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CERTIFIED COMMISSIONING AUTHORITY CXA EXAM PREP

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ONLINE TRAINING BY KRISHNAJI PAWAR

LEED AP(BD+C),GSAS CGP,GCP,ISO 14001

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MODULE 17

Retro-Commissioning

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CERTIFIED COMMISSIONING AUTHORITY CXA EXAM PREP OVERVIEW

Functionally complete, occupied buildings undergo recommissioning and retrocommissioning. Retrocommissioning involves the entire building, while Recommissioning involves one system. US utilities and energy companies support both Commissioning Authority tasks.

Learning Objectives

- Introduction
- Retro-commissioning vs new building commissioning
- The retro-commissioning process
- Conclusion

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INTRODUCTION

- The previous discussion concluded with a discussion of recommissioning, which applies to previously commissioned buildings.
- Existing functional performance test procedures and documentation are readily available for use by the owner's operations staff, making recommissioning systems and entire buildings relatively straightforward.
- Many utilities are also at the forefront of retrocommissioning existing buildings for the same reason: to optimize the energy consumption of the facility.
- exceeds the market for new construction commissioning.
- The benefits of retrocommissioning existing facilities are a powerful incentive for facility owners.

RETRO-COMMISSIONING VS NEW BUILDING COMMISSIONING

Retro - commissioning testing is similar to new building commissioning, but factors like schedule, methods, risks, and costs differ, impacting the process significantly.

- Lack of shared responsibility
- New Risks

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RETRO - COMMISSIONING PROCESS

After considering those factors, the owner and CxA can consider retro - commissioning and its differences from new building commissioning. After being appointed owner's commissioning authority, the CxA must take several steps:

1. Assess the scope of the project and develop an optimum retro-commissioning plan and order-of-magnitude cost estimate.
2. Execute phase one of the retro-commissioning plan—individual component testing.
3. Prepare a component verification report and recommendations.
4. Execute phase two of the retro-commissioning plan—systems testing.
5. Prepare a retro-commissioning report.
6. If needed, execute phase three of the retro - commissioning plan—additional corrections or modifications and retesting.
7. Make the transition to operations.





STEP 1: EVALUATE THE PROJECT'S SCOPE AND DEVELOP AN OPTIMAL RETROCOMMISSIONING PLAN AND BALLPARK COST ESTIMATE.

STEP 1: RETRO - COMMISSIONING PROCESS

- Discuss with the owner retro - commissioning philosophies, concepts, and activities.
- Determine the project requirements of the owner.
- Determine the participation level of the owner's staff.
- Conduct interviews with operations and maintenance personnel to gain insight from their observations.
- Perform an inspection of all spaces.
- To learn from the observations of certain occupants, conduct interviews with them.
- Identify occupancy considerations for retro-commissioning, including impact on activities, level of interference, potential risks to personnel and materials, and liability issues.
- Develop a general evaluation of performance objectives and system capabilities.



STEP 1: RETRO - COMMISSIONING PROCESS+

- Evaluate the equipment's remaining useful life.
- Create an outline for a retro-commissioning plan.
- Prepare a retro-commissioning scope, plan, and cost estimate range.
- Obtain the owner's approval for the proposed retro-commissioning scope, plan, and cost.
- Formalize the professional services contract, which reflects the agreed-upon scope of work.

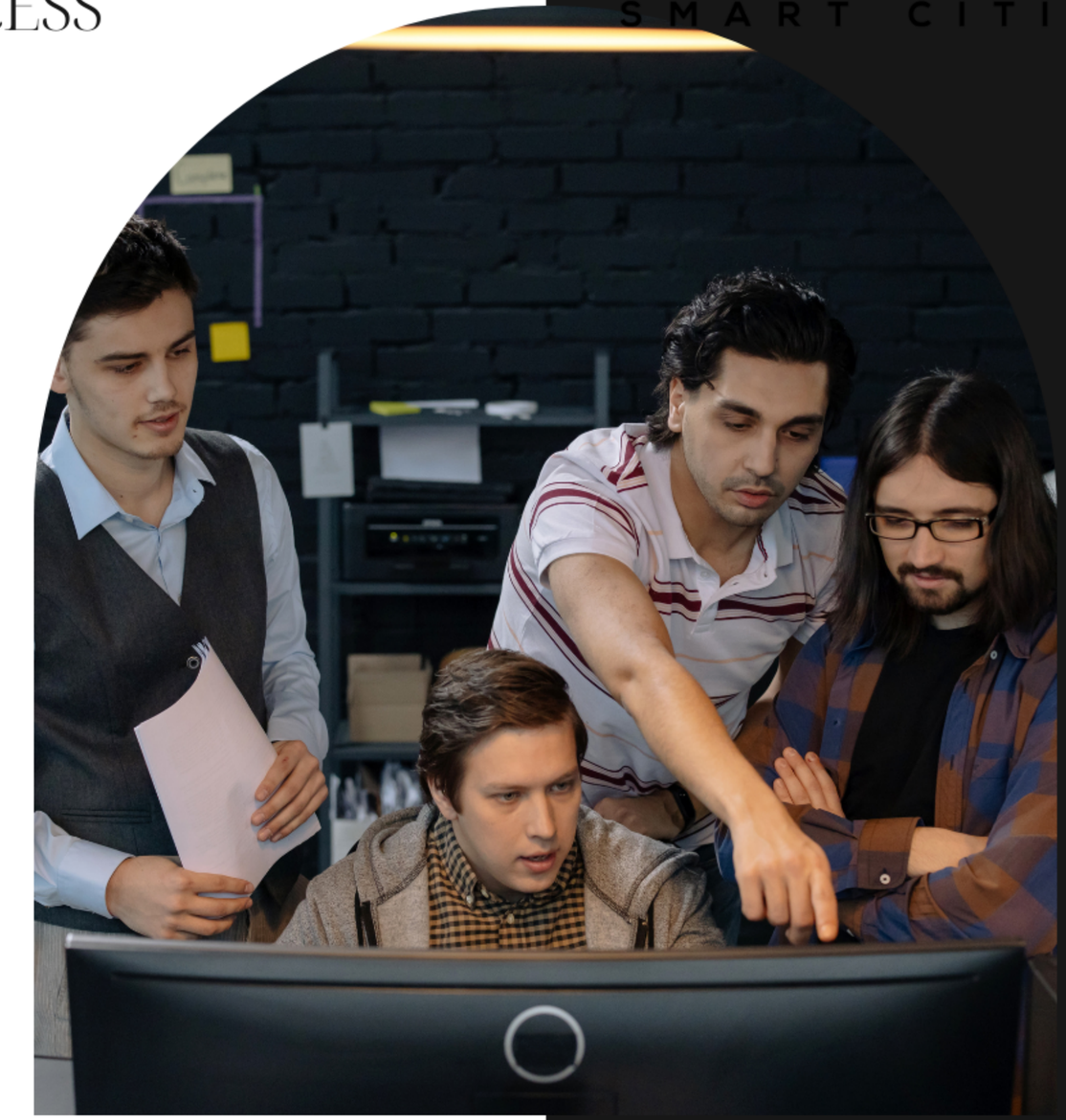




STEP 2: EXECUTE PHASE ONE OF THE RETRO-COMMISSIONING PLAN: INDIVIDUAL COMPONENT TESTING

STEP 2: RETRO - COMMISSIONING PROCESS

- As required, update and improve system documentation to support the retrocommissioning program.
- Find additional documents that may be useful.
- Analyze historical data regarding energy consumption.
- Develop verification test procedures for components.
- Reduce potential risks associated with the process of component verification testing.
- Inform occupants of how the testing will affect their ongoing activities and security measures.
- Perform verification tests on components.





STEP 3: PREPARE THE COMPONENT VERIFICATION REPORT AND RECOMMENDATIONS.

STEP 3: RETRO - COMMISSIONING PROCESS

- Review the results of component verification tests.
- Record corrective actions already taken during verification.
- testing.
- Set performance goals consistent with the owner's project.
- requirements.
- Determine whether performance goals are compatible with existing system capacities.
- Develop an outline plan and cost estimate for replacing dysfunctional components.



STEP 3: RETRO - COMMISSIONING PROCESS+

- Additional considerations include the need to clean ductwork and rebalance systems.
- Revise the plan and schedule for the retrocommissioning project and develop a report discussing the CA's findings, observations, and recommendations.
- Obtain the owner's approval of the plan and cost estimate, or replace dysfunctional components.
- Develop the final plan for replacing dysfunctional components.



STEP 3: RETRO - COMMISSIONING PROCESS+

- Develop contracts for duct cleaning and rebalancing systems, if needed.
- Mitigate potential risks associated with replacing dysfunctional components (and duct cleaning and rebalancing).
- Advise occupants of the impact of the work on their ongoing activities and security arrangements.
- Execute contract (s) for replacing dysfunctional components (and duct cleaning and rebalancing systems, if needed)



STEP 3: RETRO - COMMISSIONING PROCESS+

- Perform component verification tests.
- Review the results of component verification tests.
- Advise the owner of the successful completion of the work (or other outcome).

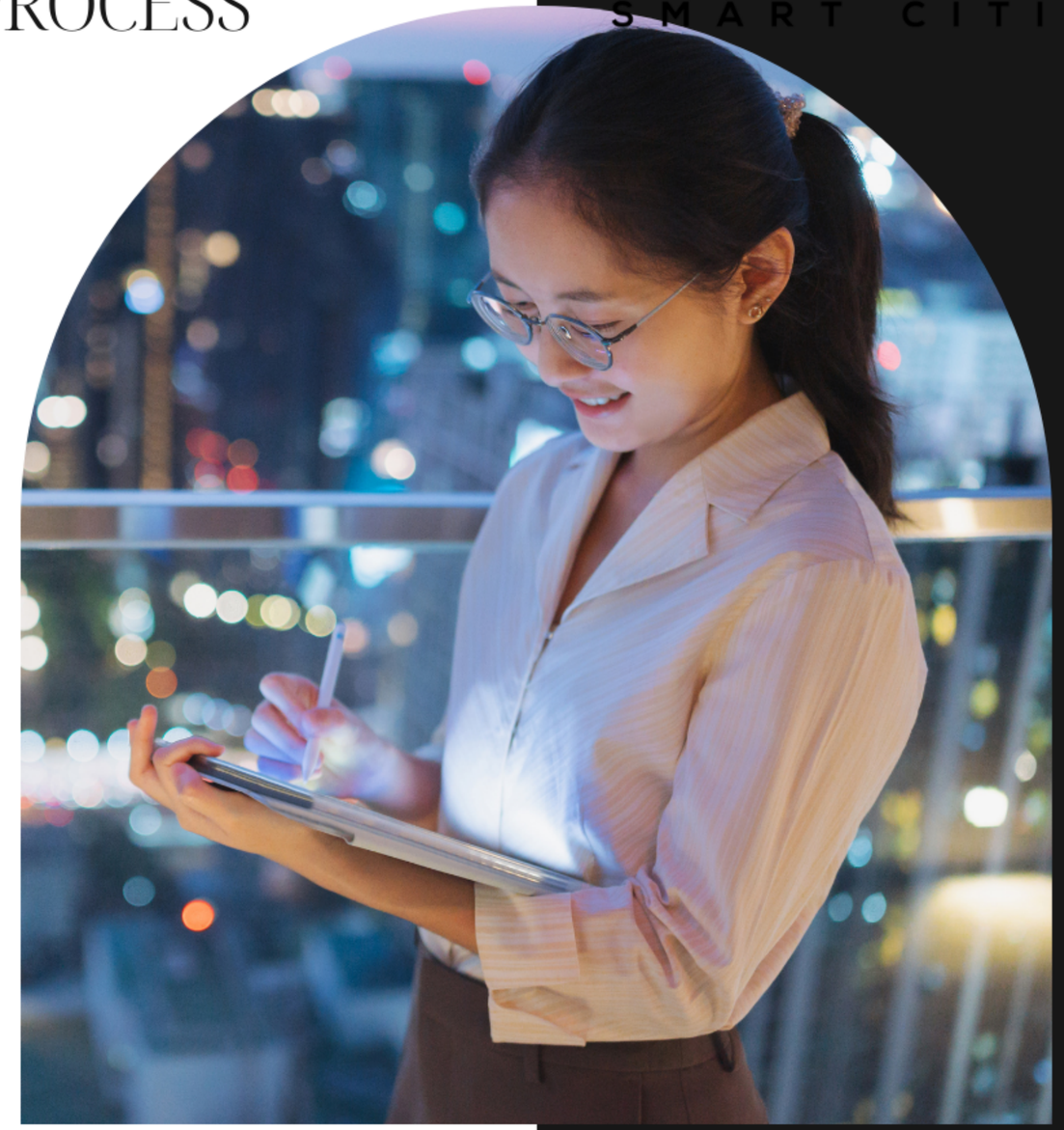




STEP 4: EXECUTE PHASE TWO OF THE RETRO-COMMISSIONING PLAN. SYSTEMS TESTING

STEP 4: RETRO - COMMISSIONING PROCESS

- Document energy and demand goals for equipment, systems, and the building.
- Update the retro-commissioning plan and schedule.
- Develop system functional performance test procedures.
- Coordinate the participation of the owner's staff in system functional performance testing.
- Provide appropriate training for the owner's operations staff.
- Mitigate the potential risks associated with the system.functional performance testing process.



STEP 4: RETRO - COMMISSIONING PROCESS+

- Advise occupants of the timetable for the retro-commissioning system functional performance tests.
- Advise occupants of the impact of the testing on their ongoing activities and security arrangements.
- Perform system functional performance test procedures and document the results.
- Correct conveniently fixable deficiencies discovered during system functional performance testing.
- Complete system functional performance tests.



STEP 4: RETRO - COMMISSIONING PROCESS+

- Advise occupants of the timetable for the retro-commissioning system functional performance tests.
- Advise occupants of the impact of the testing on their ongoing activities and security arrangements.
- Perform system functional performance test procedures and document the results.
- Correct conveniently fixable deficiencies discovered during system functional performance testing.
- Complete system functional performance tests.





STEP 5: PREPARE THE RETRO-COMMISSIONING REPORT



STEP 5: RETRO - COMMISSIONING PROCESS

- Assess the results of the retrocommissioning program.
- Prepare the report for the owner.
- Discuss any failures with the owner.
- Take other steps if needed.



STEP 6: IF NEEDED, EXECUTE PHASE THREE OF THE RETRO-COMMISSIONING PLAN: ADDITIONAL CORRECTIONS OR MODIFICATIONS AND RETESTING



STEP 6: RETRO - COMMISSIONING PROCESS

- Phase three repeats phase two's system testing and report preparation if the owner retrofits additional systems to meet performance goals.
- To ensure performance objectives are met, systems affected by the additional upgrades must be commissioned again.



STEP 7: MAKE THE TRANSITION TO OPERATIONS



STEP 7: RETRO - COMMISSIONING PROCESS

- Assist the owner and owner's staff with the transition.
- The need for ongoing monitoring
- Assessment of divergence from established operational parameters.
- Recommissioning as appropriate
- Establish operational sustainability.

IN SUMMARY

- Both Recommissioning and Retrocommissioning are performed on buildings that are functionally complete and normally already occupied.
- Recommissioning applies to buildings that have already been commissioned.
- Retrocommissioning must be performed by a Commissioning Authority.
- Recommissioning is often done on a single system, and may be required if one of a building's systems drifts beyond limits that are acceptable.
- Major advocates for Retrocommissioning (as well as Commissioning) are the utility and energy companied throughout the United States, as they wish to optimize the energy consumption of buildings.

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