

BCxA ANNUAL CONFERENCE

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Ongoing Commissioning (OCx) Best Practices

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Learning Objectives

- Explain Ongoing Commissioning (OCx) as defined by the Building Commissioning Association's Best Practices Subcommittee
- Differentiate OCx as a service from technology centric monitoring based commissioning products
- Understand the value of OCx as a strategy to sustain performance from New and Existing Building Cx approaches
- Give examples of best practices that ensure the quality of OCx

A Faceted Perspective on OCx

A Provider



5 yrs OCx experience
EMS system integration
Enterprise Tridium/Niagara design

An Owner



8 yrs experience
7MM+ sqft of facilities
Author Cx Handbook OCx Chapter

An Operator



8 yrs OCx experience
Critical facility monitoring
Risk management and performance
guarantees leveraging OCx

Survey Question #1

How does Ongoing Commissioning currently play a role in your commissioning practices?

- a) Never heard of it, that's why I'm here
- b) I'm interested in using Ongoing Commissioning as a strategy
- c) I've been using Ongoing Commissioning as an approach

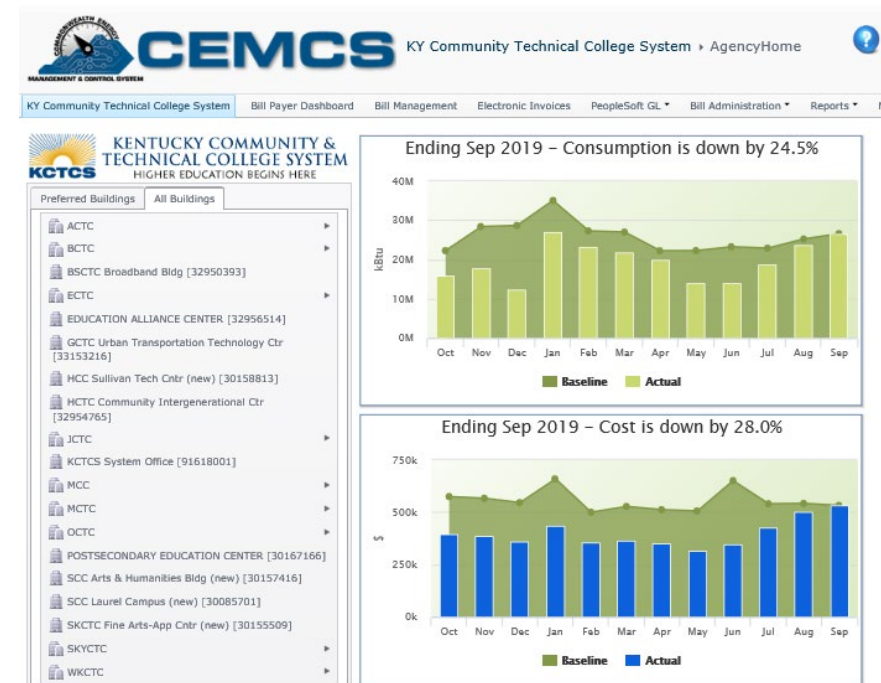
Case Study – North Carolina University Greenhouse Research Building

- Project Overview:
 - 42,000 SF, Complete HVAC Renovation 2014
 - Process Loads on Building CHW Loop; standalone controls
 - 683 kBTU/SF
- Goal: Reduce energy consumption to target for recent ESPC HVAC replacement
- Scope: OCx utilizing FDD and Analytics platform with CxP and MEP Design services as required
- Key Lessons Learned:
 - Team – O&M and Champion were critical
 - Stand-alone controls; large process loads
 - ESPC Target and energy model did not match reality
 - Initial investigation may reveal larger or more complex issue
 - Boots on the ground element always necessary



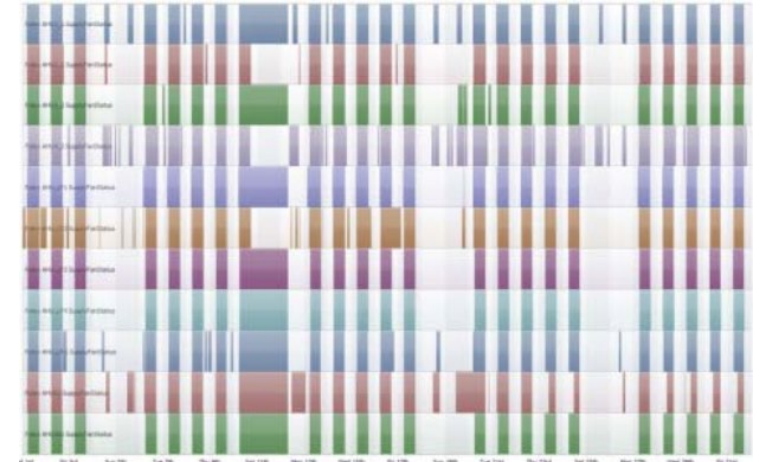
Case Study – KY Community Technical College

- Project Overview:
 - Large portfolio approach with new and existing buildings
 - 4-year long ongoing commissioning project
- Goal: prioritization of occupant comfort with commitment to energy savings
- Scope: OCx utilizing FDD and Analytics platform
- Key Lessons Learned:
 - BAS User Training integral to success
 - Change implementation and management
 - Maintaining program progress through client staff/administrative change



Case Study – Thomas Foley Courthouse

- Project Overview:
 - 300,000 SF, Complete HVAC Renovation & Modernization 2014
- Goal: Reduce energy consumption to target for guaranteed performance outcome of 30% EUI reduction (\$600K performance retainer)
 - Project achieved 50%+ reduction in EUI in first year of operation
- Scope: 90% of energy end-use metered, 4,000+ data points collected at 1-15min intervals,
- Key Lessons Learned:
 - Commission your commissioning system
 - Build tools for turnover and sustained use
 - It's never too early to start monitoring (during retrofits)
 - Change management is key to updating the OCx approach and measurement criteria



Survey Question #2

Which best describes Ongoing Commissioning for you?

- a) A fault detection or similar analytics approach to monitoring and identifying abnormal performance conditions
- b) A systematic process of evaluating building performance based on a wide range of tools and data sources
- c) I don't know – that's why I came to the session to find out

So what is Ongoing Commissioning?

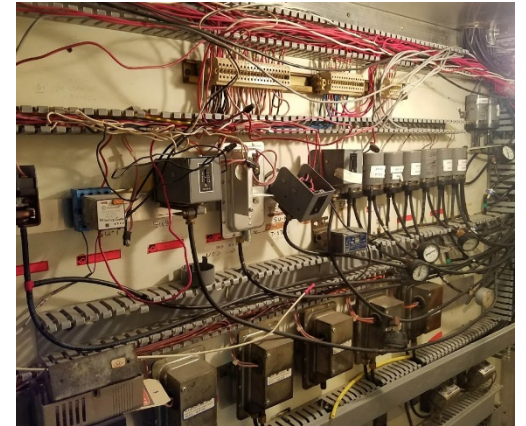
“Ongoing Commissioning (OCx) is defined as the means and process to optimize and sustain building performance on an ongoing basis through investigation, analysis, and monitoring the operating conditions of building systems.”

OCx Subcommittee (this panel)

Where's the MB in the OCx?

Process versus Technology – a distinct difference

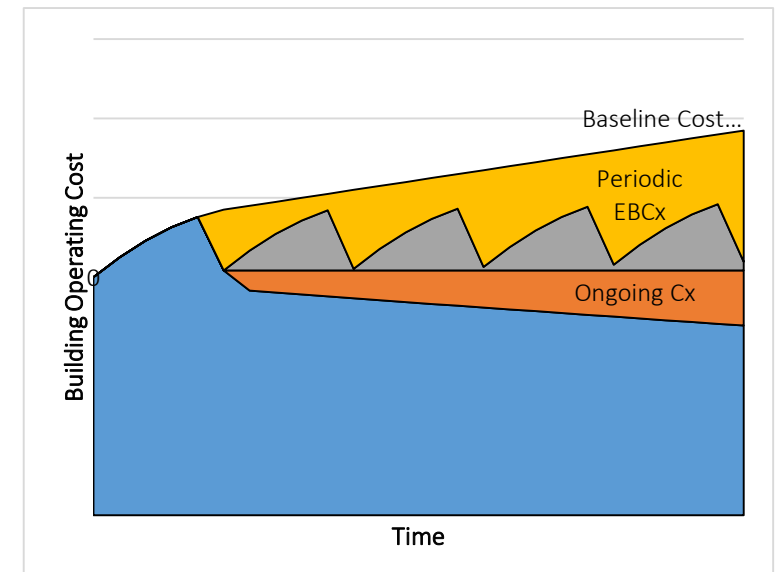
- Technology is an enabling tool for the OCx process
- In and of itself, OCx is not defined as a technology solution
- So can OCx be applied to a pneumatic facility?



NCx, EBCx, OCx, oh my!

Do we really need more abbreviations and didn't we just hear yesterday that EBCx best practice includes monitoring?

- NCx – Sustain Phase
- EBCx – MBCx as a tool
- OCx – an approach specifically designed to provide long term results



2017 Building Commissioning Handbook, 3rd Edition

Rule of thumb: if you are implementing an approach expected to manage performance for >6 months, then you are doing OCx.

Talk the Talk, Walk the Walk – Best Practices of OCx

Best Practices focus on providing guidelines for maintaining the consistency, integrity, and quality of OCx as a service.

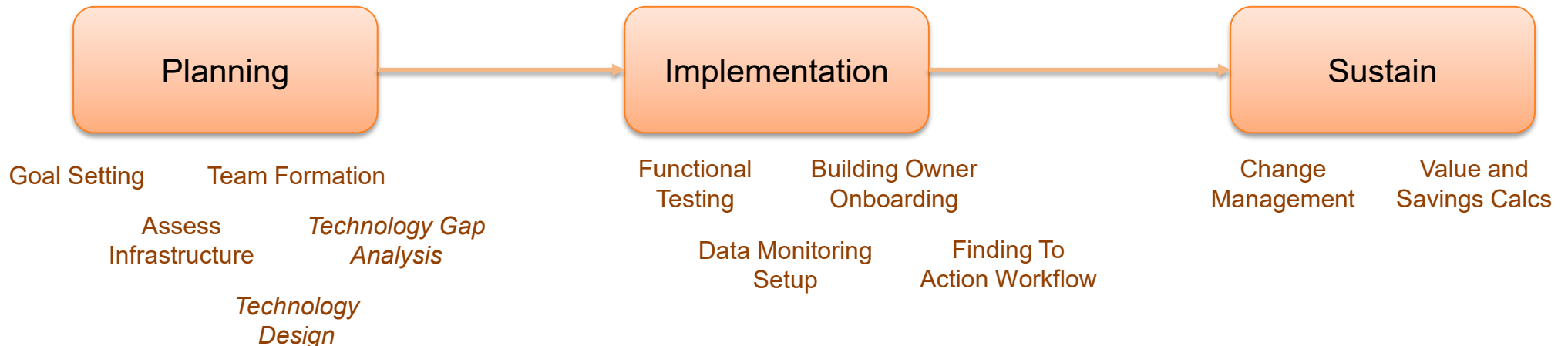
For discussion today, we're diving into best practices how we apply existing best practices to OCx for:

- Process
- Planning Phase Approach
- Functional Performance Testing
- Change Management
- The Role of the Cx Provider in the OCx Timeline

Best Practice – OCx is still Commissioning

Challenge: With the use of FDD and analytic solutions, the process sometimes skips right to technology design and implementation.

OCx best practice is to approach building performance systematically, much like any other Cx process:



Best Practice – Planning for Outcomes

Challenge: planning is the foundation of a strong OCx approach – without the OCx Plan, the outcomes are never as good as they need to be.

OCx best practice places emphasis on the Planning Phase to:



- Set expectations with measurable goals and outcomes
- Identify and form a multi-disciplinary team
- Perform an existing condition assessment
- Leverage existing technology infrastructure

Survey Question #3

For those of you who have leveraged the Ongoing Commissioning approach, have you created and used a Functional Performance Test Plan?

- a) Yes
- b) No
- c) Never tried this Ongoing Commissioning thing

Best Practice – Rethinking Functional Performance Tests



Challenge: Functional Performance Tests (FPT) are typically developed for onsite, point in time testing of building system operations where OCx relies on an ongoing approach.

Diagnostic test approach builds on the FPT and incorporates system data collection, investigation, and analysis for continuous monitoring and analysis of system performance.

Key elements of the Diagnostic test plan include:

- Definition of data points for monitoring
- Frequency of data collection
- Analysis criteria/data analytics definition
- Classification of issue severity

Best Practice – Change is the Only Constant

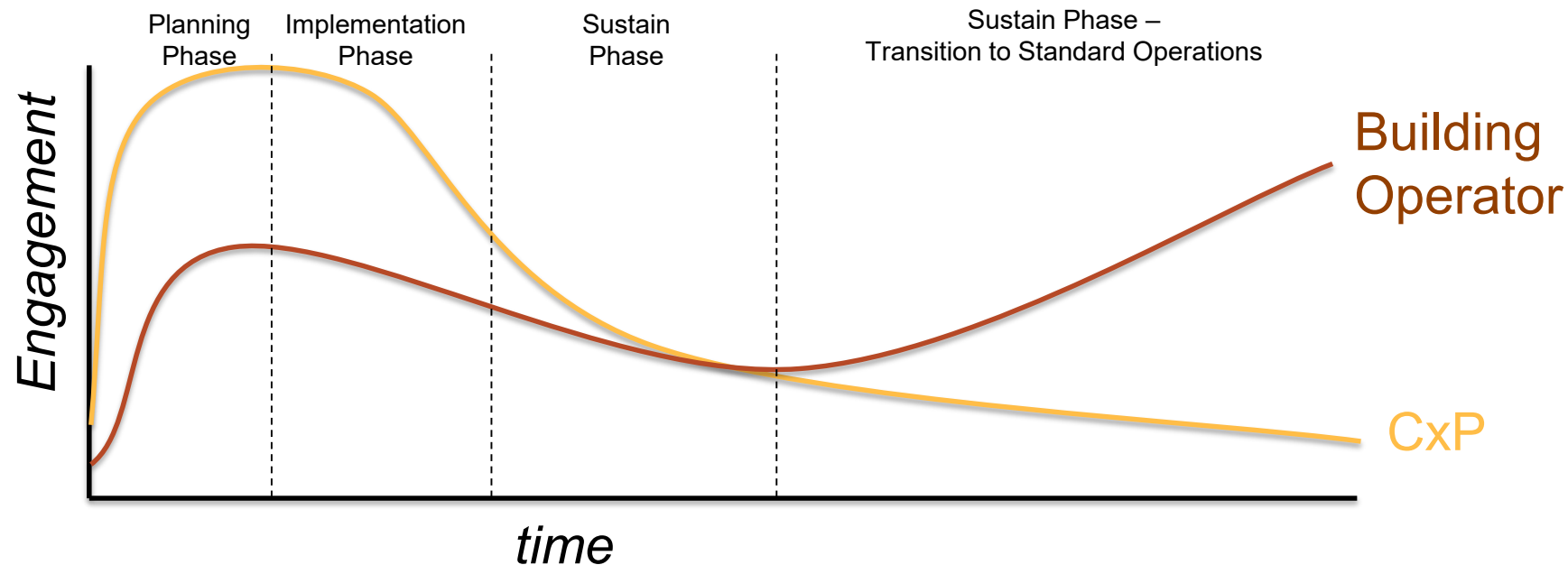
Challenge: when applied to occupied, actively operating facilities, implementing OCx monitoring equipment and subsequent correction of findings will impact operators and occupants.

Engagement with the operators and occupants of facilities is an essential function of OCx best practices. This applies throughout the planning, implementation, and sustain phases of OCx.



The Changing Role of the CxP

Best Practice: The CxP is heavily involved in initial planning phase through implementation, but as we move into sustaining long term OCx solutions, the Building Operating team is engaged in creating a sustainable ongoing solution.



Survey Question #4

Based on how you are currently using Ongoing Commissioning or how you would best apply the approach in the future, what is the primary purpose you would use OCx for:

- a) Improving energy efficiency of systems for cost savings
- b) Monitoring and maintaining the level of comfort for occupants
- c) Risk mitigation for critical systems/environments
- d) Verify performance requirements (regulatory or guaranteed)

Next Steps

Present	Best Practices Draft in Progress
Q4 2019	Review period (BCA Best Practices Committee/Board)
Q1 2020	Public Comment

Tentative Date for Publication: April 2020

Feedback and/or comments are welcome!

Want to be more involved? **Volunteer with the**



Questions / Comments?

Other thoughts?

- *For occupied buildings and spaces, how can you best include end users/occupants in the planning phase to mitigate the impacts and build awareness for change management?*
- *Does the definition of OCx shared today work for your approach (e.g. fit with NC/EBCx and technology)?*
- *What other Best Practices do you see as instrumental in the success of OCx?*

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