essential Attributes of Commissioning,* and the *Peer Review Protocol*. In the process of compiling the essential attributes, the BCA identified some commissioning elements that, while not always essential, are very often valuable. It was felt that these *Valuable Elements of Building Commissioning* should be documented and combined with the *Essential Attributes* to create the BCA's Building Commissioning Attributes.

The *Building Commissioning Attributes* document may be down loaded form the BCA's website (www.bcxa.org). A more complete explanation of the document, including commonly requested information on how some of the Attributes were selected and why specific wording was chosen is available from the BCA in a document entitled "The Building Commissioning Association Building Commissioning Attributes; Further Explanation".

Commissioning Market Assessments in the Northwest and Recommendations

In 1998, the Northwest Energy Efficiency Alliance conducted a baseline market evaluation of building commissioning. Under contract to the NEEA, SBW Consulting, Inc. investigated current practice and prevailing attitudes toward building commissioning by building owners and commissioning service providers in the Pacific Northwest (SBW, 1998). The research delved into the perceived benefits of building commissioning and barriers to full implementation. The assessment analyzed both new construction and existing buildings across a wide range of building types. The ultimate objective was to provide a strategic plan to identify specific market interventions that will achieve the goal of making commissioning "business as usual" over the next 5 to 10 year period.

"The research was limited to market segments that members of the Northwest Commissioning Collaborative believed were likely to be important future markets for commissioning services. These owners were asked about new construction practices if they had projects that reached substantial completion during the last three years. We also sought respondents that could describe commissioning practices for buildings that had been occupied for more than five years (existing buildings market)."(SBW, 1998) The segments (building types) surveyed were grocery stores, hospitals, hotels, nursing homes/assisted living, offices (commercial and high tech), retail stores, and universities/colleges. The survey split the group evenly between new construction and existing buildings.

From a list of thirteen potential benefits to owners, SBW ranked those benefits by perceived value to the owners. This resulted in some interesting findings. From this list, the top six benefits owners listed were:

1. Reduced operations and maintenance expenses
2. Fewer occupant complaints
3. Energy efficiency
4. Fewer post-acceptance operational deficiencies
5. Increased equipment lifetime
6. Fewer contractor call backs

An interesting finding of the study is the diversity of perceived benefits from the various market segments. While "reduced O&M expenses" and "fewer occupant complaints"

were clearly numbers 1 and 2 for most segments, the priority ranking of the next four benefits were somewhat different between market segments. This points to a critical factor in marketing commissioning. Any marketing strategy should target the highest priority benefits perceived by the particular market segment.

The perceived barriers present a good contrast to the benefits. The number one barrier across the broad was “added cost”. This coupled with the belief (also identified in the study) that the performance testing is already a standard practice, leads owners to question the costs vs. benefit of commissioning. The top three barriers identified in the study were:

1. Added cost
2. Disruption of the construction schedule
3. Lack of documented benefits

Although these findings are not surprising, they did provide a good baseline for market development and transformation. Considering the market perceptions of the benefits and barriers, the report cited three strategies that received the greatest support among owners. They were:

1. Education (coupled with technical assistance to first time users)
2. Case Studies
3. Tax Incentives

The owners and designers were specifically identified as critical target groups for the education and technical assistance. The report states, **“**Participants in this market clearly desire educational programs that will explain testing procedures and the benefits of commissioning. Two educational programs are needed. The first would focus on members of the design community. For all market segments, this should include design engineers. The second program would focus on the education of building owners”(SBW 1998). The report proceeds to offer specific recommendations on what elements should be addressed to effectively impact those target markets.

The BCA has used these findings and recommendations to help scope the Professional Development program of the Association. As outlined in the BCA Business Plan, the training agenda for the BCA is comprised of three modules. The first module will consist of introductory sessions to building commissioning. It is intended to inform the target audiences in the benefits and relevant issues of building commissioning to trade allies (i.e. contractors, A&E firms and building owners).

The second module is targeted to building commissioning authorities (CA's) or potential CA's. The will establish a baseline of skills, knowledge and conduct that will exemplify the professionals values and expectations of the BCA (as described in the Attributes of the previous section), and the third module will provide on-going technical and professional link with new developments in the commissioning field. These three modules should provide the base for development and maintenance of the commissioning profession and market acceptance by construction trade allies.

Commissioning Market Development

While there has been significant acceptance of building commissioning in the Northwest building and construction markets, commissioning is still not common practice. The potential role that BCA can play in market acceptance of building commissioning in the Northwest is evident from the Commissioning Practices Study conducted by the Northwest

Energy Efficiency Alliance. (SBW, 1998) Various engineering and trade groups (e.g. ASHRAE, NIBS & NEBB) address building commissioning. Each of these organizations is making valuable contributions to the applications of building commissioning, but none have an exclusive interest in the success of commissioning as a profession. Establishing the Building Commissioning Association was intended to focus exclusively on the development of the commissioning profession and assist in the overall market development.

Many BCA members are also members of these other organizations and serve as bridges to those organizations. In a recent edition of the Checklist (the BCA Newsletter), Rick Casault, BCA President, cited that "two BCA members represent the BCA on the NIBS Total Building Commissioning Steering Committee. Development of the Total Building Commissioning Guidelines is a collaborative effort of various industry-recognized associations such as Building Commissioning Association (BCA), American Institute of Architects (AIA), American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE), American Society of Civil Engineers (ASCE), Building Environment and Thermal Envelope Council (BETEC), National Resources Conservation Authority (NRCA), Illumination Engineering Society (IES), International IEEE, National Fire Protection Association (NFPA), Telecommunications Industry Association (TIA). These associations develop guidelines pertinent to their field of expertise. The Steering Committee provides coordination and oversight concerning the general principles and procedures.

"BCA members are also members of the ASHRAE Guideline Project Committee GPC-1-1996R, which is responsible for revising Guideline 1-1996, *The HVAC Commissioning Process*. This revised Guideline will provide the basis of the Mechanical and Energy Systems Guideline for the NIBS Total Building Commissioning Guidelines. (Casault, 1999)

There is significant pressure, primarily from owners, to specifically define commissioning practices as they relate to new and existing buildings. This is most evident in a recent review of commissioning efforts outlined in *The Checklist*. The following lists some recent examples of Building Commissioning being addressed in the private sector along with local, State and Federal governments.

Federal Government

- The Federal Government, in Executive Order 12902 (1994), requires all federal agencies to "establish and implement a facility commissioning program." Subsequently, the U.S. Department of Energy (USDOE) and the General Services Administration (GSA) funded the development of a commissioning guide and a comprehensive set of commissioning guide specifications(USGSA, 1998).
- USDOE and EPA have supported demonstration projects, research and literature regarding commissioning.
- The General Services Administration has embarked on a Comprehensive Building Commissioning Program nationwide, promoting commissioning and making qualified commissioning consultants readily available to all GSA offices.
- The International Performance Measurement and Verification Protocol (IPMVP) requires that all energy savings performance contracts incorporate commissioning.
- The National Institute of Health actively incorporates commissioning into their projects and has a web page dedicated to the process.

State and Local Government

- The State of Washington recommends commissioning on state buildings that are 50,000 square feet or larger.
- The State of Oregon provides planning and evaluation assistance to agencies wanting to incorporate commissioning. They also developed a comprehensive Commissioning Toolkit and train state agency leaders on the process and benefits of commissioning.
- The State of Montana's Division of Architecture and Engineering commissions all new state buildings and is commissioning their existing facilities.
- The State of Tennessee promotes a program to commission all state buildings.
- The University of Washington requires commissioning on all their projects and has developed detailed commissioning guide specifications.
- Montgomery County, Maryland has an aggressive commissioning requirement and program.
- Washington and Multnomah Counties in Oregon have commissioning requirements for all new buildings.
- The Association of State Energy Research Technology Transfer Institutions (ASERTTI) has developed curriculum for educating owners and building professionals about commissioning.
- The Seattle Energy Code requires commissioning for projects permitted under the new code adopted in 1998.

Private Sector and Organizations

- A number of private owners, such as Westin Hotels, Boeing Corp., JC Penny, Kaiser Permanente NW and Chevron incorporate commissioning into their projects on a regular basis.
- The Association of Higher Education Facilities Officers (APPA), who are comprised of the university building departments throughout the U.S., aggressively advocate commissioning. The organization has published a commissioning manual and provides commissioning training(Cassualt, 1996).
- The US Green Building Council requires commissioning on building projects wishing to qualify for their LEED (Leadership in Energy and Environmental Design) rating.
- American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) has promoted commissioning since the late 1980's and has published a building commissioning guideline(ASHRAE, 1996).
- MasterSpec, (sponsored by AIA) who publishes the largest set of standard guide specifications for the design community, is integrating commissioning into their specifications.
- DPIC Companies, Inc., the second largest professional liability insurance carrier for architects and engineers, performed a study of past claims and determined that commissioning would have significantly reduced claims. Subsequently, they promote commissioning among policyholders.

Each of these activities approach building commissioning with a point-of-view and expectation in relation to organizations involved. Current practice may or may not be

consistent or fulfill those expectations. In this area, BCA has endeavored to bring together market demand and the professional capacity.

BCA Role in Market Transformation

Market transformation is a classic example of the "eye of the beholder" perspective. What markets need transformation? Within the target markets, what is being transformed and how will we know when the market is transformed? In the Pacific Northwest, the electric utility industry is driving the perspective on "market transformation". The Northwest Energy Efficiency Alliance defines market transformation as "a method to encourage the market to adopt energy efficient products and services as the market norm. Market transformation is a strategic effort by utilities and other entities to induce lasting structural or behavioral changes in the market place that result in increased adoption and penetration of energy efficient technologies and practices"(The Alliance, 1998). Being that building commissioning is a broadly applied professional service, it is important to maintain a clear perspective on the relative value of energy efficiency to overall application of building commissioning.

Working with this definition, our goal is to motivate energy users to enlist building commissioning as means to ensuring inclusion of energy efficient technologies and practices in the construction and operation of buildings. This helps us identify the audience, but as the SBW study indicates, energy efficiency is not the highest priority of those audiences. Building commissioning has many benefits to owners, designers and contractors that are likely to exceed the energy savings, such as facility operations and maintenance, IAQ risk management, construction management to name a few.

At its core, building commissioning is quality assurance service to building owners. In most custom-manufacturing processes, quality assurance is an integral component for marketplace competitiveness. At a minimum, quality assurance values are weighted with production schedule demands set by the customer. This is not a concept that comes naturally to the construction industry. Although most buildings are unique in design and location, quality assurance oversight is often thought to be redundant or unnecessary. With the complexity of the commercial and industrial construction equaling that of high-tech manufacturing industries, many have become aware of the need for a consistent quality assurance throughout the construction process.

As the building commissioning profession emerges, the BCA will play vital transformation role in two areas. First, providing a forum to define and refine building commissioning as a profession. This will present a clear and focused understanding of the service and how it is provided. Building commissioning must be clearly defined with respect to other professional services and trades. This provides the "market transformation" component of "what is being transformed". Second, BCA will provide professional development opportunities and recognition for commissioning authorities through a professional development program. This provides another sustaining element of "transformation", and that building commissioning as a known quantity becomes standard practice in the construction industry.

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