

The EBCx Process

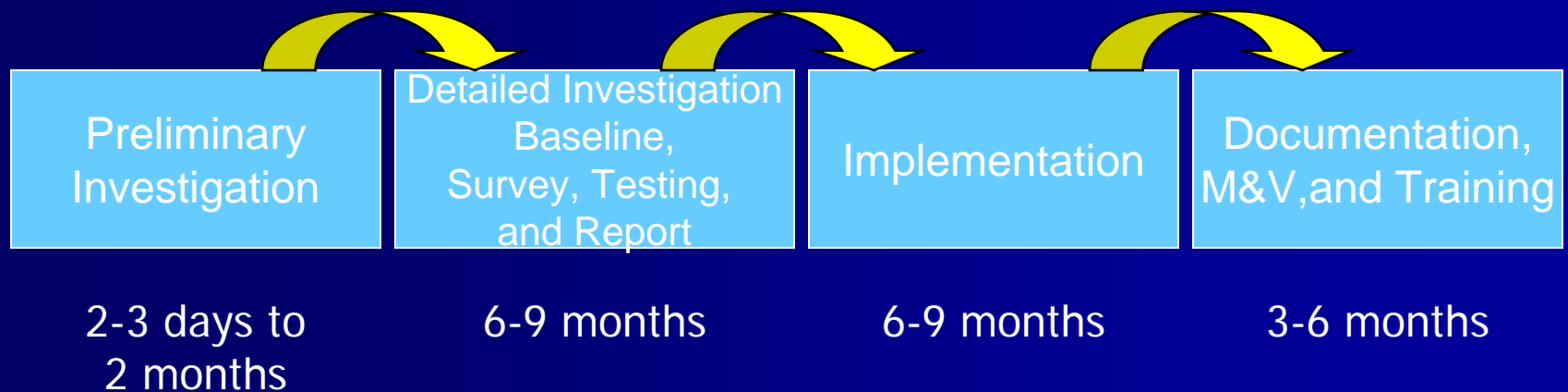
Part 2

Learning Objectives of EBCx Seminar Part 2

- Defining the EBCx Process
- Gain an understanding of planning, investigation, reporting, and implementation needed

Phases of RCx

- Four phases to the RCx process



- Complete process typically takes 1 – 2 years

Preliminary Investigation

- This is a screening/qualifying effort
- Typically pre-proposal and handled on a time and materials/NTE basis
- Typically one to three days effort (can be as much as 2 months) with the purpose of qualifying the project and obtaining enough information to provide a proposal including a preliminary list of opportunities

Preliminary Investigation

- Obtain as much information prior to visiting the site;
 - At least two years historical energy bills
 - Size and use of facility
 - HVAC equipment list
 - Past Studies
 - BAS type, age, extent, condition

Preliminary Investigation

- Interview Facility Staff
- Quick Review of Drawings
- Tour of Mechanical Rooms
- Gather info on controls
- Copies of BAS screen shots
- BAS trend logs if available
- Above Ceiling Sample Inspections

Preliminary Investigation-Results

- Go/No-Go as good candidate
- Benchmarking
- Preliminary list of opportunities
- Order of magnitude of costs and savings range
- Path Forward – EBCx Plan
- Proposal for detailed investigation

Components of the EBCx Plan

- General building information and contact (name, address, phone numbers etc.);
- Project objectives;
- Building description (brief);
- Project scope;
- Roles and responsibilities;
- Schedule (for primary tasks);
- Documentation;
- Investigation scope and methods;
- Implementation phase;
- Project handoff.

1. A Practical Guide for Commissioning Existing Buildings, April 1999, Tudi Hassi, Portland Energy Conservation, Inc. and Terry Sharp, Oak Ridge National Laboratory

Detailed Investigation

- EBCX Plan is developed
- Thorough investigation of existing operations, including testing to establish baseline conditions
- End use breakdown calibrated to historical consumption
- Test all major equipment, 10-20% of terminal devices
- Estimate savings and costs - check savings against end use breakdown
- Provide results in report
- Sometimes simple corrections are made during the investigation phase

Detailed Investigation

- Trend Log Reviews
- TAB Testing
- Investment grade technical and economic feasibility report
- Prioritization of Opportunities
- Reviewed with customer and utility

Implementation

- Scope of Work and Specifications developed for TAB and Controls
- Unit pricing for failed end devices not yet identified
- Improved sequences
- Commissioning
- Documentation
- Training
- Cx Agent provides oversight during implementation
- Final RCx Report of Results
- Include M&V and Continuous Commissioning Plan

Documentation and Training

- Begin during implementation (or staff may unknowingly undo the changes)
- Training must be planned
- Attendees should be provided with a copy of materials being presented.
- All changes must be as-built and commissioned
- Training typically at BAS front-end as well as in field

RCx Process in Review

- First, understand the current Owner's requirements
- Second, look at how the building is actually operated
- Identify what needs to change to bring these into alignment
- Focus on scheduling, controls, and TAB
- Make improvements, train, document
- Consult local utilities for assistance

How Do You Quantify Results?

- Energy benchmarking
- Trend logging sampling
- Measurement and Verification
- Demand-Side Management (DSM) evaluations
- Track O&M costs
- Complaint logs
- IEQ Studies