



CERTIFICATION STUDY GUIDE

BUILDING COMMISSIONING PROFESSIONAL (BCxP)



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CONTENTS

INTRODUCTION	9
How to Use This Study Guide.....	10
BCxP Exam Preparation Resources.....	14
SECTION 1.1: DOMAIN 1, MANAGING COMMISSIONING PROJECTS; TASKS A-D	15
Overview to Domain 1	15
Quick Quiz, Domain 1, Tasks A-D	17
Self-assessment	18
SECTION 1.2: DOMAIN 1, MANAGING COMMISSIONING PROJECTS; TASKS E-I	20
Quick Quiz, Domain 1, Tasks E-I.....	20
Self-assessment	21
SECTION 1.3: DOMAIN 1: MANAGING COMMISSIONING PROJECTS; TASKS J-M	24
Quick Quiz, Domain 1, Tasks J-M	24
Self-assessment	25
DOMAIN 1: MANAGING COMMISSIONING PROJECTS PRACTICE EXAM QUESTIONS	26
SECTION 2.1: DOMAIN 2, PREPARING COMMISSIONING DOCUMENTATION; TASKS A-E	32
Overview for Domain 2	32
Quick Quiz, Domain 2, Tasks A-E	33
Self-assessment	34
SECTION 2.2: DOMAIN 2, PREPARING COMMISSIONING DOCUMENTATION; TASKS F-J	35
Quick Quiz, Domain 2, Tasks F-J	35
Self-assessment	36
SECTION 2.3: DOMAIN 2, PREPARING COMMISSIONING DOCUMENTATION; TASKS K-O	38
Quick Quiz, Domain 2, Tasks K-O	38
Self-assessment	39
DOMAIN 2: PREPARING COMMISSIONING DOCUMENTATION PRACTICE EXAM QUESTIONS	41
SECTION 3: DOMAIN 3, CONDUCTING COMMISSIONING ACTIVITIES; TASKS A-D	48
Overview to Domain 3	48



Quick Quiz, Domain 3, Tasks A-D	49
Self-assessment	50
DOMAIN 3: CONDUCTING COMMISSIONING ACTIVITIES PRACTICE EXAM QUESTIONS	52
SECTION 4: DOMAIN 4; MANAGING TRAINING ACTIVITIES TASKS A-D	61
Overview to Domain 4	61
Quick Quiz, Domain 4, Tasks A-D	62
Self-assessment	63
DOMAIN 4: MANAGING TRAINING ACTIVITIES PRACTICE EXAM QUESTIONS.....	65
SECTION 5: DOMAIN 5, COMPLETING WARRANTY PHASE ACTIVITIES; TASKS A-D	67
Overview to Domain 5	67
Quick Quiz, Domain 5, Tasks A-D	68
Self-assessment	69
DOMAIN 5: COMPLETING WARRANTY PHASE ACTIVITIES PRACTICE EXAM QUESTIONS.....	71
SECTION 6.1: DOMAIN 6, CONDUCTING EXISTING BUILDING COMMISSIONING; TASKS A-D	74
Overview to Domain 6	74
Quick Quiz, Domain 6, Tasks A-D	75
Self-assessment	76
SECTION 6.2: DOMAIN 6, CONDUCTING EXISTING BUILDING COMMISSIONING; TASKS E-H	79
Quick Quiz, Domain 6, Tasks E-H	79
Self-assessment	80
DOMAIN 6: CONDUCTING EXISTING BUILDING COMMISSIONING PRACTICE EXAM QUESTIONS.....	83
SECTION 7.1: DOMAIN 7, CONDUCTING ONGOING COMMISSIONING; TASKS A-C	91
Overview to Domain 7	91
Quick Quiz, Domain 7, Tasks A-C	92
Self-assessment	93
SECTION 7.2: DOMAIN 7, CONDUCTING ONGOING COMMISSIONING; TASKS D-G.....	95
Quick Quiz, Domain 7, Tasks D-G.....	95
Self-assessment	96
DOMAIN 7: CONDUCTING ONGOING COMMISSIONING PRACTICE EXAM QUESTIONS	98



MY BCxP CERTIFICATION EXAM STUDY MAP.....	101
Task Notes.....	101
Study Plan	113
PRACTICE EXAM QUESTIONS: ANSWER KEY	114
Domain 1: Managing Commissioning Projects	114
Domain 2: Preparing Commissioning Documentation	115
Domain 3: Conducting Commissioning Activities.....	116
Domain 4: Managing Training Activities.....	117
Domain 5: Completing Warranty Phase Activities	117
Domain 6: Conducting Existing Building Commissioning	118
Domain 7: Conducting Ongoing Commissioning	119
APPENDIX	120
Common HVAC Design and Engineering Formulas	120
GLOSSARY.....	130



INTRODUCTION

ASHRAE is an international membership society committed to the advancement of the arts and sciences of heating, ventilation, **air-conditioning**, and refrigeration to serve humanity and promote a sustainable world. The Building Commissioning Professional (BCxP) certification program supports this mission by validating job competency as understood in internationally recognized technical information, reflecting the best practices that lead our industry.

PURPOSE OF THE BCxP CERTIFICATION

The BCxP certification program validates competency of the building commissioning professional to do the following:

Lead, plan, coordinate and manage a commissioning team to implement commissioning processes in new and existing buildings.

This Study Guide provides a framework and tools to help you self-assess your knowledge in building commissioning and create a customized, self-paced study plan for the BCxP exam. ASHRAE offers numerous resources in the field. The Study Guide will help you target which resources are most beneficial based on your own professional development needs.

In this Study Guide, you, the candidate, are expected to evaluate your knowledge and skills in the building commissioning job tasks found in seven domains.

Depending on your experience level, some of these tasks may be a bit daunting or unfamiliar. If that is the case, consider it an opportunity for growth and devote extra attention to these matters. David Underwood, P. Eng., 2015-2016 ASHRAE President, once said that “we in the engineering community are in the solutions industry.” Based on this statement, it is your job to identify problems and produce solutions. The tasks included in domains 1-7 represent the knowledge and skills necessary to produce solutions for building commissioning problems, and this Study Guide represents your opportunity to fill gaps in your knowledge and skill base.

Using navigation buttons at top of screen: The buttons located at the top of each page allow you to navigate through this document. Click on these buttons to take you Back to view the last page you were on or to the First Page, Previous Page, Next Page, or Last Page. The Glossary button provides a direct link to the full glossary.



More information about the BCxP credential and eligibility criteria can be found on the [ASHRAE website](#) and in the BCxP [Candidate Guidebook](#).



THE OVERARCHING GOALS OF THE STUDY GUIDE ARE TO:

- Provide a framework and tools for customized, self-paced exam preparation
- Focus your review on key elements of recommended exam preparation resources
- Review knowledge and skills needed to lead, plan, coordinate and manage a commissioning team to implement commissioning processes in new and existing buildings
- Build knowledge and skills across the seven (7) Domains of the BCxP exam, which are:

1

Domain 1: Managing commissioning projects

2

Domain 2: Preparing commissioning documentation

3

Domain 3: Conducting commissioning activities

4

Domain 4: Managing training activities

5

Domain 5: Completing warranty phase activities

6

Domain 6: Conducting existing building commissioning

7

Domain 7: Conducting ongoing commissioning

- Identify key terms and concepts used by building commissioning professionals
- Provide the opportunity for you to test your acumen and readiness for the BCxP exam
- Help you assess your own individual core content strengths and weaknesses, and build a study map customized for your needs

How to Use This Study Guide

This Study Guide is designed as a workbook that contains tools you can use to assess what you need to focus on as you prepare to take the exam.

The Study Guide is organized by Domains and Tasks. There are seven Domains total, all of which have numerous Tasks, so we've broken them down into segments. The BCxP certification exam was developed to assess your competence to perform each of these Tasks as organized under each Domain, so this is a great way to organize your study leading up to the exam and to also build and validate your knowledge, skills, and abilities as a building commissioning professional.

ASHRAE offers numerous resources to help you study for the BCxP certification exam; however, which resources do you need to review to prepare for the exam? The tools in this Study Guide link the Domains and Tasks with the resources available from ASHRAE to help you review and



study the content. The tools will also help you determine which Tasks you need to focus upon. So, for example, if through the Self-assessment and Quick Quiz contained herein you discover that you have limited knowledge of Domain 1: Managing Commissioning Projects, Task A: Track deficiencies (issues log), the Study Guide will direct you to Guideline 0, Section 5, p. 6 and Guideline 0.2, Section 6, p. 13-14.

Study Tools

In this Study Guide you will find the following tools for each Domain that will help you assess what you already know, and importantly, what you don't know, step-by-step:

- Quick Quiz
- Self-assessment, including the Task-by-Task Resource Guide, which will direct you to core resources you can use to study, including deep dive resources in some instances you can use to delve deeper into that topic on a more advanced level
- Practice Exam Questions
- Study Map

Used together, the tools in the Study Guide and ASHRAE's resources will help you create a targeted, customized study plan based upon your own needs. You will note that we have broken some Domains into multiple sections to help you pace yourself through the material.

You will start each section by taking a Quick Quiz which will help you test your knowledge of key terms and concepts for that section. Next, you will complete a Self-assessment to capture the areas you need to focus on as you study for your certification exam. These tools will help you assess your knowledge and skills and organize your study of the content.

Throughout this Study Guide, you'll find instructions on how to use each study tool, but here's an overview:



Using the Study Guide and ASHRAE Resources Together

We recommend using the study tools for each Domain to guide your course of study and help you prepare for the BCxP exam:

ASHRAE Resources are listed in this Study Guide and are available in the ASHRAE [Bookstore](#)

STEP 1

Read the Overview and take the Quick Quiz and Self-assessment for each section of the Study Guide, starting with Domain 1.

STEP 2

Review the ASHRAE Resources for each Task as outlined in the Task-by-Task Resource Guide included in the Self-assessment, focusing your initial review on tasks you marked as "somewhat" or "not very" confident. Record notes about the topics you need to spend time studying. These notes will automatically populate in the [Study Map](#) as you complete Step 2.

STEP 3

When you have completed your first full review of all seven Domains and the study tools for each one, turn to the [Study Map](#) in this Guide. This final study tool will help you map out your course of study leading up to the certification exam.

Practice Exam Questions

The Study Guide also includes Practice Exam Questions, organized by Domain. You can use these in several ways:

- As a pre-test to check your baseline knowledge
- As a post-test after completing your review to see how you might do on the exam
- As a study and practice tool leading up to the exam, to help check your progress

The answer key in the back of the Study Guide includes feedback with the Domain and Task number to help you go back and revisit the content as needed. Remember, you can find the right resource for each Task in the Self-assessments, which include a Task-by-Task guide to the ASHRAE Resources.



Glossary and Search

Glossary terms are defined within the text. Click any bolded term to see its definition. You can also access all of the terms at any time by clicking this button and navigating to the glossary.



At any time you can search the Study Guide to find terms or concepts you want to study or review by clicking here.

The screenshot shows a PDF viewer interface for a document titled "Search screencap.pdf". The document content includes the ASHRAE logo, the heading "INTRODUCTION", and a paragraph: "ASHRAE is an international membership society committed to the advancement of the arts and sciences of heating, ventilation, **air-conditioning**, and refrigeration to serve humanity and promote a sustainable world. The Building Commissioning Professional (BCxP) **certification** program supports this mission by validating job competency as understood in internationally recognized technical information, reflecting the best practices that lead our industry." Below this is a section titled "PURPOSE OF THE BCxP CERTIFICATION" with a sub-heading "The BCxP certification program validates competency of the building commissioning professional to do the following:" and a list item: "Lead, plan, coordinate and manage a commissioning team to implement commissioning processes in new and existing buildings." A search overlay is visible on the right side of the document, showing "Find (1/4)" with the search term "certification" and buttons for "Previous", "Next", and "Replace with".

Evaluation

We want to hear from you! Please click this [link](#) to complete an evaluation of this Study Guide when you have completed it.



BCxP Exam Preparation Resources

BCxP RESOURCES

ASHRAE publications available to help you prepare for the BCxP examination may be purchased in the ASHRAE Bookstore:
<https://www.techstreet.com/ashrae/index.html>.

Publications

Standards

- ANSI/ASHRAE/IES Standard 202-2018, *Commissioning Process for Buildings and Systems*

Handbook

- 2019 *ASHRAE Handbook—HVAC Applications* Chapters 37, 38, 40, 42, 44 & 60

Guidelines

- ASHRAE Guideline 0-2019, *The Commissioning Process*
- ASHRAE Guideline 0.2-2015, *Commissioning Process for Existing Systems and Assemblies*
- ASHRAE Guideline 1.1-2007, *HVAC&R Technical Requirements for the Commissioning Process*
- ASHRAE Guideline 1.2-2019, *Technical Requirements for the Commissioning Process for Existing HVAC&R Systems and Assemblies*
- ASHRAE Guideline 1.3-2018, *Building Operations and Maintenance Training for the HVAC&R Commissioning Process*
- ASHRAE Guideline 1.4-2019, *Preparing Systems Manuals for Facilities*
- ASHRAE Guideline 1.5-2017, *The Commissioning Process for Smoke Control Systems*

Guide

- *Commissioning Stakeholders' Guide*

ASHRAE Learning Institute (ALI) and eLearning Center Courses

- The ASHRAE Learning Institute (ALI, <https://www.ashrae.org/professional-development>) and ASHRAE eLearning On Demand (<https://www.ashrae.org/professional-development/elearning-on-demand>) offer a wide range of archived, online courses (<https://www.techstreet.com/ashrae/subgroups/48292>), professional development seminars, and short courses on ASHRAE Standards and Guidelines. ASHRAE also offers training for companies or chapters.
- BCxP Practice Exam <https://store.lxr.com/product.aspx?id=1622>

SECTION 1.1: DOMAIN 1, MANAGING COMMISSIONING PROJECTS; TASKS A-D

Overview to Domain 1

In Domain 1, you will review the tasks related to managing commissioning projects. These tasks will aid in creating the foundation for the **commissioning process**. During this initial stage, you will be able to create a blueprint to successfully validate the design of a project. You will evaluate the project scope and create a team whose goal is to successfully bring the project in on budget. To do so, you will identify deliverables, evaluate risks, and identify essential tasks. Vital planning and scheduling, imperative to progress, will take place. These first steps are crucial to any commissioning effort.

Identifying goals and creating a pathway to achieving these goals can be manageable when approached logically at the inception of the project. The tasks outlined in Domain 1, Tasks A through M are where planning begins and strategies are developed.

Tasks A through M are designed to separate the initial phases of the commissioning process into workable pieces that can be examined and developed. They are used throughout the process to manage the commissioning project.

How these concepts might apply day to day

Say you are working on a large-scale data center expansion; you might need to look at the following factors:

- How will the new area be integrated into the existing building?
- What risks are involved with construction at a live/occupied data center?
- How will the budget be affected by the coordination and extra planning required at a live/occupied site?
- Will the schedule need to be adjusted to accommodate the active data center's critical network times?
- How will the integrated testing affect the entire site?