

**DEVELOPMENT SERVICES – BUILDING DIVISION**

SUBMITTAL GUIDELINES: GREEN BUILDING STANDARD CONDITIONS OF APPROVAL CHECKLIST

SCOPE: COMMERCIAL

APPLICABLE CODES: 2022 CBC, CEC, CALGreen, and PAMC

The information provided in this document is general and intended as a guide only. Each project is unique and additional requirements may be enforced as deemed appropriate.

DO NOT SUBMIT THIS DOCUMENT WITH PERMIT APPLICATION

In an effort to streamline the plan review process, please follow the steps outlined below to ensure that there is no delay in processing your application and reviewing your responses to these plan check comments

Green Building Triggers:

- **CALGreen Mandatory:** Tenant improvements, renovations, or alterations less than 5,000 sq. ft. and/or a permit value of \$200,000 or more.
- **CALGreen Mandatory + Tier 1:** Tenant improvements or renovation of 5,000 sq. ft. or more that include replacement of at least two of the following: HVAC system, building envelope, hot water system, or lighting system.
- **CALGreen Mandatory + Tier 2:** All new construction of any size, and addition projects 1,000 sq. ft. or greater.

Nonresidential substantial remodel projects may trigger CALGreen Mandatory, Tier 1, or Tier 2 requirements depending on the project scope of work. A substantial remodel is defined as:

- **Substantial Remodel (50-50-50 RULE).** Any project or projects that affects the removal or replacement of 50% or more of the linear length of the existing exterior walls of the building, and/or 50% or more of the linear length of the existing exterior wall plate height is raised, and/or 50% or more of the existing roof framing area is removed or replaced, over a 3-year period.
 - Any permit(s) applied for will trigger a review of a 3-year history of the project. This review will result in determining if a substantial remodel has occurred.
 - The Chief Building Official or designee shall make the final determination regarding the application if a conflict occurs.

Permit Plans Instructions:

- Review the Green Building Verification Form on the “Compliance” page of the Green Building section of the of the Development Services webpage.
- Include the applicable “GB-1” sheet in the permit plans. For provisions marked as “Y” on the “GB-1” sheet, comply with the CALGreen provision instructions within this document. This does not exclude CALGreen and PAMC 16.14 requirements.
- In some cases, the provision includes only construction phase activities and no plan check items are required. For the items that require construction phase requirements only, refer to the *Nonresidential Green Building Inspection Guidelines* for compliance requirements.
- SPECIAL INSPECTION: For residential projects subject to Mandatory, Tier 1 or Tier 2 requirements, the project must hire a Green Building Special Inspector from the City’s approved list of Green Building Special Inspectors in accordance with PAMC 16.14.120. The Green Building Special Inspector shall review the permit plans and sign the “GB-1” sheet verifying that the CALGreen measures are included as outlined in the permit plans.
- For particular provisions, the Tier 1 and Tier 2 requirements are more stringent than similar requirements listed in the Mandatory provisions.
- Innovation concepts to be submitted for review and approval as an AMMR, Alternate Materials and Methods Request.

Revision and Resubmittal Instructions:


For projects that receive revision comments:

- Plan check comments will reference item numbers that are identified within these standards conditions.
- Revised plans and calculations shall incorporate or address all comments indicated in the standard conditions. Provide a written response to each comment and show where and how it has been addressed. Identify the sheet number and detail or reference note on the revised plans where the corrections are made. Provide cloud marker indication and delta revision numbers.
- Provide a written response to each comment and show where and how it has been addressed. Identify the sheet number and detail or reference note on the revised plans where the corrections are made. Provide cloud marker indication and delta revision numbers.
- Incomplete, indefinite or faded drawings or calculations will not be accepted.


Inspections:

- Projects should reference the *Nonresidential Green Building Inspection Guidelines* for details on Inspection Phase requirements.


How to Read the Enforcement Icons:**PLAN CHECK REQUIREMENTS**

The requirements identified with the icon  are subject to **Plan Check** requirements as listed in this document. Unless otherwise indicated, for each applicable provision selected on the “GB-1” sheet, the design professional shall call out the requirements in the form of sheet note on the applicable discipline portion of the permit plans. Mandatory, Tier 1 and Tier 2 projects are subject to the Green Building Special Inspector requirements identified on page 2 of this document and the compliance process outlined on Green Building Compliance webpage.


FIELD INSPECTION

The requirements identified with the icon  are subject to **field inspection**. See *Nonresidential Green Building Inspection Guideline* for requirements.

LOCALLY AMMENDED

The requirements identified with the icon  include local amendments to the 2022 California Green Building Code. Requirements identified with this icon are located within the Palo Alto Municipal Code 16.14.

TIER 1 AND TIER 2 MANDATORY

The requirements identified with the icon  include the pre-requisite requirements listed in Division A4.6 and the local Palo Alto Municipal Code 16.14. These items are identified on the “GB-1” sheet as “Tier 1 Mand” or “Tier 2 Mand”.

CHAPTER 1: ADMINISTRATION

Section 102 Construction Documents and Installation Verification

1. Sec. 102.1. Submittal Documents. Because of special conditions, the City is requiring the construction documents to be prepared by a licensed design professional.
2. Sec 102.2. Information on construction documents. The construction documents shall provide sufficient clarity to indicate the location, nature, and scope of the proposed green building features.
3. Sec 102.3. Verification. Plans shall provide a method to verify compliance with all CALGreen requirements.

Chapter 3: GREEN BUILDING

Section 301 Scope

4. When CALGreen Mandatory is required, without triggering Tier 1 or Tier 2, the mandatory provisions of Chapter 5 shall be applied to additions or alterations less than 5,000 sq. ft. and/or a permit value of \$200,000 or more. The requirements shall apply only to and/or within the specific area of the addition or alteration.
 - a. **Mandatory or Tier 1:** Any project or projects that affects the removal or replacement of 50% or more of the linear length of the existing exterior walls of the building, and/or 50% or more of the linear length of the existing exterior wall plate height is raised, and/or 50% or more of the existing roof framing area is removed or replaced, over a 3-year period.
 - b. **Tier 1:** All non-residential building tenant improvements or renovations exceeding 5,000 square feet, that include replacement of at least two or more of the following systems HVAC system, building envelope, hot water system or lighting system, must meet the California Green Building Standards Code plus Tier 1 requirements, as amended in PAMC 16.14 and applicable to the scope of work.
Tier 2: Non-residential additions of 1000 square feet and all newly constructed non-residential building must meet the California Green Building Standards Code plus Tier 2 requirements, as amended in PAMC 16.14 and applicable to the scope of work.

Substantial Remodel (50-50-50 RULE). Any project or projects that affects the removal or replacement of 50% or more of the linear length of the existing exterior walls of the building, and/or 50% or more of the linear length of the existing exterior wall plate height is raised, and/or 50% or more of the existing roof framing area is removed or replaced, over a 3-year period.

 1. Any permit(s) applied for will trigger a review of a 3-year history of the project. This review will result in determining if a substantial remodel has occurred.
 2. The Chief Building Official or designee shall make the final determination regarding the application if a conflict occurs. Substantial Remodel Projects are subject to Tier 2 requirements (PAMC 16.16.070).

Section 302 Mixed Occupancy Buildings

5. In mixed occupancy buildings, each portion of a building shall comply with the specific green building measures applicable to each specific occupancy.

Section 303 Phased Projects

6. Each phase of a project shall comply with those code measures relevant to the building components and systems.

Chapter 5: NON-RESIDENTIAL MANDATORY MEASURES

Division 5.1 – PLANNING AND DESIGN

Section 5.106 Site Development

Storm water pollution prevention. Newly constructed projects and additions which disturb less than one acre of land shall prevent the pollution of stormwater runoff from the construction activities

7. Sec. 5.106.1.1 Storm water pollution prevention.



Newly constructed projects and additions shall comply with additional storm water pollution prevention measures as applicable. See Chapter 16.11, Storm Water Pollution Prevention, of the Palo Alto Municipal Code. (PAMC 16.14.290/ 5.106.1.1)

8. Sec. 5.106.1 Bicycle Parking.



Projects must evaluate the Palo Alto Zoning requirements and CALGreen requirements and must implement the most stringent of the applicable requirements. Requirements will vary based on the location, building type, and scope of the project type. (PAMC 18.54.060/ 5.106.4)

- a. PAMC 18.52.040: Projects must reference PAMC section 18.52.040 for quantity and short and long term, and 18.54.060 for location/type of facilities. Show bicycle parking on the site plan demonstrating compliance. Call-out the number of spaces provided.
- b. 2022 CALGreen: Show bicycle parking on the site plan demonstrating compliance with Sections 5.106.4.1 and 5.106.4.1.2 or comply with local ordinance (PAMC 18.52.040), whichever is stricter.
 - i. **5.106.4.1.1 Short-term bicycle parking.** If the new project or an addition or alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5 percent of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack.
Exception: Additions or alterations which add nine or less visitor vehicular parking spaces.
 - ii. **5.106.4.1.2 Long-term bicycle parking.** For new buildings with 10 or more tenant-occupants or for additions or alterations that add 10 or more tenant vehicular parking spaces, provide secure bicycle parking for 5 percent of the tenant vehicular parking spaces being added, with a minimum of one space. Acceptable parking facilities shall be convenient from the street and shall meet one of the following:
 - i. Covered, lockable enclosures with permanently anchored racks for bicycles;
 - ii. Lockable bicycle rooms with permanently anchored racks; or
 - iii. Lockable, permanently anchored bicycle lockers.

Note: Additional information on recommended bicycle accommodations may be obtained from Sacramento Area Bicycle Advocates.

9. Sec 5.106.5.3 Electric Vehicle Charging for New Construction



The City of Palo Alto has adopted more stringent requirements in reference to Electric Vehicle Charging for New Construction (PAMC 16.14.420). They are as follows:

Electric Vehicle (EV) Charging for Non-Residential Structures. (A5.106.5.3)

New non-residential structures shall comply with the following requirements for electric vehicle supply equipment (EVSE).

All parking space calculations under this section shall be rounded up to the next full space. The requirements stated in this section are in addition to those contained in Section 5.106.5.3 of the California Green Building Standards Code. In the event of a conflict between this section and Section 5.106.5.3, the more robust EV Charging requirements shall prevail.

Non-Residential Structures Other than Hotels. (A5.106.5.3.5)

The following standards apply to newly constructed non-residential structures other than hotels.

For a building with 10 to 20 parking spaces, the property owner shall provide at least 20% EV Capable or EVSE-Ready space, and at least 20% Level 2 EVSE installed of the total parking spaces.

For a building with over 20 parking spaces, the property owner shall provide at least 15% EV Capable or EVSE-Ready space, and at least 15% EVSE installed for of the total parking spaces

Accessible spaces. Projects shall comply with the 2022 California Building Code requirements for accessible electric vehicle parking.

Minimum total circuit capacity. The property owner shall ensure sufficient circuit capacity, as determined by the Chief Building Official or designee, to support a Level 2 EVSE in every location where EVSE Capable space, EVSE-Ready space or EVSE Installed is required.

Location. The EVSE, receptacles, and/or raceway required by this section shall be placed in locations allowing convenient installation of and access to EVSE. Location of EVSE or receptacles shall be consistent with all city regulations.

5.106.5.3.3 Use of automatic load management systems (ALMS).

ALMS shall be permitted for EVCS. When ALMS is installed, the required electrical load capacity specified in Section 5.106.5.3.1 for each EVCS may be reduced when serviced by an EVSE controlled by an ALMS. Each EVSE controlled by an ALMS shall deliver a minimum 30 amperes to an EV when charging one vehicle and shall deliver a minimum 3.3 kW while simultaneously charging multiple EVs.

10. Sec 5.106.5.4 Electric vehicle (EV) charging: medium-duty and heavy-duty.



If applicable to the scope of work, demonstrate compliance with Electric vehicle charging readiness requirements for warehouses, grocery stores and retail stores with planned off-street loading spaces.

TABLE 5.106.5.4.1
RACEWAY CONDUIT AND PANEL POWER
REQUIREMENTS FOR MEDIUM- AND HEAVY-DUTY EVSE [N]

BUILDING TYPE	BUILDING SIZE (SQ. FT.)	NUMBER OF OFF-STREET LOADING SPACES	ADDITIONAL CAPACITY REQUIRED (KVA) FOR RACEWAY & BUSWAY AND TRANSFORMER & PANEL
Grocery	10,000 to 90,000	1 or 2	200
		3 or Greater	400
	Greater than 90,000	1 or Greater	400
Retail	10,000 to 135,000	1 or 2	200
		3 or Greater	400
	Greater than 135,000	1 or Greater	400
Warehouse	20,000 to 256,000	1 or 2	200
		3 or Greater	400
	Greater than 256,000	1 or Greater	400

11. Sec 5.106.8 Light Pollution Reduction.



PAMC 16.14.295/Sec 5.106.8 Light pollution reduction is amended to read: Outdoor lighting systems shall be designed and installed to comply with the following:

1. The minimum requirements in the California Energy Code for Lighting Zones 0-4 as defined in Chapter 10, Section 10-114 of the California Administrative Code; and
2. Backlight (B) ratings as defined in IES TM-15-11 (shown in Table A-1 in Chapter 8);
3. Uplight and Glare ratings as defined in California Energy Code (shown in Tables 130.2-A and 130.2-B in Chapter 8); and
4. Allowable BUG ratings not exceeding those shown in Table 5.106.8 [N]; or
5. Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.

Projects may use an approved equal reference standard for light fixtures where BUG ratings are unavailable.

1. Exceptions:

1. Luminaires that qualify as exceptions in Section 103.2(b) and 140.7 of the California Energy Code.
2. Emergency lighting.
3. Building facade meeting the requirements in Table 140.7-B of the California Energy Code, Part 6.
4. Custom lighting features as allowed by the local enforcing agency, as permitted by Section 101.8 Alternate materials, designs and methods of construction.

12. Sec 5.106.10 Grading and paving.



Construction plans shall indicate how site grading or a drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following:

1. Swales.
2. Water collection and disposal systems.
3. French drains.
4. Water retention gardens.
5. Other water measures which keep surface water away from buildings and aid in groundwater recharge.

Exception: Additions and alterations not altering the drainage path.

13. PAMC 16.14.300/Sec 5.106.13 All-Electric Buildings/Site



A building or parcel of land whose sole source of energy is electricity and contains no combustion equipment or plumbing for combustion equipment.

5.106.13.1 Full electrification. Full electrification is required for new buildings substantial remodels, and new outdoor appliances/equipment such as grill, stove, barbeque, fireplace, firepit, heater for swimming pool/spa, and similar equipment.

Division 5.2 – ENERGY EFFICIENCY

Section 5.201 General

14. Sec 4.201.1



Provide documentation to indicate the project meets State energy efficiency standards.(5.201)

Division 5.3 – WATER EFFICIENCY AND CONSERVATION

Section 5.303 Indoor Water Use

15. Sec 5.303.1 Meters.



Separate submeters or metering devices shall be installed for the uses described in Sections 5.303.1.1 and 5.303.1.2. Indicate and call out the location of the meter(s) on the permit plans.

- a. **5.303.1.1 New buildings or additions in excess of 50,000 square feet.** Separate submeters shall be installed as follows:
 - a. For each individual leased, rented, or other tenant space within the building projected to consume more than 100 gal/day (380 L/day), including, but not limited to, spaces used for laundry or cleaners, restaurant or food service, medical or dental office, laboratory, or beauty salon or barber shop.
 - b. Where separate submeters for individual building tenants are unfeasible, for water supplied to the following subsystems:
 - i. Makeup water for cooling towers where flow through is greater than 500 gpm (30 L/s).
 - ii. Makeup water for evaporative coolers greater than 6 gpm (0.04 L/s).
 - iii. Steam and hot-water boilers with energy input more than 500,000 Btu/h (147 kW).
- b. **5.303.1.2 Excess consumption.** A separate submeter or metering device shall be provided for any tenant within a new building or within an addition that is projected to consume more than 1,000 gal/day.

The plumbing fixture schedule shall indicate the flow and flush fixture performance values in this section.

16. Sec 5.303.3.1 Water closets.



The effective flush volume of all water closets shall not exceed 1.28 gallons per flush. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-Type Toilets.

17. Sec 5.303.3.2.1 Wall-mounted urinals.



The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush.

18. Sec 5.303.3.2.2 Floor-mounted urinals.



The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush.

19. Sec 5.303.3.3.1 Single showerhead.



Showerheads shall have a maximum flow rate of not more than 1.8 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.

Note: A hand-held shower shall be considered a showerhead.

20. Sec 5.303.3.3.2 Multiple showerheads serving one shower.



When a shower is served by more than one showerhead, the combined flow rate of all shower-heads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi, or the shower shall be designed to allow only one shower outlet to be in operation at a time.

Note: A hand-held shower shall be considered a showerhead.

21. Sec 5.303.3.4.1 Nonresidential lavatory faucets.



Lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi.

22. Sec 5.303.3.4.2 Kitchen faucets.



Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi and must default to a maximum flow rate of 1.8 gallons per minute at 60 psi.

23. Sec 5.303.3.4.3 Wash fountains.



Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute/20 [rim space (inches) at 60 psi].

24. Sec 5.303.3.4.4 Metering faucets.



Metering faucets shall not deliver more than 0.20 gallons per cycle.

25. Sec 5.303.3.4.5 Metering faucets for wash fountains.



Metering faucets for wash fountains shall have a maximum flow rate of not more than 0.20 gallons per cycle/20 [rim space (inches) at 60 psi].

Note: Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.

26. Sec 5.303.4.1 Food waste disposers.



Disposers shall either modulate the use of water to no more than 1 gpm when the disposer is not in use (not actively grinding food waste/no-load) or shall automatically shut off after no more than 10 minutes of inactivity. Disposers shall use no more than 8 gpm of water.

27. Sec 5.303.5 Areas of addition or alteration.



For those occupancies within the authority of the California Building Standards Commission as specified in Section 103, the provisions of Sections 5.303.3 and 5.303.4 shall apply to new fixtures in additions or areas of alteration to the building.

28. Sec 5.303.6 Standards for plumbing fixtures and fittings.



Plumbing fixtures and fittings shall be installed in accordance with the California Plumbing Code, and shall meet the applicable standards referenced in Table 1701.1 of the California Plumbing Code and in Chapter 6 of this code.

Section 5.304 Outdoor Water Use

29. Sec 5.304.1 Outdoor potable water use in landscape areas.



Residential developments shall comply with the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELo).

- a. The Model Water Efficient Landscape Ordinance (MWELo) is located in the California Code of Regulations, Title 23, Chapter 2.7, Division 2.
- b. MWELo and supporting documents, including a water budget calculator, are available at <https://www.water.ca.gov/>.

30. Sec 5.304.2 Invasive species prohibited.



All non-residential new construction, additions, and alterations shall not install invasive species in a landscape area of any size. (PAMC 16.14.330)

Section 5.306 Non-Residential Enhanced Water Budget.

31. Sec 5.306 Non-residential enhanced water budget.



Non-residential enhanced water budget is added as mandatory to read: Non-residential buildings anticipated to use more than 1,000 gallons of water a day shall complete an Enhanced Water Budget Calculator as established by the Chief Building Official or designee. (PAMC 16.14.36, Section 5.306)

Section 5.307 Cooling Tower Water Use

32. PAMC 16.14.350 / Sec 5.307 Cooling Tower Water Use in n Highrise Residential or Non-Residential Buildings.



Cooling tower water use must meet the conditions as follows and as outlined in Palo Alto Municipal Code Section 16.08.100. Projects are required to perform a potable water analysis at the site to meet the maximum concentration of parameters noted in Table 5.307.1

Calculate maximum number of cycles that can be achieved with these levels of concentration shall be included in the plumbing design plans.

Table 5.307.1

Ca (as CaCO3)	600 ppm
Total alkalinity	500 ppm
SiO2	150 ppm
Cr	300 ppm
Conductivity	3300 Us/cm

Division 5.4 – MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

Section 5.407 Water Resistance and Moisture Management

33. Sec 5.407.1 Weather protection.



Provide a weather-resistant exterior wall and foundation envelope as required by California Building Code Section 1402.2 (Weather Protection), manufacturer’s installation instructions or local ordinance, whichever is more stringent.

34. Sec 5.407.2 Moisture control.



Employ moisture control measures by the following methods:

- a. **5.407.2.1 Sprinklers.** Design and maintain landscape irrigation systems to prevent spray on structures.
- b. **5.407.2.2 Entries and openings.** Design exterior entries and/or openings subject to foot traffic or wind-driven rain to prevent water intrusion into buildings as follows:
 - a. **5.407.2.2.1 Exterior door protection.** Primary exterior entries shall be covered to prevent water intrusion by using nonabsorbent floor and wall finishes within at least 2 feet around and perpendicular to such openings plus at least one of the following:
 - i. An installed awning at least 4 feet in depth.
 - ii. The door is protected by a roof overhang at least 4 feet in depth.
 - iii. The door is recessed at least 4 feet.
 - iv. Other methods which provide equivalent protection.
 - b. **5.407.2.2.2 Flashing.** Install flashings integrated with a drainage plane.

Section 5.408 Construction Waste Reduction, Disposal and Recycling

35. PAMC 16.14.410/ Sec A5.408 Enhanced Construction Waste Reduction



Nonhazardous construction and demolition debris generated at the site is diverted to recycle or salvage in compliance with the following: including new construction, additions, and alterations, as long as the construction has a valuation of \$25,000 or more. Any mixed recyclables that are sent to mixed-waste recycling facilities shall include a qualified third party verified facility average diversion rate. Verification of diversion rates shall meet minimum certification eligibility guidelines, acceptable to the local enforcing agency.

Projects with job valuations less than \$25,000 shall meet State standards: Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste. (5.408.1)

Exceptions:

1. Residential stand-alone mechanical, electrical or plumbing permits.
2. Commercial stand-alone mechanical, electrical or plumbing permits.

GREEN HALO: Documentation shall be presented to the C&D Planner both prior to permit issuance and prior to final inspection using Green Halo. www.greenhalosystems.com

36. Sec 5.408.2 Universal waste.

*Additions and Alterations*

Additions and alterations to a building or tenant space that meet the scoping provisions in Section 301.3 for nonresidential additions and alterations, shall require verification that Universal Waste items such as fluorescent lamps and ballast and mercury containing thermostats as well as other California prohibited Universal Waste materials are disposed of properly and are diverted from landfills. A list of prohibited Universal Waste materials shall be included in the construction documents.

37. Sec 5.408.3 Excavated soil and land clearing debris.



100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stock-piled on site until the storage site is developed.

Exception: Reuse, either on-or off-site, of vegetation or soil contaminated by disease or pest infestation.

Section 5.410 Building Maintenance and Operation

38. Sec 5.410.1 Recycling by occupants.



Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals.

- a. **Sec 5.410.1.1 Additions.** All additions conducted within a 12-month period under single or multiple permits, resulting in an increase of 30 percent or more in floor area, shall provide recycling areas on site.

Exception: Additions within a tenant space resulting in less than a 30-percent increase in the tenant space floor area.

39. Sec 5.410.2 Commissioning.



New buildings 10,000 square feet and over.

For new buildings 10,000 square feet and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements. Commissioning shall be performed in accordance with this section by trained personnel with experience on projects of comparable size and complexity.

Commissioning requirements shall include:

1. Owner's or owner representative's project requirements.
2. Basis of design.
3. Commissioning measures shown in the construction documents.
4. Commissioning plan.
5. Functional performance testing.
6. Documentation and training.
7. Commissioning report.

Exceptions:

1. *Unconditioned warehouses of any size.*
2. *Areas less than 10,000 square feet used for offices or other conditioned accessory spaces within unconditioned warehouses.*
3. *Tenant improvements less than 10,000 square feet as described in Section 303.1.1.*
4. *Open parking garages of any size, or open parking garage areas, of any size, within a structure.*

Note: For the purposes of this section, unconditioned shall mean a building, area, or room which does not provide heating and or air conditioning. See section 5.410.2 for additional detail.

40. Sec 5.410.4 Testing and adjusting.



New buildings less than 10,000 square feet. Testing and adjusting of systems shall be required for new buildings less than 10,000 square feet or new systems to serve an addition or alteration subject to Section 303.1. Follow requirements in Section 5.410.4.1-5.410.4.4.

41. Sec 5.410.4.5 Operation and maintenance (O & M) manual.



Provide the building owner or representative with detailed operating and maintenance instructions and copies of guaranties/warranties for each system. O & M instructions shall be consistent with OSHA requirements in CCR, Title 8, Section 5142, and other related regulations. The project is required to submit Inspections and reports, include a copy of all inspection verification and reports to the Building Inspector.

Division 5.5 – ENVIRONMENTAL QUALITY

Section 5.503 Fireplaces

42. Sec 5.503.1 Fireplaces.



Install only a direct-vent sealed-combustion gas or sealed wood-burning fireplace, or a sealed wood- stove or pellet stove, and refer to residential requirements in the California Energy Code, Title 24, Part 6, Subchapter 7, Section 150. Fireplaces shall comply with applicable local ordinances.

Section 5.504 Pollutant Control

43. Sec 5.504.1 Temporary ventilation.



The permanent HVAC system shall only be used during construction if necessary to condition the building or areas of addition or alteration within the required temperature range for material and equipment installation. If the HVAC system is used during construction, use return air filters with a Minimum Efficiency Reporting Value (MERV) of 8, based on ASHRAE 52.2-1999, or an average efficiency of 30 percent based on ASHRAE 52.1- 1992. Replace all filters immediately prior to occupancy, or, if the building is occupied during alteration, at the conclusion of construction.

44. Sec 5.504.3 Covering of duct openings and protection of mechanical equipment during construction.



At the time of rough installation and during storage on the construction site until final startup of the heating, cooling and ventilating equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheet metal or other methods acceptable to the enforcing agency to reduce the amount of dust, water and debris which may enter the system.

45. Sec 5.504.4 Finish material pollutant control.



Finish materials shall comply with Sections 5.504.4.1 through 5.504.4.6.

46. Sec 5.504.4.1 Adhesives, sealants, and caulks.



Adhesives, sealants, and caulks used on the project shall meet the requirements of the following standards:

1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in Tables 5.504.4.1 and 5.504.4.2. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products as specified in subsection 2, below.
2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of California Code of Regulations, Title 17, commencing with Section 94507.

47. Sec 5.504.4.3 Paints and coatings.



Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Suggested Control Measure, as shown in Table 5.504.4.3. (5.504.4.3)

48. Sec 5.504.4.3.1 Aerosol paints and coatings.



Aerosol paints and coatings: Aerosol paints and coatings shall meet the requirements of Sections 94522(a)(2), 94522(c)(2), and (d)(2) of California Code of Regulations, Title 17 commencing with Section 94520. (5.504.4.3.1)

49. Sec 5.504.4.3.2 Verification.



Verification of compliance with this section shall be provided as required by the Green Building Special Inspector during field inspection. Documents may include, but not limited to the following:

- a. Manufacturer's product specification
- b. Field verification of on-site product containers

50. Sec 5.504.4.4 Carpet systems.



All carpet installed in the building interior shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350).

51. Sec 5.504.4.4.1 Carpet cushion.



All carpet cushion installed in the building interior shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350).

52. Sec 5.504.4.5 Composite wood products.



Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.) Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5.

**TABLE 5.504.4.5
FORMALDEHYDE LIMITS¹
Maximum Formaldehyde Emissions in Parts per Million**

PRODUCT	CURRENT LIMIT
Hardwood plywood veneer core	0.05
Hardwood plywood composite core	0.05
Particleboard	0.09
Medium density fiberboard	0.11
Thin medium density fiberboard ²	0.13

1. Values in this table are derived from those specified by the California Air Resources Board, Air Toxics Control Measure for Composite Wood as tested in accordance with ASTM E1333. For additional information, see *California Code of Regulations*, Title 17, Sections 93120 through 93120.12.
2. Thin medium density fiberboard has a maximum thickness of $\frac{5}{16}$ inch (8 mm).

53. Sec 5.504.4.5.3 Composite wood products: documentation



Note on the plans that documentation shall be provided to indicate compliance with Section 4.504 and shall include at least one of the following: 1. Product certifications specifications 2. Chain of custody certifications 3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.) 4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered 5. Other methods acceptable to the enforcing agency. (5.504.4.5.3)

54. Sec 5.504.4.6 Resilient flooring systems.



Where resilient flooring is installed, at least 80 percent of floor area receiving resilient flooring shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350).

55. Sec 5.504.5.3 Filters.



In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exception: Existing mechanical equipment.

56. Sec 5.504.7 Environmental tobacco smoke (ETS) control.



Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent.

Section 5.505 Indoor Moisture Control

57. Sec 5.505.1 Indoor moisture control.



Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of CALGreen.

Section 5.506 Indoor Air Quality

58. Sec 5.506.1 Outside air delivery.



For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the California Energy Code, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

59. Sec 5.506.2 Carbon dioxide (CO2) monitoring.



For buildings or additions equipped with demand control ventilation, CO2 sensors and ventilation controls shall be specified and installed in accordance with the requirements of the California Energy Code, Section 120.1(c)(4).

60. Sec 5.506.3 Indoor Air Quality Management Plan.

*Commercial buildings*

Commercial projects must submit an Indoor Air Quality Management Plan (IAQ) with building permit application in accordance with the Sheet Metal and Air Conditioning Contractors National Association (SMACNA IAQ) Guidelines for Occupied Buildings Under Construction, 2nd edition ANSI/SMACNA 008-2008. (PAMC 16.14.390 Section 5.506.4 Indoor Air Quality.)

Section 5.507 Environmental Comfort

61. Sec 5.507.4 Acoustical control.



Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E90 and ASTM E413 or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Section 5.508 Outdoor Air Quality

62. Sec 5.508.1 Ozone depletion and greenhouse gas reductions.



Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

- a. **5.508.1.1 Chlorofluorocarbons (CFCs).** Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.
- b. **5.508.1.2 Halons.** Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

63. Sec 5.508.2 Supermarket refrigerant leak reduction



New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Comply with Sections 5.508.2.1 to 5.508.2.6.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO₂), and potentially other refrigerants.

Appendix A5: NON-RESIDENTIAL VOLUNTARY MEASURES

As required for Pre-requisites and Electives for projects subject to Tier 1 and Tier 2

Note: Provisions required for individual projects shall be indicated on the GB-1 sheet.

Division A5.1 – Planning and Design

Section A5.103.1 Site Selection

64. Sec A5.103.1 Community connectivity.



Where feasible, locate project on a previously developed site within a 1/2 mile radius of at least ten basic services, readily accessible by pedestrians, including, but not limited, to one each of bank, place of worship, convenience grocery, day care, cleaners, fire station, barber shop, beauty shop, hardware store, laundry, library, medical clinic, dental clinic, senior care facility, park, pharmacy, post office, restaurant (two may be counted), school, supermarket, theater, community center, fitness center, museum or farmers market.

65. Sec A5.103.2 Brownfield or greyfield site redevelopment or infill area development.



If feasible, select for development a brownfield in accordance with Section A5.103.2.1 or on a greyfield or infill site as defined in Section A5.102.

66. Sec A5.103.2.1 Brownfield redevelopment.



Develop a site documented as contaminated by means of an ASTM E1903-97 Phase II Environmental Site Assessment or on a site defined as a brownfield by a local, state or federal government agency. The site must be fully remediated in accordance with EPA regulations to the level required of the anticipated land use.

Section A5.104 Site Preservation

67. Sec A5.104.1 Reduce development footprint and optimize open space.



Optimize open space on the project site in accordance with Sections A5.104.1.1, A5.104.1.2 or A5.104.1.3 and the PAMC Title 18 Zoning Ordinance.

- a. **A5.104.1.1 Local zoning requirement in place.** Exceed the zoning's open space requirement for vegetated open space on the site by 25 percent.
- b. **A5.104.1.2 No local zoning requirement in place.** Provide vegetated open space area adjacent to the building equal to the building footprint area.
- c. **A5.104.1.3 No open space required in zoning ordinance.** Provide vegetated open space equal to 20 percent of the total project site area.

Section A5.105 Deconstruction and Reuse of Existing Structures

68. Sec A5.105.1 Deconstruction



Section A5.105.1 is not adopted as an elective measure. See Chapter 5.24 of the Municipal Code for the local deconstruction and source separation requirements.

69. Sec A5.105.1.1 Existing building structure.



Maintain at least 75 percent of existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing) based on surface area.

Exceptions:

1. Window assemblies and nonstructural roofing material.
2. Hazardous materials that are remediated as a part of the project.
3. A project with an addition of more than two times the square footage of the existing building.

70. Sec A5.105.1.2 Existing nonstructural elements.



Reuse existing interior nonstructural elements (interior walls, doors, floor coverings and ceiling systems) in at least 50 percent of the area of the completed building (including additions).

Exception: A project with an addition of more than two times the square footage of the existing building.

71. Sec A5.105.1.3 Salvage.



Salvage additional items in good condition such as light fixtures, plumbing fixtures and doors as follows.

Document the weight or number of the items salvaged.

1. Salvage for reuse on the project items that conform to other provisions of Title 24 in an on-site storage area.
2. Nonconforming items may be salvaged in dedicated collection bins for exempt projects or other uses.

Section A5.106 Site Development

72. Sec A5.106.3 Low Impact Development (LID).



All newly constructed projects shall mitigate (infiltrate, filter, or treat) stormwater runoff from the 85th percentile 24-hour runoff event (for volume-based BMP's) or the runoff produced by a rain event equal to two times the 85th percentile hourly intensity (for flow-based BMP's) through the application of LID strategies. Employ at least two of the following methods or other best management practices to allow rainwater to soak into the ground, evaporate into the air or collect in storage receptacles for irrigation or other beneficial uses. LID strategies include, but are not limited to:

1. Bioretention (rain gardens)/filtration planters;
2. Precipitation capture (Cisterns and rain barrels);
3. Green roofs meeting the structural requirements of the building code;
4. Roof leader or impervious area disconnection;
5. Permeable and porous paving;
6. Vegetative swales and filter strips; tree preservation; and
7. Tree preservation and tree plantings;
8. Landscaping soil quality;
9. Stream buffer; and
10. Volume retention suitable for previously developed sites.

73. Sec A5.106.3.2 Greyfield or infill site.



Manage 40 percent of the average annual rainfall on the site's impervious surfaces through infiltration, reuse or evapotranspiration.

74. Sec A5.106.4.3 Changing rooms.



For buildings with over 10 tenant-occupants, provide changing/shower facilities for tenant-occupants only in accordance with Table A5.106.4.3 or document arrangements with nearby changing/shower facilities.

Note: Additional information on recommended bicycle accommodations may be obtained from Sacramento Area Bicycle Advocates.

75. Sec A5.106.5.1 Designated parking for clean air vehicles.

*Tier 1 and Tier 2 Mandatory*

Provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table A5.106.5.1.1 or A5.106.5.1.2.

- a. **A5.106.5.1.1 Tier 1.** Ten percent of total spaces. [BSC- CG] Provide 10 percent of total designated parking spaces for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as outlined in Table A5.106.5.1.1.
- b. **A5.106.5.1.2 Tier 2.** Provide 12 percent of total designated parking spaces for any combination of low-emitting, fuel-efficient, and carpool/van pool vehicles as outline in Table A5.106.5.1.2

76. Sec A5.106.5.1.3 Parking stall marking.



Paint, in the paint used for stall striping, the following characters such that the lower edge of the last word aligns with the end of the stall striping and is visible beneath a parked vehicle:

CLEAN AIR/
VANPOOL/EV

Note: Vehicles bearing Clean Air Vehicle stickers from expired HOV lane programs may be considered eligible for designated parking spaces.

77. Sec A5.106.6 Parking capacity.



Design parking capacity to meet but not exceed minimum local zoning requirements.

78. Sec A5.106.6.1 Reduce parking capacity.



With the approval of the enforcement authority, employ strategies to reduce on-site parking area by:

1. Use of on street parking or compact spaces, illustrated on the site plan or
2. Implementation and documentation of programs that encourage occupants to carpool, ride share or use alternate transportation.

79. Sec A5.106.7 Exterior wall shading.



Meet requirements in the current edition of the California Energy Code and comply with either Section A5.106.7.1 or A5.106.7.2 for wall surfaces. If using vegetative shade, plant species documented to reach desired coverage within 5 years of building occupancy.

80. Sec A5.106.7.1 Fenestration.



Provide vegetative or man-made shading devices for all fenestration on east-, south-, and west-facing walls.

- a. **A5.106.7.1.1 East and west walls.** Shading devices shall have 30-percent coverage to a height of 20 feet or to the top of the exterior wall, whichever is less. Calculate shade coverage on the summer solstice at 10 AM for east-facing walls and at 3 PM for west-facing walls.
- b. **A5.106.7.1.2 South walls.** Shading devices shall have 60-percent coverage to a height of 20 feet or to the top of the exterior wall, whichever is less.

81. Sec A5.106.7.2 Opaque wall areas.



Use wall surfacing with minimum SRI 25 (aged), for 75 percent of opaque wall areas.

Exception: Use of vegetated shade in Wildland-Urban Interface Areas as defined in Chapter 7A (Materials and Construction Methods for Exterior Wildfire Exposure) of the California Building Code shall meet the requirements of that chapter.

Note: If not available from the manufacturer, aged SRI value calculations may be found at the California Energy Commission's web site at www.energy.ca.gov.

82. Sec A5.106.11.1 Hardscape alternatives.



Use one or a combination of strategies 1 and 2 for 50 percent of site hard- scape or put 50 percent of parking underground.

1. Use light colored materials with an initial solar reflectance value of at least 30 as determined in accordance with American Society for Testing and Materials (ASTM) Standards E1918 or C1549.
2. Use open-grid pavement system or pervious or permeable pavement system.

83. Sec. A4.106.11.2 Cool roof for reduction of heat island effect.



Tier 1 and Tier 2 Mandatory

Use roofing materials having a minimum aged solar reflectance and thermal emittance complying with Sections A5.106.11.2.1 and A5.106.11.2.2 or a minimum aged Solar Reflectance Index (SRI) complying with Section A5.106.11.2.3 and as shown in Table A5.106.11.2.2 for Tier 1 or Table A5.106.11.2.3 for Tier 2.

**TABLE A5.106.11.2.1
VALUES OF SOILING RESISTANCE, β, BY PRODUCT TYPE**

PRODUCT TYPE	CRRC PRODUCT CATEGORY	β
Field-applied coating	Field-applied coating	0.65
Other	Not a field-applied coating	0.70

**TABLE A5.106.11.2.2 [BSC]
TIER 1**

ROOF SLOPE	CLIMATE ZONE	MINIMUM AGED SOLAR REFLECTANCE	THERMAL EMITTANCE	SRI
≤ 2:12	1-16	0.63	0.75	75
> 2:12	1-16	0.20	0.75	16

**TABLE A5.106.11.2.3 [BSC]
TIER 2**

ROOF SLOPE	CLIMATE ZONE	MINIMUM AGED SOLAR REFLECTANCE	THERMAL EMITTANCE	SRI
≤ 2:12	1-16	0.68	0.85	82
> 2:12	1-16	0.28	0.85	27

Division A5.2 – Energy Efficiency

Section A5.203 Performance Approach for Newly Constructed Buildings

1. Sec. A5.203.1 Performance Approach for Newly Constructed Buildings.

Sections A5.203.1 is not adopted as a Tier 1 and Tier 2 elective measure. New construction and substantial remodel projects are subject to the all-electric building/site requirements of PAMC 16.14.

Division A5.3 – WATER EFFICIENCY AND CONSERVATION

Section A5.303 Indoor Water Use

2. Sec A5.303.2.3.1 Tier 1 – 12-percent savings.



Tier 1 Mandatory

A schedule of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by 12 percent shall be provided. The reduction shall be based on the maximum allowable water use per plumbing fixture and fitting as required by the California Building Standards Code. The 12-percent reduction in potable water use shall be demonstrated by one of the following methods:

1. Prescriptive method. Each plumbing fixture and fitting shall not exceed the maximum flow rate at greater than or equal to 12-percent reduction as specified in Table A5.303.2.3.1; or
2. Performance method. A calculation demonstrating a 12-percent reduction in the building “water use baseline” as established in Table A5.303.2.2 shall be provided.

3. Sec.A5.303.2.3.2 Tier 2 – 20-percent savings.



Tier 2 Mandatory

A schedule of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by 20 percent shall be provided. A calculation demonstrating a 20-percent reduction in the building “water use baseline” as established in Table A5.303.2.2 shall be provided.

4. Sec. A5.303.2.3.3 25-percent savings.



A schedule of plumbing fixtures and fixture fittings that will reduce the over- all use of potable water within the building by 25 percent shall be provided. A calculation demonstrating a 25-percent reduction in the building “water use baseline” as established in Table A5.303.2.2 shall be provided.

5. Sec. A5.303.2.3.4 Nonpotable water systems for indoor use.



Utilizing nonpotable water systems (such as captured rainwater, treated graywater and recycled water) intended to supply water closets, urinals, and other allowed uses, may be used in the calculations demonstrating the 12-, 20- or 25-percent reduction. The non- potable water systems shall comply with the current edition of the California Plumbing Code.

6. Sec. A5.303.3 Appliances and fixtures for commercial application.



Appliances and fixtures shall meet the following:

1. Clothes washers shall have a maximum Water Factor (WF) that will reduce the use of water by 10 percent below the California Energy Commissions' WF standards for commercial clothes washers located in Title 20 of the California Code of Regulations.
2. Dishwashers shall meet the following water use standards:
 - a. Residential—ENERGY STAR.
 - i. Standard Dishwashers – 4.25 gallons per cycle.
 - ii. Compact Dishwashers – 3.5 gallons per cycle.
 - b. Commercial—Shall be in accordance with ENERGY STAR requirements. Refer to Table A5.303.3.
3. Ice makers shall be air cooled.
4. Food steamers shall be connectionless or boiler less – and shall consume no more than 2 gallons of water per pan per hour, including condensate water, for batch type steamers, and no more than 5 gallons of water per pan per hour, including condensate water, for cook to order steamers.
5. The use and installation of water softeners that discharge to the community sewer system may be limited or prohibited by local agencies if certain conditions are met.
6. Combination ovens shall use a maximum of 1.5 gallons of water per hour per pan, including condensate water.
7. Commercial pre-rinse spray valves manufactured on or after January 1, 2006 shall function at equal to or less than 1.6 gpm (0.10 L/s) at 60 psi (414 kPa) and
 - a. Be capable of cleaning 60 plates in an average time of not more than 30 seconds per plate.
 - b. Be equipped with an integral automatic shutoff.
 - c. Operate at static pressure of at least 30 psi (207 kPa) when designed for a flow rate of 1.3 gpm (0.08 L/s) or less.
8. Food waste pulping systems shall use no more than 2 gpm of potable water.
Note: potable water excludes on-site graywater use, such as dishwasher discharge water.

7. Sec A5.303.4.1 Nonwater supplied urinals.



Nonwater supplied urinals are installed in accordance with the California Plumbing Code. Where approved, urinal, hybrids as defined in Chapter 2, shall be considered waterless urinals.

8. Sec A5.303.4.1 A5.303.5 Dual plumbing.



New buildings and facilities shall be dual plumbed for potable and recycled water systems for toilet flushing when recycled water is available as determined by the enforcement authority.

See dual plumbing requirements in PAMC 16.12.035.

Section A5.304 Outdoor Water Use

9. Sec A5.304.6 Restoration of areas disturbed by construction.



Restore all landscape areas disturbed during construction by planting with local adaptive and/or noninvasive vegetation.

10. Sec A5.304.7 Previously developed sites.



On previously developed or graded sites, restore or protect at least 50 percent of the site area with adaptive and/or noninvasive vegetation. Projects complying with Section A5.106.3, Item 3 may apply vegetated roof surface to this calculation if the roof plants meet the definition of adaptive and noninvasive.

Exception: Area of the building footprint is excluded from the calculation.

11. Sec A5.304.8 Graywater irrigation system.



Install a graywater collection system for onsite subsurface irrigation using gray- water collected from bathtubs, showers, bathroom wash basins and laundry water. See California Plumbing Code.

Section A5.305 Water Reuse

12. Sec A5.305.1 Nonpotable water systems.



Nonpotable water systems for indoor and outdoor use shall comply with the current edition of the California Plumbing Code.

13. Sec A5.305.2 Irrigation systems.



Irrigation systems regulated by a local water efficient landscape ordinance or by the California Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO) shall use recycled water.

Division A5.4 – MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

Section A5.404 Efficient Framing Techniques

14. Sec A5.404.1 Wood framing.



Employ advanced wood framing techniques or OVE, as recommended by the U.S. Department of Energy's Office of Building Technology, State and Community Programs and as permitted by the enforcing agency.

15. Sec A5.404.1.1 Structural or fire-resistance integrity.



The OVE selected shall not conflict with structural framing methods or fire-rated assemblies required by the California Building Code.

16. Sec A5.404.1.2 Framing specifications.



Advanced framing techniques include the following:

1. Building design using 2-foot modules;
2. Spacing wall studs up to 24 inches on center;
3. Spacing floor and roof framing members up to 24 inches on center;
4. Using 2-stud corner framing and drywall clips or scrap lumber for drywall backing;
5. Eliminating solid headers in non-load-bearing walls;
6. Using in-line framing, aligning floor, wall and roof framing members vertically for direct transfer of loads; and
7. Using single lumber headers and top plates where appropriate.

Note: Additional information can be obtained from the U.S. DOE Energy Efficiency and Renewable Energy (EERE) website.

Section A5.405 Material Sources

17. Sec A5.405.1 Regional materials.



Compared to other products in a given product category, select building materials or products for permanent installation on the project that have been harvested or manufactured in California or within 500 miles of the project site.

1. For those materials locally manufactured, select materials manufactured using low embodied energy or those that will result in net energy savings over their useful life.
2. Regional materials shall make up at least 10 percent, based on cost, of total materials value.
3. If regional materials make up only part of a product, their values are calculated as percentages based on weight.
4. Provide documentation of the origin, net projected energy savings and value of regional materials.

18. Sec A5.405.2 Bio-based materials.



Select bio-based building materials and products made from solid wood, engineered wood, bamboo, wool, cotton, cork, straw, natural fibers, products made from crops (soy-based, corn-based) and other bio-based materials with at least 50-percent bio-based content.

~~19. Sec A5.405.2.1 Certified wood.~~



~~Certified wood is an important component of green building strategies and the California Building Standards Commission will continue to develop a standard through the next code cycle.~~

20. Sec A5.405.2.2 Rapidly renewable materials.



Use materials made from plants harvested within a ten-year cycle for at least 2.5 percent of total materials value, based on estimated cost.

21. Sec. A5.405.3 Reused materials.



Use salvaged, refurbished, refinished, or reused materials for a minimum of 5 percent of the total value, based on estimated cost of materials on the project. Provide documentation as to the respective values.

Note: Sources of some reused materials can be found at CalRecycle. See also Appendix A5, Division A5.1, Section A5.105.1 for on-site materials reuse.

22. Sec A5.405.4 Recycled content.



Tier 1 and Tier 2 Mandatory

Comply with the requirements for recycled content in Section A5.405.4.

Tier 1. The RCV shall not be less than 10 percent of the total material cost of the project, or use two products

which meet the minimum recycled content levels in Table A5.405.4 for at least 75%, by cost, of all products in that category in the project.

Required Total RCV (dollars) = Total Material Cost (dollars) × 10 percent (Equation A5. 4-1)

Tier 2. The RCV shall not be less than 15 percent of the total material cost of the project, or use three products which meet the minimum recycled content levels in Table A5.405.4 for at least 75%, by cost, of all products in that category in the project.

Required Total RCV (dollars) = Total Material Cost (dollars) × 15 percent (Equation A5. 4-2)

For the purposes of this section, materials used as components of the structural frame shall not be used to calculate recycled content. The structural frame includes the load bearing structural elements such as wall studs, plates, sills, columns, beams, girders, joists, rafters and trusses.

Notes:

1. *Sample forms which allow user input and automatic calculation are located at www.hcd.ca.gov/CALGreen.html and may be used to simplify documenting compliance with this section and for calculating recycled content value of materials or assembly products.*
2. *Sources and recycled content of some recycled materials can be obtained from CalRecycle if not provided by the manufacturer.*

23. Sec A5.405.4.5 Alternate method for concrete.



When Supplementary Cementitious Materials (SCMs), such as fly ash or ground blast furnace slag cement, are used in concrete, an alternate method of calculating and reporting recycled content in concrete products shall be permitted. When determining the recycled content value, the percent recycled content shall be multiplied by the cost of the cementitious materials only, not the total cost of the concrete.

24. PAMC 16.14.400 Sec A5.405.5 Cement and Concrete



Section A5.405.5 is adopted as a mandatory measure for all Tier 1 and Tier 2 projects and is amended to outline local low carbon concrete requirements. Use cement and concrete made with recycled products and complying with the following sections and requirements. Full requirements listed in PAMC 16.14.240.

Two pathways of Compliance (the Cement Limit Pathway and the Embodied Carbon Pathway) are represented in Table A4.403.2.3.

Submit the applicable compliance form to the building department for plan review. The form should be accompanied by proof of mix design ideally placed on and/or attached to structural sheets. Sample mix specifications for compliance can be found on the StopWaste webpage: <https://www.stopwaste.org/concrete>.

Table A4.403.2.3 Cement and Embodied Carbon Limit Pathways

	Cement limits for use with any compliance method A4.403.2.3.2 to A4.403.2.3.5	Embodied Carbon limits for use with any compliance method A4.403.2.3.2 to A4.403.2.3.5
Minimum specified compressive strength f_c , psi (1)	Maximum ordinary Portland cement content, lbs/yd³ (2)	Maximum embodied carbon kg CO ₂ e/m ³ , per EPD
up to 2500	362	260
3000	410	289
4000	456	313
5000	503	338
6000	531	356
7000	594	394
7001 and higher	657	433
up to 3000 light weight	512	578
4000 light weight	571	626
5000 light weight	629	675
Notes		
(1) For concrete strengths between the stated values, use linear interpolation to determine cement and/or embodied carbon limits.		
(2) Portland cement of any type per ASTM C150.		

25. A5.405.5.1 Cement.

Cement shall comply with one of the following standards:

1. Portland cement shall meet ASTM C150, Standard Specification for Portland Cement.
2. Blended cement shall meet ASTM C595, Standard Specification for Blended Hydraulic Cement or ASTM C1157, Standard Performance Specification for Hydraulic Cement.
3. Other Hydraulic Cements shall meet ASTM C1157, Standard Performance Specification for Hydraulic Cement.

26. Sec A5.405.5.2 Concrete.

Unless otherwise directed by the Engineer of Record, use concrete manufactured with cementitious materials in accordance with Sections A5.405.5.2.1 and A5.405.5.2.1.1, as approved by the enforcing agency.

- a. **A5.405.5.2.1 Supplementary cementitious materials (SCM).** Use concrete made with one or more supplementary cementitious materials (SCM) conforming to the following standards:
 1. Fly ash conforming to ASTM C618, Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
 2. Slag cement (GGBFS) conforming to ASTM C989, Specification for Use in Concrete and Mortars.
 3. Silica fume conforming to ASTM C1240, Specification for Silica Fume Used in Cementitious Mixtures.
 4. Natural pozzolan conforming to ASTM C618, Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
 5. Blended supplementary cementitious materials conforming to ASTM C1697, Standard Specification for Blended Supplementary Cementitious Materials. The amount of each SCM in the blend will be used separately in calculating Equation A5.4-1. If Class C fly ash is used in the blend, it will be considered to be "SL" for the purposes of satisfying the equation.
 6. Ultra-fine fly ash (UFFA) conforming to ASTM C618, Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete and the following chemical and physical requirements in the table listed in A5.405.5.2.1.
 7. Metakaolin conforming to ASTM C618, Specification for Coal Fly Ash and Raw or Calcined

Natural Pozzolan for Use in Concrete, the following chemical and physical requirement listed in the table in A5.405.5.2.1.

8. Other materials with comparable or superior environmental benefits, as approved by the Engineer of Record and enforcing authority.

27. Sec A5.405.5.3 Additional means of compliance.



Any of the following measures shall be permitted to be employed for the production of cement or concrete, depending on their availability and suitability, in conjunction with Section A5.405.5.2.

28. Sec A5.405.5.3.1 Cement.



The following measures shall be permitted to be used in the manufacture of cement.

- a. **A5.405.5.3.1.1 Alternative fuels.** The use of alternative fuels where permitted by state or local air quality standards.
- b. **A5.405.5.3.1.2 Alternative power.** Alternate electric power generated at the cement plant and/or green power purchased from the utility meeting the requirements of Section A5.211.

29. Sec A5.405.5.3.2 Concrete.



The following measures shall be permitted to be used in the manufacture of concrete.

- a. **A5.405.5.3.2.1 Alternative energy.** Renewable or alternative energy meeting the requirements of Section A5.211.
- b. **A5.405.5.3.2.2 Recycled aggregates.** Concrete made with one or more of the following materials:
 - a. Blast furnace slag as a lightweight aggregate in unreinforced concrete.
 - b. Recycled concrete that meets grading requirements of ASTM C33, Standard Specification for Concrete Aggregates. Other materials with comparable or superior environmental benefits, as approved by the engineer and enforcing authority.
- c. **A5.405.5.3.2.3 Mixing water.** Water recycled by the local water purveyor or water reclaimed from manufacturing processes and conforming to ASTM C1602, Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.
- d. **A5.405.5.3.2.4 High strength concrete.** Concrete elements designed to reduce their total size compared to standard 3,000 psi concrete, thereby reducing the total volume of cement, aggregate and water used on the project, as approved by the Engineer of Record.

Section A5.406 Enhanced Durability and Reduced Maintenance

30. Sec A5.406.1 Choice of materials.



Compared to other products in a given product category, choose materials proven to be characterized by one or more of the following:

- a. **A5.406.1.1 Service life.** Select materials for longevity and minimal deterioration under conditions of use.
- b. **A5.406.1.2 Reduced maintenance.** Select materials that require little, if any, finishing. For those with surface protection, choose materials that do not require frequent applications of toxic or malodorous finishes.
- c. **A5.406.1.3 Recyclability.** Select materials that can be reused or recycled at the end of their service life in the project.

Section A5.409 Life Cycle Assessment

31. Sec A5.409.1 General.



Life cycle assessment shall be ISO 14044 compliant. The service life of the building and materials assemblies shall not be less than 60 years unless designated in the construction documents as having a shorter service life as approved by the enforcing agency.

32. Sec A5.409.2 Whole building life cycle assessment.



Conduct a whole building life assessment, including operating energy, showing that the building project achieves at least a 10 percent improvement for at least three of the impacts listed in Section A5.409.2.2, one of which shall be climate change, compared to a reference building of similar size, function, complexity and operating energy performance, and meeting the 2016 California Energy Code at a minimum.

- a. **A5.409.2.1 Building components.** The building envelope, structural elements, including footings and foundations, interior ceilings, walls, and floors; and exterior finishes shall be considered in the assessment.

Exceptions:

1. *Plumbing, mechanical and electrical systems and controls; fire and smoke detection and alarm systems and controls; and conveying systems.*
2. *Interior finishes are not required to be included.*
- b. **A5.409.2.2 Impacts to be considered.** Select from the following impacts in the assessment:
 1. Climate change (greenhouse gases).
 2. Fossil fuel depletion.
 3. Stratospheric ozone depletion.
 4. Acidification of land and water sources.
 5. Eutrophication.
 6. Photochemical oxidants (smog).

33. Sec A5.409.3 Materials and system assemblies.



If whole building analysis of the project is not elected, select a minimum of 50 percent of materials or assemblies based on life cycle assessment of at least three of the impacts listed in Section A5.409.2.2, one of which shall be climate change.

Note: Software for calculating life cycle assessments for assemblies and materials may be found at the Athena Institute web site and the NIST BEES website.

34. Sec A5.409.4 Substitution for prescriptive standards.



Performance of a life cycle assessment completed in accordance with Section A5.409.2 may be substituted for other prescriptive Material Conservation and Resource Efficiency provisions of Division A5.4, including those made mandatory through local adoption of Tier 1 or Tier 2 in Division A5.6.

Division A5.5 – ENVIRONMENTAL QUALITY

Section A5.504 Pollutant Control

35. Sec A5.504.1 Indoor air quality (IAQ) during construction.



Maintain IAQ as provided in Sections A5.504.1.1 and A5.504.1.2.

36. Sec A5.504.1.1 Temporary ventilation.



Provide temporary ventilation during construction in accordance with Section 120.1 (Requirements for Ventilation) of the California Energy Code, CCR, Title 24, Part 6 and Chapter 4 of CCR, Title 8 and as follows:

1. Ventilation during construction shall be achieved through openings in the building shell using fans to produce a minimum of three air changes per hour.
2. If the building is occupied during demolition or construction, meet or exceed the recommended Control Measures of the Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 1995, Chapter 3.

37. Sec A5.504.1.2 Additional IAQ measures.



Employ additional measures as follows:

1. When using generators to generate temporary power, use generators meeting the requirements of CCR, Title 13, Chapter 9 or local ordinance, whichever is more stringent.
2. Protect on-site absorbent materials from moisture. Remove and replace any materials with evidence of mold, mildew or moisture infiltration.
3. Store odorous and high VOC-emitting materials off-site, without packaging, for a sufficient period to allow odors and VOCs to disperse.
4. When possible, once materials are on the jobsite, install odorous and high VOC-emitting materials prior to those that are porous or fibrous.
5. Clean oil and dust from ducts prior to use.

38. Sec A5.504.2 IAQ postconstruction.



After all interior finishes have been installed, flush out the building by supplying continuous ventilation with all air handling units at their maximum outdoor air rate and all supply fans at their maximum position and rate for at least 14 days.

1. During this time, maintain an internal temperature of at least 60°F and relative humidity no higher than 60 percent. If extenuating circumstances make these temperature and humidity limits unachievable, the flush-out may be conducted under conditions as close as possible to these limits, provided that documentation of the extenuating circumstances is provided in writing.
2. Occupancy may start after 4 days, provided flush-out continues for the full 14 days. During occupied times, the thermal comfort conditions of Title 24 must be met.
3. For buildings that rely on natural ventilation, exhaust fans and floor fans must be used to improve air mixing and removal during the 14-day flush-out and windows should remain open.
4. Do not "bake out" the building by increasing the temperature of the space.
5. If continuous ventilation is not possible, flush-out air must total the equivalent of 14 days of maximum outdoor air. The equivalent of 14 days of maximum outdoor air (the target air volume) shall be

calculated by multiplying the maximum feasible air flow rate (in ft³/ m) by 14 days (20,160 minutes). The air volumes for each period of ventilation are then calculated and summed and the flush-out continues until the total equals the target air volume.

39. Sec A5.504.2.1 IAQ testing.



If the engineer determines that building flush-out pursuant to Section A5.504.2 is not feasible, a testing alternative may be employed after all interior finishes have been installed, using testing protocols recognized by the United States Environmental Protection Agency (U.S. EPA).

40. Sec A5.504.2.1.1 Maximum levels of contaminants.



Allowable levels of contaminant concentrations measured by testing shall not exceed the following:

1. Carbon Monoxide (CO): 9 parts per million, not to exceed outdoor levels by 2 parts per million;
2. Formaldehyde: 27 parts per billion;
3. Particulates (PM10): 50 micrograms per cubic meter;
4. 4-Phenylcyclohexene (4-PCH), if fabrics and car- pets with styrene butadiene rubber (SBR) latex backing, are installed: 6.5 micrograms per cubic meter; and
5. Total Volatile Organic Compounds (TVOC): 300 micrograms per cubic meter.

41. Sec A5.504.2.1.2 Test protocols.



Testing of indoor air quality should include the following elements:

1. The contaminant sampling and averaging times and the measurement methods should be sufficient to achieve a Limit of Detection that is below the maximum allowable concentrations.
2. Testing should be conducted with the HVAC system operated at the minimum design outdoor air ventilation rate.
3. Air samplers and monitors should be located near likely sources of formaldehyde and other volatile organic compounds, at a height of 3 to 6 feet from the floor and well away from walls and air diffusers.
4. The test protocols should be justified with documentation to show that appropriate sampling methods and times were used.

42. Sec A5.504.2.1.3 Noncomplying building areas.



For each sampling area of the building exceeding the maximum concentrations specified in Section A5.504.2.1.1, flush out with outside air and retest samples taken from the same area. Repeat the procedures until testing demonstrates compliance.

Note: U.S. EPA-recognized testing protocols may be found on the Air Resources Board web site.

43. Sec A5.504.4.5.1 No added formaldehyde Tier 1.



Use composite wood products approved by the California Air Resources Board (ARB) as no-added formaldehyde (NAF) based resins or ultra-low emitting formaldehyde (ULEF) resins.

44. Sec A5.504.4.7 Resilient flooring systems, Tier 1.

*Tier 1 Mandatory*

For 90 percent of floor area receiving resilient flooring, install resilient flooring that is:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

45. Sec A5.504.4.7.1 Resilient flooring systems, Tier 2.

*Tier 2 Mandatory*

For 100 percent of floor area receiving resilient flooring, install resilient flooring that is:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

Exception: Allowance may be permitted in Tier 2 for up to 5-percent specialty purpose flooring.

46. Sec A5.504.4.8 Thermal insulation, Tier 1.

*Tier 1 Mandatory*

Comply with the following standards:

1. Chapters 12-13 (Standards for Insulating Material) in Title 24, Part 12, the California Referenced Standards Code,
2. The VOC-emission limits defined in 2014 CA- CHPS criteria and listed on its High Performance Products Database.
3. California Department of Public Health 2010 Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as Specification 01350.)

47. Sec A5.504.4.8.1 Thermal insulation, Tier 2.

*Tier 2 Mandatory*

Thermal insulation, No-added Formaldehyde. Install thermal insulation which complies with Tier 1 plus does not contain any added formaldehyde.

48. Sec A5.504.4.9 Acoustical ceilings and wall panels.



Comply with Chapter 8 in Title 24, Part 2, the California Building Code and with the VOC-emission limits defined in the 2009 CHPS criteria and listed on its High Performance Products Database.

49. Sec A5.504.5 Hazardous particulates and chemical pollutants.



Minimize and control pollutant entry into buildings and cross-contamination of regularly occupied areas.

50. Sec A5.504.5.1 Entryway systems.



Install permanent entry- way systems measuring at least six feet in the primary direction of travel to capture dirt and particulates at entry- ways directly connected to the outdoors.

1. Qualifying entryways are those that serve as regular entry points for building users.
2. Acceptable entryway systems include, but are not limited to, permanently installed grates, grilles or slotted systems that allow cleaning underneath.
3. Roll-out mats are acceptable only when maintained regularly by janitorial contractors as documented in service contract or by in-house staff as documented by written policies and procedures.

51. Sec A5.504.5.2 Isolation of pollutant sources.



In rooms where activities produce hazardous fumes or chemicals, such as garages, janitorial or laundry rooms and copy or printing rooms, exhaust them and isolate them from their adjacent rooms.

1. Exhaust each space with no air recirculation in accordance with ASHRAE 62.1, Table 6-4 to create negative pressure with respect to adjacent spaces with the doors to the room closed.
2. For each space, provide self-closing doors and deck to deck partitions or a hard ceiling. Install low-noise, vented range hoods for all cooking appliances and in laboratory or other chemical mixing areas.

Section A5.507 Environmental Comfort

52. Sec A5.507.1 Lighting and thermal comfort controls.



Provide controls in the workplace as described in Sections A5.507.1.1 and A5.507.1.2.

53. Sec a. A5.507.1.1 Single-occupant spaces.



Provide individual controls that meet energy use requirements in the California Energy Code in accordance with Sections A5.507.1.1.1 and A5.507.1.1.2.

- a. **A5.507.1.1.1 Lighting.** Provide individual task lighting and/or daylighting controls for at least 90 percent of the building occupants.
- b. **A5.507.1.1.2 Thermal comfort.** Provide individual thermal comfort controls for at least 50 percent of the building occupants.
 - a. Occupants shall have control over at least one of the factors of air temperature, radiant temperature, air speed and humidity as described in ASHRAE 55-2004.
 - b. Occupants inside 20 feet of the plane of and within 10 feet either side of operable windows can substitute windows to control thermal com- fort. The areas of operable window must meet the requirements of Section 120.1 (Requirement for Ventilation) of the California Energy Code.

54. Sec A5.507.1.2 Multi-occupant spaces.



Provide lighting and thermal comfort system controls for all shared multi-occupant spaces, such as classrooms and conference rooms. Provide supporting documentation in the plans.

55. Sec A5.507.2 Daylight.



Provide daylight spaces as required for top- lighting and sidelighting in the California Energy Code. Provide daylighting analysis or supporting documentation in the plans. In constructing a design, consider the following.

1. Use of light shelves and reflective room surfaces to maximize daylight penetrating the rooms
2. Means to eliminate glare and direct sun light, including through skylights
3. Use of photosensors to turn off electric lighting when daylight is sufficient
4. Not using diffuse daylighting glazing where views are desired

Notes: Exceptions to Sections A5.507.2 and A5.507.3. Copy/ printing rooms, storage areas, mechanical spaces, rest- rooms, auditoria and other intermittently or infrequently occupied spaces or spaces where daylight would interfere with use of the space.

56. Sec A5.507.3 Views.



Achieve direct line of sight to the outdoor environment via vision glazing between 2 feet 6 inches and 7 feet 6 inches above finish floor for building occupants in 90 percent of all regularly occupied areas as demonstrated by plan view and section cut diagrams. Provide view analysis and calculations on plans.

Notes: Exceptions to Sections A5.507.2 and A5.507.3. Copy/ printing rooms, storage areas, mechanical spaces, rest- rooms, auditoria and other intermittently or infrequently occupied spaces or spaces where daylight would interfere with use of the space.

57. Sec A5.507.3.1 Interior office spaces.



Entire areas of interior office spaces may be included in the calculation if at least 75 percent of each area has direct line of sight to perimeter vision glazing

58. Sec A5.507.3.2 Multi-occupant spaces.



Include in the calculation the square footage with direct line of sight to perimeter vision glazing.

Section A5.508 Outdoor Air Quality

59. Sec A5.508.1.3 Hydrochlorofluorocarbons (HCFCs).



Install HVAC and refrigeration equipment that do not contain HCFCs.

60. Sec A5.508.1.4 Hydrofluorocarbons (HFCs).



Install HVAC complying with either of the following:

1. Install HVAC, refrigeration and fire suppression equipment that do not contain HFCs or that do not contain HFCs with a global warming potential greater than 150.
2. Install HVAC and refrigeration equipment that limit the use of HFC refrigerant through the use of a secondary heat transfer fluid with a global warming potential no greater than 1.