



Heating and Cooling Operating Procedures

Summary/Introduction:

The University of Colorado Denver has made a commitment to reduce greenhouse gas emissions 50% by 2030 (from a 2019 baseline) and to improve energy efficiency in buildings owned by the university. These operating procedures establish heating and cooling setpoint thresholds and define occupied/unoccupied building hours in order to improve energy efficiency and fiscal stewardship, while maintaining a comfortable working and learning environment in buildings owned and operated by CU Denver.

Adjusting thermostat setpoints and using setbacks during unoccupied hours is a proven strategy for reducing both energy consumption and cost. Energy modeling simulation studies suggest that increasing a cooling setpoint by 5 degrees or reducing heating setpoint by 2 degrees can reduce HVAC energy by around 30%.¹ The Department of Energy asserts that implementing temperature setbacks of 7°–10°F for eight hours daily (during unoccupied hours) can result in up to 10% annual energy savings². Numerous higher education institutions (such as Yale, SUNY Cortland, UGA, Washington University, and the University of Utah) have successfully implemented similar thermostat policies and reported energy and financial savings, as well as no reported occupant discomfort. The University of Georgia reported a 19-40% reduction in chilled water usage by increasing cooling setpoints to 74 or 76 degrees³.

Furthermore, this operating procedure is intended to bring greater thermal comfort to residents during occupied building hours. [OSHA's workplace guidelines](#) recommend temperature control between 68-76 degrees Fahrenheit, and [ASHRAE's Thermal Comfort Standard](#) asserts that 80% of occupants are comfortable between 67 and 82 °F. The Auraria Campus and tri-institutional leadership (the Auraria Board of Directors) has already enacted a policy utilizing the OSHA thermostat thresholds for the CU Denver occupied buildings that AHEC operates (North Classroom, Science, etc.).

Operating Procedure

- **Cooling Guidelines:** During the cooling season the goal is to cool all CU Denver-controlled buildings to below 76 degrees Fahrenheit.
- **Heating Guidelines:** During the heating season the goal is to heat all CU Denver-controlled buildings to above 68 degrees Fahrenheit.

¹ Hoyt, T. (2015). [Extending air temperature setpoints: Simulated energy impacts in office buildings. Energy & Buildings.](#)

² U.S. Department of Energy. (n.d.). [Programmable Thermostats.](#)

³ Mann, A. (2020, September 15). [Turn up the thermostat: lower energy costs, no complaints. UGA Research Newsletter.](#)

- **Buildings Implicated:** this SOP applies to CU Denver owned, general fund buildings (Lawrence Street Center, CU Denver Building, Business School, Student Commons, Learning Commons).

Fluctuations and Deadband: Temperature fluctuations may occur due to external environmental factors and the operational limitations of building systems (ie: building age, design, controls capabilities). This may be especially true during the shoulder seasons of spring and fall when outdoor air temperatures fluctuate more widely. Older buildings with less sophisticated HVAC systems (Lawrence Street Center and the CU Building, in particular) have a more difficult time achieving uniform temperatures across all floors and zones and require more manual adjustments to achieve comfort.

- **Occupied Building Hours:** The above setpoints will be maintained during hours of building occupancy, as established by open building hours, academic class schedules, events and meetings scheduled through the Event Management System (EMS), and historical building usage. Outside of scheduled classes, events and meetings, the building will not necessarily be conditioned to the setpoints designated above. Please come prepared with the appropriate clothing and layers to support your thermal comfort. To learn more about how Occupied Hours are established, see Appendix 1 below.
- **Use of Space Heaters:** Electric space heaters may be used as a temporary measure in areas where Heating Guidelines cannot be achieved. However, as space heaters are potentially hazardous if used improperly, only space heaters designated under [OPP 103-105](#) are authorized. Where non-approved space heaters are identified, CU Denver Facilities Management will leave notices for occupants requesting space heaters be removed to prevent fires and electrical outages.
- **Exemptions:** Certain areas (such as certain laboratory spaces, the Wellness Center and select equipment rooms) require more stringent controls and are not governed by these guidelines. Any additional exemptions must be approved in writing by CU Denver Facilities Management and the Department or user group in the designated space.
- **Occupant Responsibilities:**
Occupants of CU-Denver-controlled facilities are encouraged to:
 - Schedule events and meetings in the EMS to ensure the room will be programmed to meet your heating and cooling needs
 - Keep thermostats, vents, and registers clear from obstructions.
 - Keep windows closed.
 - Closing shades and blinds can help retain warmer temperatures in the winter evening hours and maintain cooler temperature during the day in summer periods.
- **Work Orders:** If a space is outside of the temperature range specified within these guidelines, affected occupants may contact CU Denver Facilities Management by submitting a work order. Facilities Management will:
 - Measure room temperatures with digital thermometers.
 - Make every reasonable effort to correct the temperature if found out of the expected range.

Appendix 1: Occupied Hours

Occupancy Definitions

- Occupied Hours: Hours during which the building will be heated and cooled to standard setpoints (68-76).
- Unoccupied Hours: Building will not be heated and cooled to standard setpoints (setbacks will be used to conserve energy). These hours may overlap with badge accessible building hours.

Occupancy States

Occupied hours are not consistent across buildings or across time (day/week/semester) because they are established to reduce unnecessary heating and cooling and reduce energy consumption based on each building's academic schedule and operational needs. Occupancy is categorized into four major occupancy states, and each of these occupancy states may dictate different Occupied Hours for a building.

- 1) Academic Weekday (Monday-Friday)
 - a. Academic classes in session (Fall, Spring, Maymester, Summer term)
- 2) Academic Weekend (Saturday and Sunday)
 - a. Academic classes in session (Fall, Spring, Maymester, Summer term)
- 3) Academic Recess
 - Classes are not in session, university employees are on campus. Includes Winter Recess, Fall/Spring breaks, early August (between Summer and Fall terms)
- 4) Holiday
 - Campus is closed

Defining Occupied Hours

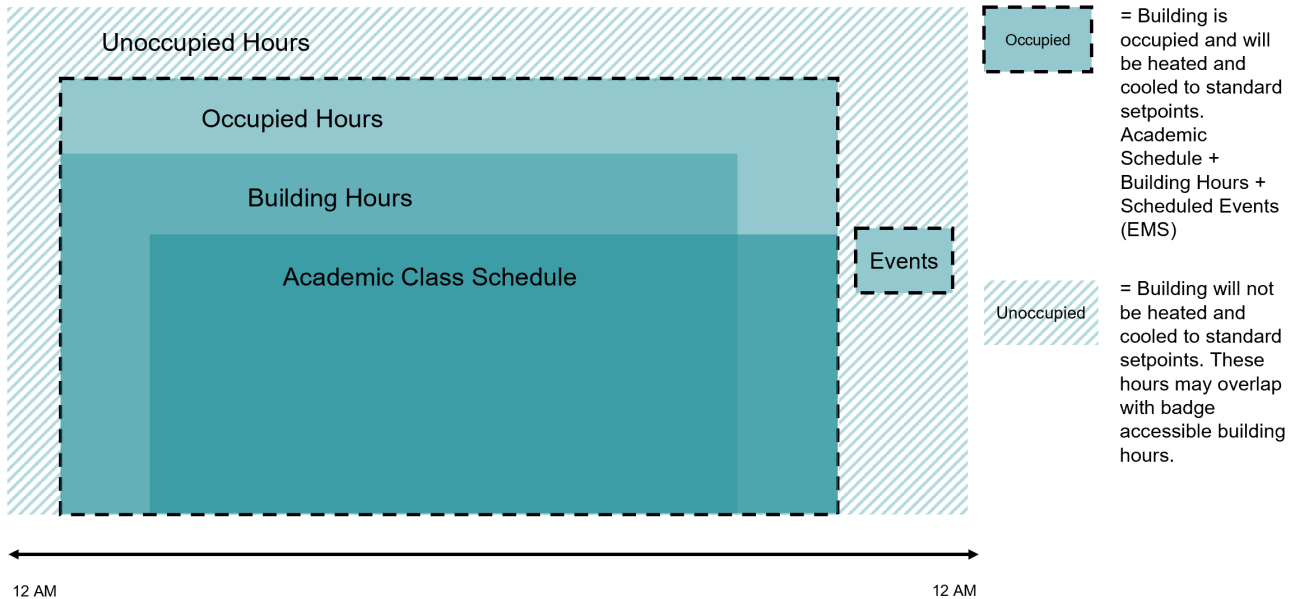
Occupied hours are determined by a combination of the following:

- Building Hours: Building unlocked and open as advertised on AHEC and CU Denver websites (badge not needed for building access)
- Academic Hours: Academic course schedule from Registrar's Office
- Historical Usage: Occupancy patterns discerned from badge access timestamps, wifi utilization rates, parking gate access, lighting occupancy sensors, etc.
- Direct Input from Occupants: in some instances, hours are further refined by feedback from faculty, staff and students

The following diagrams depict how Occupied Hours are defined in each of the four occupancy states.

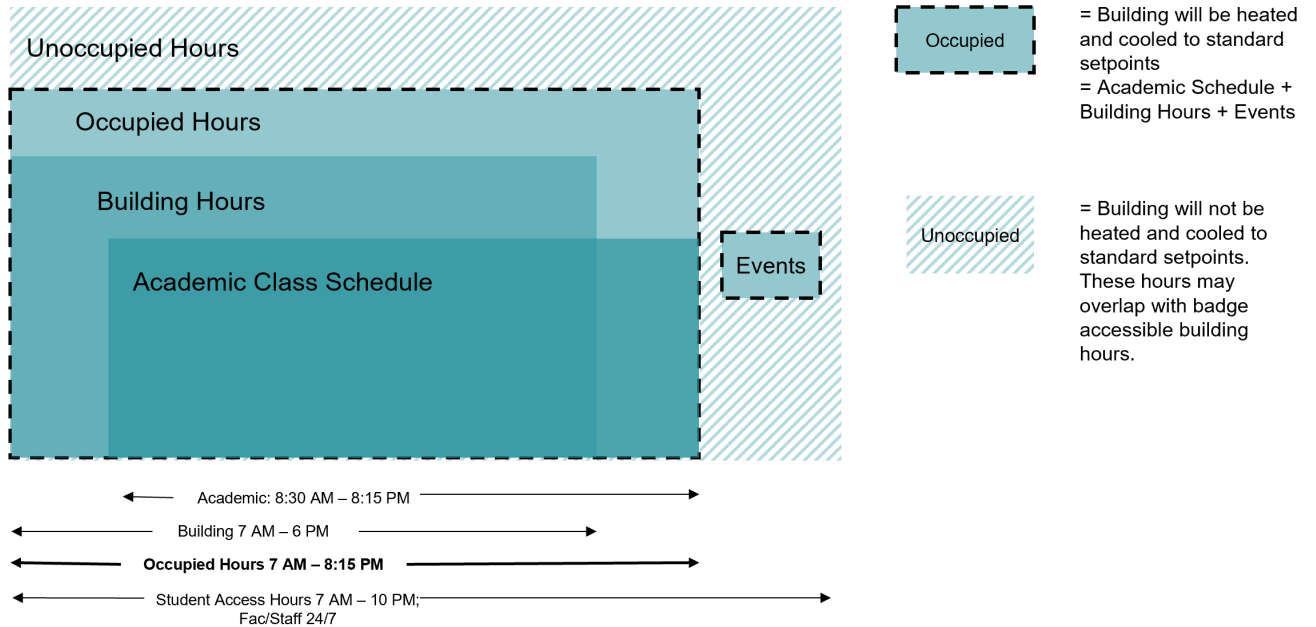
Academic Weekday (Monday-Friday) - Fall and Spring semester, ~~Maymester~~, Summer term

Occupied Hours = Academic Schedule + Building Hours + Scheduled Events (EMS)



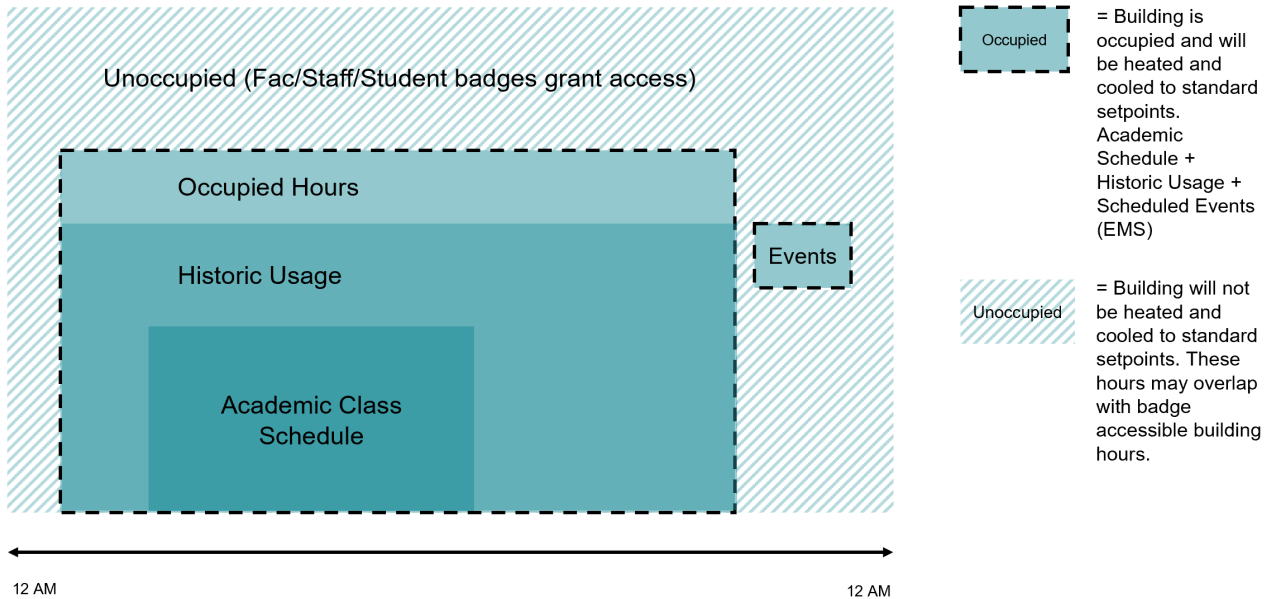
Example: Lawrence Street (Monday – Friday)

Occupied Hours = Academic Schedule + Building Hours + Scheduled Events (EMS)



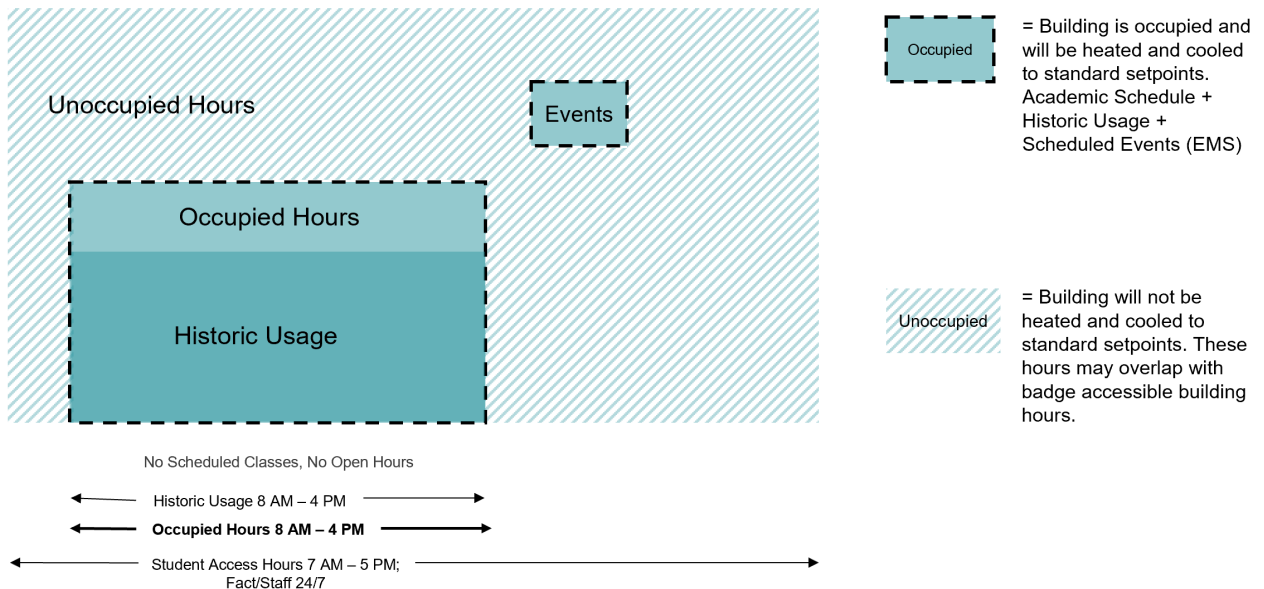
Academic Weekend (Saturday-Sunday) - Fall and Spring semester, *Maymester*, Summer term

Occupied Hours = Academic Schedule (often none) + Historic Usage + Scheduled Events (EMS)



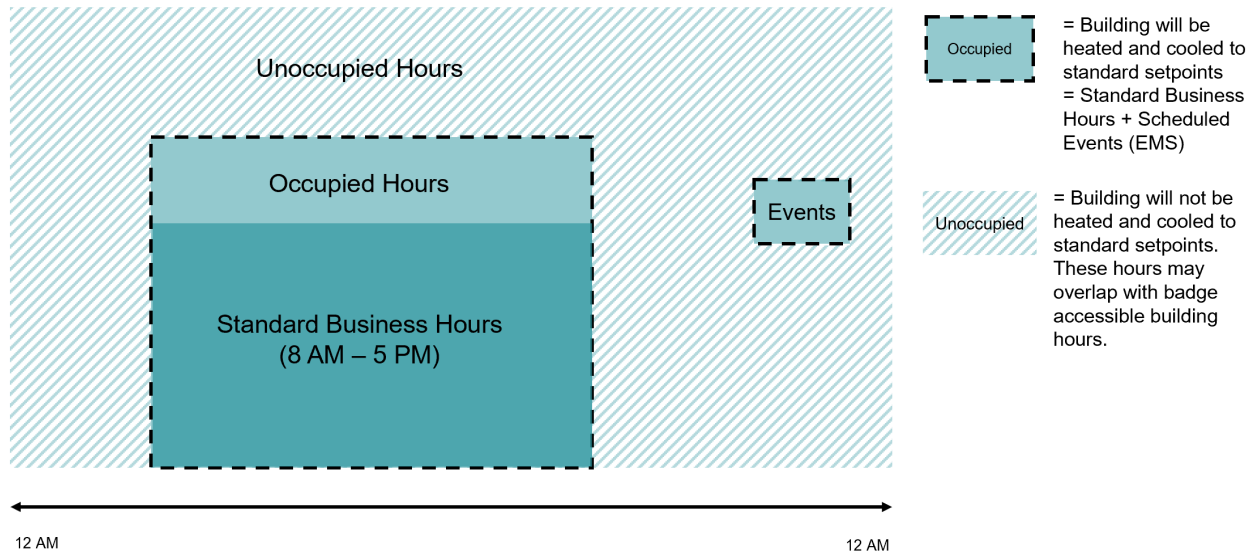
Example: Lawrence Street (Sunday Fall 2025)

Occupied Hours = Academic Schedule (often none) + Historic Usage + Scheduled Events (EMS)



Academic Recess - Classes are not in session, university employees on campus. Includes Winter Recess, Fall/Spring break, early August (between Summer and Fall terms)

Building will be conditioned for during normal business hours, M-F.



Holiday

Building will not be heated/cooled to normal setpoints during holidays.

