

The Checklist

A Quarterly Journal of the Building Commissioning Association



NCBC 2014 WRAP-UP

22ND NATIONAL CONFERENCE ON BUILDING COMMISSIONING

NCBC

SPECIAL EDITION

2014

The 22nd National Conference on Building Commissioning took place in late May in Hartford, Connecticut this year, hosted by the Northeast Chapter of the Building Commissioning Association (BCA) and our Diamond Sponsors, Northeast Utilities and Energize Connecticut. This year's focus on performance and the future brought commissioning providers, building owners, designers, constructors, technical experts and facility managers numbering more than 240 in attendance.



The three-day event included a special half-day workshop on building enclosure commissioning (BECx); a fundraiser golf tournament to support the BCA Scholarship Foundation; the ever-entertaining and unpredictable annual meeting and dinner; two full days packed with presentations by leaders in the building community; and a closing Town Hall session focused on defining the future for the commissioning profession.

The BCA Scholarship Foundation golf tournament was sponsored by engineering firm AKF Group and BVH Integrated Services, along with the BCA Northeast and Southeast Chapters. A cool morning outing and competitive spirit of fun helped the BCA raise \$4,500 for the Foundation. **Thanks, Players!**

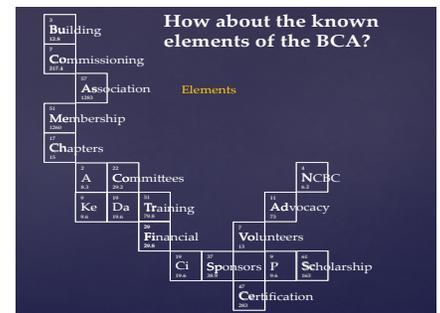


Annual BCA Meeting

The BCA hosted the annual meeting at the Connecticut Science Center for an evening of networking, serious inquiry and entertainment. The six-story building provided the perfect atmosphere for this year's overall conference refrain, The Science of Commissioning because science, like commissioning, is a method, a process building on previous knowledge that leads to discovery and improvement. Appropriately, this is also the first science museum in the U.S. to generate most of its energy needs on-site with a fuel cell. A special gallery, *Energy City* (funded in part by Connecticut Energy Efficiency Fund), allowed NCBC visitors to play with interactive energy-related technologies, graphics and games.



The BCA's annual meeting address, a feat of both information and entertainment, was presented on a 30-foot screen in the Science Museum theater. As attendees found theater seats and lights began to fade, the evening took on larger-than-life "elements." BCA Vice President Craig Hawkins' deep-toned voice at first seemed to emanate mysteriously from a dark and distant universe. On screen, a "revised" Periodic Table of elements described the BCA's actions and advocacy of the past year in terms of empirical structure and measurable evidence. Then, emerging onto the dimly lit stage Hawkins, President Bill McMullen and Executive Director Liz Fischer unlocked the mysteries of running a successful nonprofit professional association, in light of the past year's many challenges.





PRESIDENT'S AWARD
Mark Miller, Michael Chelednik and Bruce Pitts



Annual BCA Meeting (cont.)

At the close of the annual address, BCA President Bill McMullen honored three BCA members with the President's Award for their service to the association and the commissioning industry. Mark Miller, Michael Chelednik and Bruce Pitts have volunteered tirelessly over many years to work both within the BCA and with local and national agencies and organizations to develop workforce training, commissioning standards, and industry best practices. [\[Link\]](#)

As theater lights came up, attendees streamed into the bright sky-lit lobby. The evening was arranged so that dinner, desserts and beverages were served on different floors. Conference goers enjoyed refreshments, a "progressive dinner" and social evening wandering leisurely among hands-on exhibits showing the science of sight, sound, space, sports and energy throughout the building.

The NCBC Challenge!

PECI sponsored this year's NCBC Challenge which attracted over 85 registered players. This smartphone-enabled quiz asked participants 13 commissioning-related questions over the two days of the conference, with a couple more coming the day after NCBC. Participants scored highly on the challenging technical questions, and did great on knowing the benefits of signing up as a BCA member (almost everyone knew that free ice cream was NOT a benefit of BCA membership!) Dave Moser of Peci scored highest on the competition, getting 14 out of 15 questions right. Sadly for Dave he could not claim the winner's prize as a Peci employee so the prize was awarded to Jeff Yirak of Wood Harbinger and BCA NW Chapter member. **Congrats, Jeff!**

The golf tournament, annual meeting and dinner set a sociable tone for the next two days of inquiry, intense learning and educational fun. Everyone reconvened at a breakfast event before the opening plenary at the impressive Connecticut Convention Center.



Opening Plenary Session

BCA President Bill McMullen welcomed the audience to the 22nd annual NCBC conference, presenting the current state of commissioning, building science, building industry construction markets and growth areas, opportunities and challenges for commissioning providers, and drivers for tomorrow. [\[Link\]](#)



Bill McMullen



Opening Plenary (cont.)

Penni McLean-Conner, Chief Customer Officer and Senior Vice President, Northeast Utilities, delivered the keynote address. Her topic,

Commissioning Advancements In Our Age of Efficiency, presented the utility’s role and the customer’s business case for commissioning to achieve and sustain energy efficiency and building performance. Case studies included the Hartford school system, where retrocommissioning helped reduce energy use by 25 percent, and Northeast Utilities’ role in retrocommissioning the highly complex, multi-facility conference venue itself, which took place over two years and was completed this year. Penni’s message – learn, engage, act – is based on her experience in leading the utility’s drive to provide reliability and customer service, while “building negawatts.” Northeast Utilities has built the equivalent of a 500 MW power plant in the past five years and, according to Penni, is doubling its investment in energy efficiency this year. [\[Link\]](#)

After the opening session, participants dispersed to hear – over the course of two days – sixty (yes, 60) speakers and panel members who shared details and answered questions about tools, systems, programs, case studies, owner issues, study findings, field experiences and project outcomes...and expert advice that can only come from experience.

It’s impossible to describe each session or presentation in this summary. Every single one is a highlight within its category. Here are examples of three very different sessions:



EBCx of the Connecticut Convention Center

David Vallerie, LEED AP, Principal, Strategic Building Solutions led a panel — including the commissioning team participants (owners, facility manager, operations staff, utility) — in an in-depth discussion of the huge two-year EBCx program for the hotel, science center and conference facilities housing NCBC this year. The project combined the 540,000 gross square feet (gsf) Convention Center, the 320,000 gsf Hartford Marriott Downtown, and the 154,000 gsf Connecticut Science Center, all of which are provided steam and chilled water from a Central Utility Plant. Northeast Utilities’ RCx Program played a significant role in this complex project. The panel presented the project schedule, details of energy conservation measures (ECMs) for each facility, utility consumption figures, implementation costs, Northeast Utilities incentives, and dollar savings resulting from EBCx. [\[Link\]](#)

The Human Side of Commissioning

Eileen Westervelt, PE, CEM, QCxP, LEED AP, UIUC-SEDAC presented her industry paper, “The Human Side of Commissioning.” Using examples and on-site experiences, Westervelt described human factor issues, challenges and solutions she refers to as *people processes*. For example, a building’s multiple stakeholders may have competing motivational drivers for their actions; they often make decisions based on incomplete information, they communicate less than perfectly, and they do not have routine procedures in place to retain savings. Attempts to address these retrocommissioning challenges include five constructive responses which were described in detail. She discussed underlying issues, observations and specific examples of behaviors and attitudes that have helped to achieve and maintain desired results. Westervelt’s paper is located with her presentation on the NCBC website. [\[Link\]](#)

Michael Dooley, PE, LEED AP, CEM, CCP of AKF Engineers, LLP and Robert J. Falaguerra of Saint Francis Hospital and Medical Center presented firsthand experience from an owner and a provider on managing conflict resolution, methods and prioritization of resolution efforts for new construction commissioning, along with conflict resolution methods throughout the commissioning process. [\[Link\]](#)

Building Information Modeling:

Theory, Practice & Commissioning

Evan Wyner, PE, CCP, CBCP, LEED AP, of Strategic Building Solutions; Joseph Lorino, PE, LEED AP, of New York Presbyterian Hospital; and Igor Starkov of EcoDomus, Inc. introduced Building Information Modeling (BIM) with a focus on its application for owners and commissioning providers. While BIM tools are beginning to become common in the design marketplace, due in part to requirements from Federal and State agencies, the application of these tools to Commissioning and ongoing building operations is still a new field. This presentation described current BIM practice, provided details of owner expectations and experiences, suggested a best practice for commissioning in a BIM environment, and detailed the performance aspects of a tool used to integrate design BIM into operations. [\[Link\]](#)

You can see that learning was intense and diversified. As one attendee put it simply, **“You just had to be there.”** All NCBC conference presentations are now available to view online at: www.bcx.org/training/ncbc

CONFERENCE THEMES:

Performance and the Future of Commissioning

The deep competency and knowledge expressed by presenters – owners, policy makers, analysts, utility program managers, project designers, builders and commissioning providers – resulted in a well-rounded, up to date and comprehensive view of how commissioning is working in the market today. Performance, and the future of commissioning, emerged as themes both in and outside speakers' halls.

Performance

Performance was a key topic at NCBC this year. Understanding and measuring the performance of buildings, energy performance and commissioning performance itself all came forth in discussion. In general, here's how they broke out:

BUILDING PERFORMANCE PRESENTATIONS

- Existing building commissioning (EBCx) case studies involving critical facilities
- Multi-building portfolios including several campus studies and a survey of 189 portfolio owners
- Digital tools for commissioning data collection and analysis

ENERGY PERFORMANCE PRESENTATIONS

- An impact review and analysis of energy policies planned and in place in the Northeast U.S. region, including panelists from NRDC, the New York City Mayor's Office, and energy offices in the States of Connecticut and Massachusetts
- Utility program performance, successes and lessons learned
- Energy data acquisition, energy modeling, measurement, evaluation and persistence of energy savings
- Energy systems performance, prioritization, scheduling, implementation and testing

COMMISSIONING PERFORMANCE PRESENTATIONS

- How to approach owners; support services contracting; aligning with building operations staff; communicating benefits; long term capital planning; team collaboration; quality contractors; project team conflict resolution
- Methods for achieving building performance as designed
- Commissioning tools including cloud-based workflow software and commissioning using building information modeling, energy information systems, automation software and diagnostic tools. Tools also included those that are free and publicly available such as Universal Translator 3 (UT3) and ECAM+(Energy Charting And Metrics Plus)

- Specifications and how to use them in commissioning from early design through project delivery
- Building systems commissioning, including building enclosure as a system
- Engaging and training building occupants, operators, facility managers and owners' representatives in the use of best practices in supporting and managing building performance

The Future of Commissioning

Prior to the conference, the BCA conducted a survey of members and others with a stake in commissioning to understand the trends and issues that impact commissioning professionals and practices. We asked respondents to help define what matters most to our industry to prepare for discussing the strategic road ahead at NCBC.

Significant results are included here because they are available nowhere else, and they represent commissioning community interests that were explored throughout the conference and at the Town Hall session.

The pre-conference survey was answered by building owners, design architects, engineers, construction managers, facility managers and, of course, commissioning providers. Responses revealed three primary areas of concern within the building community: (1) training and certification; (2) more specialized commissioning firms and teams; and (3) the effects of the market on commissioning practices – technology improvements, codes and standards, and drivers for whole-building commissioning.



The Future of Commissioning (cont.)

TRAINING AND CERTIFICATION

A surprising variety and sense of urgency emerged for training topics, ranging from analysis to communication, and from technical updates to “how to” sell quality-based commissioning services. Topics focused on peoples’ performance at the job site, building performance and methods for acquiring and using performance information. Performance training for new employees showed the following needs:

- Commissioning process 87%
- Analytical skills 63%
- Fundamental building science 60%
- Specialized systems (e.g., building envelope) 46%

Only 7% of respondents said they hire new employees who are fully experienced providers.

As a hot button for many respondents and conference attendees alike, the conversation around commissioning provider certification was strident. The survey revealed that, while 84% of respondents believe that valid certification should be required, a full 96% believe that certification will be required. On the other hand, although about 75% are adding specialty commissioning services to their teams or firms, (e.g., building enclosure, daylighting, water, plumbing, etc.), when asked if such specialty certifications are needed, responses were close to equal – 53% no and 47% yes.

THE “NEW” CX FIRM

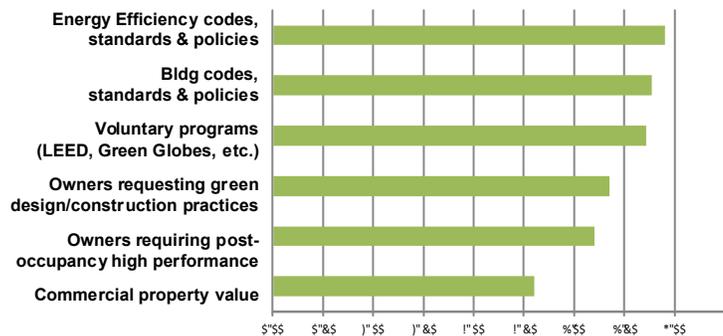
Sixty-two percent of respondents say they are experiencing more owner engagement in commissioning. More than 85% believe that owner education on the Cx process and expected results would improve engagement. This is not new.

What is new is that 50% of providers say owners and managers are now asking for persistence of savings, and 63% of providers are entering projects in the design phase instead of during construction – likely indicators that respect for, and reliance on, the commissioning process and findings are resulting in more cost effective design, construction and performance. The “new” commissioning firm is becoming more specialized and more integrated with project teams, both earlier and post-occupancy.

THE CX MARKET

The commissioning market was addressed in the survey with questions about the economy, codes and standards, whole building commissioning, and the effect of technology advances in the built environment. An upward market shift since the downturn in 2008 is positively impacting 78% of respondents and 63% expect to add staff in the coming year. As expected, providers in regions where the economy is still struggling are not experiencing much growth in the building market.

Whole building commissioning – a desired objective of the commissioning process – is driven by a number of factors. We asked people to rate, on a scale of 1-5 (5 highest) how important six drivers are in achieving whole building commissioning. Energy efficiency continues to take the lead at nearly 4, with commercial property value (ahem, a private sector owner’s frame of reference) coming in at 2.6.



We asked how building technology advances will impact the Cx industry. There was a significant range of both positive and negative responses about the increasing complexity of commissioning and performance requirements. For example, one replied, “Monitoring-based commissioning (i.e. continuous commissioning) software and analytics will threaten a hands-on Cx approach by the reported ‘the software does the commissioning for you’ ideas. While this couldn’t be farther from the truth, it will threaten our position as this software tool and market develop and mature.” Another respondent said, “With the (huge) assumption that the technology has been properly applied and installed it should make it easier to confirm optimal building systems performance.”

Here are additional observations about the growing impact of technology from the preconference survey:

- More useful and automated tools
- More specialists
- More continuing education to keep up
- Smart devices with self-calibrating capabilities & self-diagnostics
- Easier to confirm optimal building systems performance
- Makes Cx more critical for project success
- More pressure to perform commissioning remotely
- Greater human presence at turnover to fine-tune systems

These and other results, delivered during a lunch presentation at NCBC, led the way to the Town Hall session. We asked, where is our industry going in the next 5, 10, 15 years? How is our profession best served by codes, standards, program requirements, and certifications? How do we move the needle on owners' understanding and expectations for commissioning? [\[Link\]](#)

TOWN HALL 2014

NCBC's lively Town Hall closing session always helps to refresh the vision and roadmap for the future of commissioning. It provides a forum for thoughtful debate and discussion. In a facilitated session with a panel representing expertise in codes and standards, owner needs, certification and training, and the commissioning profession, we asked attendees to take center stage in voicing their opinions about the current and future professional environment for commissioning and the building community.

The following topics occupied most of the Town Hall session:

- [Certification?](#)
- [Where are the owners?](#)
- [Commissioning provider selection criteria](#)

They demonstrate the nature and flavor of the discussion and include remarks quoted directly, in their own words, from conference attendees.

Certification

The topic of certification came up first. Many attendees were aware of the work in progress by the US Department of Energy, led by the National Institute for Building Science, to engage industry stakeholders in developing voluntary national guidelines for commercial building workforce training and certification programs through a Commercial Workforce Credentialing Committee (CWCC). The training and certification focuses on five key energy-related jobs including building commissioning professionals. The DOE's objective is to improve quality and reduce confusion and uncertainty in commercial workforce training and credentialing programs. The discussion centered mostly on credentialing, quality and risk.

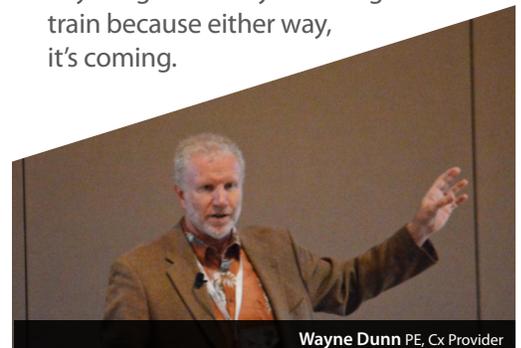
WHAT'S DRIVING CX CERTIFICATION?

One provider said it's risk management – "in Florida, you need to be able to underwrite the results."

Another said that building officials (Authorities Having Jurisdiction, or AHJs) are having problems with the technology of buildings and don't have the necessary skills – they are looking for commissioning providers to be the inspectors," he said, and asked, "Do we want to do that?"

There is clearly disagreement among industry organizations about what constitutes certification. In their own words, participants' comments below represent the core of the conversation.

- The idea of getting a uniform certification is not new. Some of us tried four or five years ago to get organizations to start working together ... now it's interesting how the common challenge brings us together. We can have an influence on that – as an industry we need to protect our profession and ourselves. It's important to participate as this evolves to be sure that the CWCC process works toward that.
- Certification is coming. It may become a check box on a client's form. If we're standing in the train tracks, I don't feel comfortable about discussing the condition of the tracks when the train is barreling down... I would look to anything that delays the freight train because either way, it's coming.



Wayne Dunn PE, Cx Provider



Bill McMullen BCA President



Jerry Kettler PE, Codes Expert



Liz Fischer BCA Executive Director

What's Driving Cx Certification? (cont.)

- The evolution of the industry is that there are different levels of capabilities. We are both large & small firms, many of us joint venture with others to get the work done. The IAS (International Accreditation Service) AC476, the energy code and Standard 1000 are set up so that there is a provider who leads the process, and there are specialists.
- The question is, how do we get involved – you should go to your BCA chapter, access information about the certification issue. I don't think everyone understands where we're at (in the accreditation of the certifications process).
- Enforcement of code will push the market first. Insurance will also drive it. You could increase the cost with codes by many-fold, but there is a better way. Through information, engagement and putting some English on the ball, we can get focused on getting owners engaged.
- How many of you go to code meetings, or actually talk to your local officials? I advocate that you go to your state and city code councils. Because of that kind of activity from commissioning providers, the State of Washington requirement for certification is built on the BCA system.

WHO REQUIRES CERTIFICATION?

- The federal government does not specify a requirement for professional engineers to conduct commissioning, but some states do. New York (State and City) have special requirements for certification; an owner's representative stated that his hospital requires commissioning providers to be Certified Commissioning Providers (CCPs) because he believes that certification is rigorous enough for the critical healthcare environment.
- DOE can't make the rest of the building owner market follow them, but DOE can set requirements for federal projects, which is an indicator of where the market is going ... the timeline is on track to create universal guidelines for quality providers through verifiable and market-accepted certification.

DOES CERTIFICATION = QUALITY PERFORMANCE?

- Which are the "best" or "right" certifications? Certification is intended to raise the bar, but now we have a variety of certifications... the AIA (American Institute of Architects) is concerned and very interested in tracking the IAS and CWCC accreditation process project outcomes.
- A lot of us are concerned about commoditization of the commissioning industry, just like TAB, auditing, and certified auditors. I know the train left the station about 6 years ago. But be careful, because you cannot certify competence and experience. Certification alone does not tell the whole story of a provider's qualifications.
- Qualifications are tied to track records in making a decision about commissioning providers. Of course we want a minimum standard, but then we also want certification level criteria.
- I didn't get into the business of commissioning to check the box. We need to understand the meaning of criteria because this may be a moot point pretty soon... Certification can be an opportunity instead of 'OMG people are coming to do this to us'... It's important to show what kind of experience and knowledge you bring, how you specialize.
- Everyone should be about the outcome and competency. You can throw certification in there or not. If I know a provider, I'm hiring his reputation and will verify that competency, but not necessarily certification.
- I look at a CCP certification like an engineering diploma... as an owner I see that the candidate went out of their way to develop the qualifications for CCP. The Joint Commission, a hospital regulatory agency, requires certified balancers – one-third of my commissioning prequalification is hospital experience, but candidates need to prove that commissioning is the majority of their business. They can't be a design firm with a subset of commissioning. I picked the CCP because I knew it had what we needed.



Where Are The Owners?

A problem that arises at every Town Hall, and is experienced by commissioning providers everywhere, is that of owner engagement in the importance of commissioning. One provider asked, “How many of you would pay to get more owners here at the conference?” which was followed by a general nodding of heads around the hall. Here are suggestions from the audience:

- One-day chapter meetings specifically for owners
- Regularly published/presented case studies and benefits of the commissioning program – more owners should be aware of benefits
- Grass roots! Owners want to hear it from other owners, they don’t want to hear it from someone looking for a purchase order
- Connect with the Building & Facilities Management Shows where there are lots of owners. There is one in November at the Boston Convention Center – it’s free to attend, paid for by exhibitors and sponsors
- Clients (Owners) have to sell budgets internally for any QA process. Risk management techniques have always been important. We need to engage the owner’s internal process ... owners must see the value statement/benefit to end user about what we’re bringing to the table
- Create an issues and benefits log for owners
- Take your client to an educational seminar

Commissioning Provider Selection – How, Why, When

- **HOW.** We need to be more involved in qualifications-based selection programs in which we’ll be rated against others ... similar to the PE perspective where there is already criteria for selection. Then we can also bring certification to the project as well.
- **WHY.** A selection procurement process doesn’t define you, but ensures that the minimum is met as a risk mitigation issue.
- **WHEN.** Early engagement is everything. If you come in late you’re costing me [the owner] money; that’s why commissioning comes in at the beginning – depending on the project, as early as a feasibility study, and latest at construction documents. If you’re just there for LEED points or anything like that you’re wasting my time. When you’re talking to a developer who’s going to flip it you’re never going to convince them to spend money on commissioning.

The Town Hall concluded the conference and people were slow to leave the room because, as usual, there was more to say and not enough time. Key takeaways from the Town Hall include:

- **CERTIFICATION.** A need for more commissioning provider engagement in the certification dialog – among commissioning providers and with owners, building officials and policy makers. One participant summarized the certification question like this: “You need to get and stay engaged. If you stand back you’ll get the commissioning certification you “deserve.”
- **OWNERS.** A need for innovative ways to engage and influence owners to understand and participate in the commissioning process, including documentation and proof that can be referenced. One participant declared, “there may never be the kind of funding that was available for Evan Mills’ LBNL study. Data from various benchmarking efforts around the country can provide some documentation, but there’s minimal data specific to commissioning. The closest in the public sector is likely NY Local Law 87. We should promote adoption of similar regulations [to local law 87] in other cities – instead of commissioning being anchored to the bottom, this is an opportunity to teach.”
- **SELECTION.** Commissioning providers are likely to face increasing competition and should consider developing a proactive approach to the selection process.

Successful commissioning providers feel that they take on responsibility for project success, as one provider put it, “we are continuously asking, are we helping people deliver a building as good practitioners? Our mission and our challenge is to do that. We need to make sure owners can sleep better at night because of commissioning.”

The intensity of pressure on commissioning as a profession now is different from a decade ago, even though some of the issues are the same. Given the evaluations and suggestions for this session, the next Town Hall session could be as early as next year at NCBC.

EXHIBITOR EVENT

The Exhibit Hall featured technology manufacturers, commissioning providers, systems analysts, utilities, program designers and managers, and facility services firms displayed their companies’ expertise. The event was a full-day affair allowing exhibitors to spend time presenting their products and services, followed by an exhibitor-sponsored evening of networking and discussion in the Exhibit Hall.

Thank You!

Technology Showcase Event

Augmenting the Exhibitor Event, NCBC featured technology showcases in which exhibitors formally presented their products and applications in depth. The Showcase included cloudbased workflow software solutions, Delta T application, HOBOT diagnostic tools, ECAM+ and Universal Translator free whole building energy analysis tools. Exhibitors discussed their products' new and expanded roles in commissioning, and their effectiveness in collecting and analyzing data to enhance the commissioning process on site. The Showcase representatives demonstrated how commissioning can be completed more easily and more comprehensively with the use of these products.

Readers may view all of the NCBC conference details and presentations online at www.bcxa.org/ncbc.



Gateway to the Commissioning of Tomorrow – NCBC 2015

NCBC 2015 is scheduled for St. Louis, Missouri, an exciting city of major historical significance. Annual events will include the BCA Scholarship Foundation golf tournament, BCA Baseball, the BCA St. Louis Blues Band, and the always-stimulating BCA annual dinner. Professional and technical topics are under consideration – Watch for the BCA's Call for Speakers in September!



Building Commissioning Association

1600 NW Compton Drive, Suite 200
Beaverton, OR 97006
877.666.BCXA (2292) Main • 503.747.2903 FAX
www.bcxa.org

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