



Division 230800

Commissioning of HVAC, Plumbing and Electrical

DESIGN GUIDE

1 General

1.1 Related Sections

- A. Division 1.
- B. Division 22-Plumbing
- C. Division 26-Electrical

1.2 Introduction

- A. This section applies to commissioning of HVAC, Plumbing and Electrical systems.
- B. Consult with capital planning project manager as the applicability and scope of the procedures and services outlined herein.
- C. Building commissioning work is a joint effort requiring the participation of all project team members to ensure that all building systems function properly and meet their designed intent. Note that the process defined herein goes well beyond the typical building start-up and testing procedures both in detail of testing and in level of documentation.
- D. Goals and Objectives. There are six (6) major goals to be achieved by the commissioning process. They can be summarized as follows:
 - 1. To provide safe and healthy facilities by minimizing building system's deficiencies relative to air quality and environmental comfort.



2. To improve energy efficiency and increase the facility's life by improving systems performance.
3. To reduce operating and maintenance costs by fine-tuning building systems.
4. To facilitate the training of the operations and maintenance staff and develop appropriate testing and operational processes.
5. To improve all systems' technical documentation relative to the operation, maintenance, troubleshooting and renovation(s) of facilities.
6. To aid in meeting the facility users' needs by developing a facility that operates as it was intended.

1.3 Major Capital Projects Commissioning

- A. Commissioning for major capital projects applies to any projects that are LEED certified and state funded as well as major capital projects that are funded outside of the state general fund (student housing, student funded etc.).
- B. Potential exemptions include the following (<https://des.wa.gov/services/facilities-leasing/energy-program/green-building-leed>):
 1. New construction less than 5000 sq. ft.
 2. Renovation projects with a cost of less than 50% of the assessed value.
 3. Consult with Capital Planning Project Manager for direction on exemptions.
- C. CWU engages third party certified commissioning professionals directly. The level of commissioning shall meet the intent of LEED Enhanced Commissioning whether the project is LEED certified or not.
- D. The commissioning professionals' role/scope includes:
 1. Review of the Owner project requirements and the Engineer Basis of Design documents
 2. Periodic review and comment of major design submittals.



3. Review of project metering plan.
4. Development of project commissioning specifications
5. Lead commissioning kick off meeting with the contractor and the subcontractors.
6. Coordinating Cx activities into the contract schedule.
7. Participate in Control Summit meeting for the review of the building automation system control shop drawings.
8. Reviewing of contractor product submittals in conjunction with the engineer-of-record.
9. Review 10% of test and balance results for air and water systems.
10. Witness calibration of energy meters.
11. Development and verification of functional test procedures for HVAC, Plumbing, Lighting and Control Systems.
12. Additional seasonal testing when test procedures cannot be performed due to climatic conditions.
13. Verification of closeout materials such as operation and maintenance requirements
14. Participation in operator/occupant training
15. Preparation of final commissioning report
16. Review of operations 10 months after construction is complete
17. Review of monthly and annual energy metering data for 24 months past final completion. Refer to 230900 for supplemental information.
18. Development of an on-going commissioning plan.

1.4 Non-Major Capital Projects (Code Commissioning)

- A. For non-major capital projects, commissioning shall be provided to meet the State Energy Code and services shall be provided by a certified commissioning professional. Energy code commissioning is required for Division 22/23 mechanical systems and service water



heating systems as noted below. These are minimum requirements and CWU may elect for increased level of commissioning depending upon the nature of the work.

- B. Effective 2022, systems are exempt from energy code commissioning when:
 - 1. Total mechanical equipment capacity is less than 240,000 btuh cooling and 300,000 btu/h heating.
 - 2. Service water heating systems less than 200,000 btuh
 - 3. Check the state energy code for periodic updates.
- C. Options for engagement of certified commissioning professional include the following. Consult with Capital Planning Project Manager, Mechanical HVAC manager or Mechanical Plumbing Manager for direction.
 - 1. 3rd party services provided by certified commissioning professional direct to the Owner.
 - 2. The design engineer provides commissioning by certified commissioning professional direct to the Owner as part of design services agreement. This is not allowed for LEED certified projects or large capital projects but may be utilized on some smaller projects.

1.5 Commissioning-Beyond Energy Systems

- A. Additional scope items beyond energy within the commissioning scope shall include
 - 1. Miscellaneous Equipment – Compressed Air, Vacuum, Dust Collection, Sump Pumps. Verify operations and alarming to BAS is complete.
 - 2. Electrical Checks – Coordination Study Settings backcheck, Miscellaneous torque backchecks on main gear.
 - 3. Variable Frequency Drive Checks – Verify all parameters are set according to CWU's current VFD checkout sheet.
 - 4. Ensure that sanitary sewer, indirect waste, chem waste, and storm sewer cleanout plugs are installed and accessible.



1.6 Project Manual

- A. The project manual/specifications shall include commissioning documents as well as requirements for the contractor's to participate in the commissioning process where commissioning is required.

2 Materials

2.1 Reserved for future.

3 Execution

3.1 Reserved for future.

4 Appendix

4.1 Reserved for future.

