FINAL EXPRESS TERMS

FOR

PROPOSED BUILDING STANDARDS

OF THE

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

REGARDING ADOPTION OF AMENDMENTS TO THE 2010 CALIFORNIA BUILDING STANDARDS CODE, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR), PARTS 1, 2, 3, 4, 5 AND 6 INTO TITLE 24, CCR, PART 11, CALIFORNIA GREEN BUILDING STANDARDS CODE

- The Department of Housing and Community Development (HCD) proposes to adopt the 2010 edition of the California Green Building Standards Code (CGBC) with amendments as presented on the following pages.

LEGEND FOR EXPRESS TERMS:

1. **Existing California amendments or code language being modified**: **All language will appear in normal Arial 9 point, modified language is underlined or shown in ~~strikeout~~.**

2. **Repealed text**: **All language appears in ~~strikeout.~~**

3. **Notation: Authority and Reference citations are provided at the end of each chapter.**

Adopt new text as follows:

Part 1 – Chapter 2, Article 2-1

2-101. Scope. The Department of Housing and Community (HCD) shall develop and propose for adoption to the California Building Standards Commission green building standards related to methods, materials, or processes not under the authority of another State agency. HCD also may review and comment on proposals and proposed standards developed by other agencies in order to reduce or eliminate ambiguities or conflicts with HCD's residential standards or authority. The green building standards developed and proposed by HCD would be applicable for residential occupancies including, but not limited to, hotels, motels, lodging houses, apartment houses, dwellings, dormitories, condominiums, shelters for homeless persons, congregate residences, employee housing, factory-built housing and other types of dwellings containing sleeping accommodations with or without common toilets or cooking facilities. The administrative procedures for developing and proposing those standards shall be consistent with this article.

2-102. Development of Standards. (a) In developing green building standards, the Department of Housing and Community Development shall consult with State entities appropriate for specific standards including, but not limited to, the following State agencies:

1. The California Department of Resource Recycling and Recovery
2. The California Energy Resources Conservation and Development Commission.
3. The California Air Resources Board.
4. The California Department of Water Resources.
5. The California Department of Transportation.
6. The California Department of General Services.
7. The California Department of Public Health.
8. Office of the State Fire Marshal.

(b) HCD also shall consult with representatives from each of the following:

1. Environmental advocacy groups.
2. Interested city, county, or city and county government and code enforcement entities.
3. The building construction and design industry.
4. Interested public parties.

(c) HCD may consult with and seek input from the entities and representatives identified in subsections (a) and (b) either by written comment or in a meeting format and shall consider all input provided during the development of the green building standards which is relevant to specific standards. HCD shall provide written responses to formal comments received during the public comment period for any proposed green building standard.

Parts 2, 3, 4, 5 and 6 into CCR, Title 24, Part 11:

PREFACE

This document is ~~Part 11~~ the 11th of 12 parts of the official compilation and publication of the adoptions, amendments and repeal of regulations to California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This Part is known as the California Green Building Standards Code.

The California Building Standards Code is published in its entirety every three years by order of the California Legislature. The California Legislature delegated authority to various State agencies, boards, commissions and departments to create building regulations to implement the ~~s~~State's statutes. These building regulations or standards have the same force of law, and take effect 180 days after their publication unless otherwise stipulated. The California Building Standards Code applies to all occupancies in the State of California as annotated.

A city, county or city and county may ~~make necessary changes to the provisions contained in this code which are~~ establish more restrictive standards reasonably necessary because of local climatic, geological, or topographical conditions. For the purpose of this code, these conditions include local environmental conditions as established by a city, county, or city and county. Findings of the local condition(s) and the adopted local building standard(s) must be filed with the California Building Standards Commission to become effective and may not be effective sooner than the effective date of this edition of the California Building Standards Code. ~~B~~Local building standards that were adopted ~~by local ordinance~~ and applicable to previous editions of the California Building Standards Code do not apply to this edition without appropriate adoption and the required filing.

Should you find publication (e.g., typographical) errors or inconsistencies in this code or wish to offer comments toward improving its format, please address your comments to:

California Building Standards Commission
2525 Natomas Park Drive, Suite 130
Sacramento, CA 95833-2935
Phone: (916) 263-0916
Fax: (916) 263-0959

Website: www.bsc.ca.gov

EFFECTIVE USE OF THIS CODE

The format of this code is common to other parts of the California Building Standards Code and contains building standards applicable to occupancies which fall under the authority of different State agencies. Occupancies and applications under the authority of a specific State agency are identified in Chapter 1, Sections 103 through 106. Sections of this code which are applicable and adopted by each State agency are identified in the ~~Application~~ Matrix Adoption Tables located at the beginning of each chapter ~~for each state agency contained in Chapter 11~~. The following outline ~~may be helpful~~ is provided as a guide to establish which provisions are applicable to a specific occupancy.

1. Establish the type of occupancy.
2. Verify which State agency has authority for the established occupancy by reviewing the authorities list in Sections 103 through 106.
3. Once the appropriate agency has been identified, find ~~the application matrix for that agency in Chapter 11~~ the chapter which covers the established occupancy.
4. The ~~application~~ Matrix Adoption Tables at the beginning of Chapters 4 and 5 will ~~list~~ identify the mandatory green building measures necessary to meet the minimum requirements of this code ~~adopted, provide the effective date and other information regarding each green building measure applicable to~~ for the established occupancy.
5. Voluntary tier measures are contained in Appendix Chapters A4 and A5. A Checklist containing each ~~Each~~ green building measure, both mandatory and voluntary is provided at the end of each appendix chapter. Each measure listed in the application ~~matrix~~ checklist has a section number which correlates ~~with a section number in Chapters 4 through 8~~ to a section where more information about the specific measure is available.
6. ~~More information is available for each green building measure listed in the application matrix in the correlated sections contained in Chapters 4 through 8.~~ The Application Checklist identifies which measures are mandatory by this code and allows users to check-off which voluntary items have been selected to meet voluntary tier levels if desired or mandated by a city, county, or city and county.

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CHAPTER 1

ADMINISTRATION

SECTION 101
GENERAL

101.1 Title. These regulations shall be known as the California Green Building Standards Code and may be cited as such and will be referred to herein as "this code". The California Green Building Standards Code is Part 11 of twelve parts of the official compilation and publication of the adoption, amendment and repeal of building regulations to the California Code of Regulations, Title 24, also referred to as the California Building Standards Code.

101.2 Purpose. The purpose of this code is to improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact, or positive environmental impact and encouraging sustainable construction practices in the following categories:

1. Planning and design.
2. Energy efficiency.
3. Water efficiency and conservation.
4. Material conservation and resource efficiency.
5. Environmental quality.

101.3 Scope. The provisions of this code shall apply to the planning, design, operation, construction, ~~replacement,~~ use and occupancy~~, location, maintenance, removal and demolition~~ of every newly constructed building or structure, ~~or any appurtenances connected or attached to such building structures~~ unless otherwise indicated in this code, throughout the State of California.

It is not the intent ~~of the California Building Standards Commission~~ that this code substitute or be identified as meeting the certification requirements of any green building program ~~that is not established and adopted by the California Building Standards Commission~~.

101.3.1 State-regulated buildings, structures and applications. Provisions of this code shall apply to the following buildings, structures, and applications regulated by State agencies as referenced in the Matrix Adoption Tables and as specified in Sections 103 through 106, except where modified by local ordinance pursuant to Section 101.7. When adopted by a State agency, the provisions of this code shall be enforced by the appropriate enforcing agency, but only to the extent of authority granted to such agency by ~~the State Legislature~~ statute.

1. State-owned buildings, including buildings constructed by the Trustees of the California State University, and to the extent permitted by California laws, buildings designed and constructed by the Regents of the University of California and regulated by the Building Standards Commission. See Section 103 for additional scoping provisions.
2. Energy efficiency standards regulated by the California Energy Commission
3. Low-rise residential buildings constructed throughout the State of California, including, but not limited to, hotels, motels, lodging houses, apartment houses, dwellings, dormitories, condominiums, shelters for homeless persons, congregate residences, employee housing, factory-built housing and other types of dwellings containing sleeping accommodations with or without common toilets or cooking facilities regulated by the Department of Housing and Community Development. See Section 104 for additional scoping provisions.
4. Public elementary and secondary schools, and community college buildings regulated by the Division of the State Architect. See Section 105 for additional scope provisions.
5. Qualified historical buildings and structures and their associated sites regulated by the State Historical Building Safety Board within the Division of the State Architect.
6. General acute care hospitals, acute psychiatric hospitals, skilled nursing and/or intermediate care facilities, clinics licensed by the Department of Public Health and correctional treatment centers regulated by the Office of Statewide Health Planning and Development. See Section 106 for additional scoping provisions.
7. Graywater systems regulated by the Department of Water Resources and the Department of Housing and Community Development.

101.4 Appendices. Provisions contained in the appendices of this code ~~shall not apply~~ are not mandatory unless specifically adopted by a State agency or adopted by a ~~local enforcing agency~~ city, county, or city and county in compliance with Health and Safety Code Section 18938 (b) for Building Standards Law, Health and Safety Code Section 17950 for State Housing Law and Health and Safety Code Section 13869.7 for Fire Protection Districts. See Section 101.7 of this code.

101.5 Referenced codes and standards. The codes and standards referenced elsewhere in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference.

101.5.1 Building. The provisions of the California Building Code and California Residential Code, as applicable, shall apply to the construction, alteration, movement, enlargement, replacement, repair, use and occupancy, location, maintenance, removal and demolition of every structure or any appurtenances connected or attached to such buildings or structures.

101.5.2 Electrical. The provisions of the California Electrical Code shall apply to the installation of electrical systems, including, but not limited to, alterations, repair, replacement, equipment, appliances, fixtures, fittings and appurtenances thereto.

101.5.3 Mechanical. The provisions of the California Mechanical Code shall apply to the installation, alterations, repair and replacement of mechanical systems, including equipment, appliances, fixtures, fittings and/or appurtenances, including ventilating, heating, cooling, air-conditioning and refrigeration systems, incinerators and other energy-related systems.

101.5.4 Plumbing. The provisions of the California Plumbing Code shall apply to the installation, alteration, repair and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances where connected to a water or sewage system.

101.5.5 Fire prevention. The provisions of CCR, Title 19, Division 1 and CCR, Title 24, Part 2 and Part 9 relating to fire and panic safety as adopted by the Office of the State Fire Marshal shall apply to all structures, processes and premises for protection from the hazard of fire, panic and explosion.

101.5.6 Energy. The provisions of the California Energy Code shall apply to the minimum design and construction of buildings for energy efficiency.

101.6 Order of precedence and use.

101.6.1 Differences. In the event of any differences between these building standards and the standard reference documents, the text of these building standards shall govern. In the event a local amendment to this code results in differences between these building standards and the amendment, the text of the amendment shall govern.

101.6.2 Specific provision. Where a specific provision varies from a general provision, the specific provision shall apply.

101.6.3 Conflicts. When the requirements of this code conflict with the requirements of any other part of the California Building Standards Code, Title 24, the most restrictive requirement shall prevail.

101.6.4 Explanatory notes. Explanatory material, such as references to websites or other sources where additional information may be found, is included in this code in the form of notes. Notes are informational only and are not enforceable requirements of this code.

101.7 City, county, or city and county amendments, additions or deletions. ~~It is the intent of the California Building Standards Commission, by adopting this~~ This code is intended to set mandatory minimum Green Building Standards and include optional tiers that may, at the discretion of any ~~local government entity~~ city, county, or city and county, be applied. ~~It is the further intent of the California Building Standards Commission that all entities subject to this code view these standards as minimal Green Building Standards and that local government entities retain their discretion to exceed the standards established by this code. It is the further intent of the California Building Standards Commission to encourage state and local government entities, private entities and interested members of the public to provide the Commission with input regarding the efficacy of this code, in order to assist the Commission in preparing mandatory Green Building Standards during the next code cycle.~~

This code does not limit the authority of city, county, or city and county governments to make necessary changes to the provisions contained in this code pursuant to Section 101.7.1. The effective date of amendments, additions, or deletions to this code ~~of~~ for cities, counties, or city and counties filed pursuant to Section ~~101.8.1~~ 101.7.1 shall be the date on which it is filed. However, in no case shall the amendments, additions or deletions to this code be effective any sooner than the effective date of this code.

Local modifications shall comply with Health and Safety Code Section 18941.5(b) for Building Standards Law, Health and Safety Code Section 17958.5 for State Housing Law or Health and Safety Code Section 13869.7 for Fire Protection Districts.

101.7.1 Findings and filings.

1. The city, county, or city and county shall make express findings for each amendment, addition or deletion based upon climatic, topographical, or geological conditions. For the purpose of this section, climatic, topographical, or geological conditions include environmental conditions as established by the city, county, or city and county.
2. The city, county, or city and county shall file the amendments, additions, or deletions expressly marked and identified as to the applicable findings. Cities, counties, cities and counties, and fire departments shall file the amendments, additions or deletions and the findings with the California Building Standards Commission at 2525 Natomas Park Drive, Suite 130, Sacramento, CA 95833.
3. Findings prepared by fire protection districts shall be ratified by the local city, county, or city and county and filed with the California Department of Housing and Community Development at 1800 3rd Street, Room 260, Sacramento, CA 95811.
4. The city, county, or city and county shall obtain California Energy Commission approval for any energy related ordinances consistent with ~~PRC~~ Public Resources Code Section 25402.1(h)(2) and Title 24, Part 1, Section 10-106. Local governmental agencies may adopt and enforce energy standards for newly constructed buildings, additions, alterations, and repairs provided the California Energy Commission finds that the standards will require buildings to be designed to consume~~r~~ no more energy than permitted by Part 6. Such local standards include, but are not limited to, adopting the requirements of Part 6 before their effective date, requiring additional energy conservation measures, or setting more stringent energy budgets.

101.8 Alternate materials, designs and methods of construction. The provisions of this code are not intended to prevent the use of any alternate material, appliance, installation, device, arrangement, method, design or method of construction not specifically prescribed by this code provided that any such alternative has been approved. An alternate shall be approved on a case-by-case basis where the enforcing agency finds that the proposed alternate is satisfactory and complies with the intent of the provisions of this code and is at least the equivalent of that prescribed in this code in planning and design, energy, water, material, resource efficiency and conservation, environmental air quality, performance, safety, and the protection of life and health. Consideration and compliance provisions for occupancies regulated by adopting State agencies are found in the sections listed below.

1. Section 104.11, Appendix Chapter 1, 2007 California Building Code (CBC) for the California Building Standards Commission and the Division of the State Architect.
2. Section ~~108.7.2~~ 1.8.7, Chapter 1, Administration, Division 1, of the 2010 California Building Code ~~CBC~~ and Section 1.2.6, Chapter 1, Administration, Division 1, of the 2010 California Residential Code for the Department of Housing and Community Development.
3. Section 7-104, 2007 California Administrative Code for the Office of the Statewide Health Planning and Development.

101.9 Effective date of this code. Only those standards approved by the California Building Standards Commission that are effective at the time an application for a building permit is submitted shall apply to the plans and specifications for, and to the construction performed under, that permit. For the effective dates of the provisions contained in this code, see the appropriate application ~~matrix~~ checklist and the History Note page of this code ~~and the History Note page of this code~~.

101.10 Mandatory requirements. This code contains both mandatory and voluntary ~~and mandatory~~ green building measures. Mandatory and voluntary measures are identified in the appropriate application ~~matrix~~ checklist contained in ~~Chapter 11 of~~ this code.

101.11 Effective use of this code. The following steps shall be used to establish which provisions of this code are applicable to a specific occupancy:

1. Establish the type of occupancy.
2. Verify which State agency has authority for the established occupancy by reviewing the authorities list in Sections 103 through 106.
3. Once the appropriate agency has been identified, find ~~the application matrix for that agency in Chapter 11~~ the chapter which covers the established occupancy.
4. The ~~application~~ Matrix Adoption Tables at the beginning of Chapters 4 and 5 will ~~list~~ identify the mandatory green building measures necessary to meet the minimum requirements of this code ~~adopted, provide the effective date and other information regarding each green building measure applicable to~~ for the established occupancy.
5. Voluntary tier measures are contained in Appendix Chapters A4 and A5. A Checklist containing each ~~Each~~ green building measure, both mandatory and voluntary is provided at the end of each appendix chapter. Each measure listed in the application ~~matrix~~ checklist has a section number which correlates ~~with a section number in Chapters 4 through 8~~ to a section where more information about the specific measure is available.

6. ~~More information is available for each green building measure listed in the application matrix in the correlated sections contained in Chapters 4 through 8.~~ The Application Checklist identifies which measures are mandatory by this code and allows users to check-off which voluntary items have been selected to meet voluntary tier levels if desired or mandated by a city, county, or city and county.

SECTION 102
CONSTRUCTION DOCUMENTS AND INSTALLATION VERIFICATION

102.1 Submittal documents. Construction documents and other data shall be submitted in one or more sets with each application for a permit. Where special conditions exist, the enforcing agency is authorized to require additional construction documents to be prepared by a licensed design professional and may be submitted separately.

Exception: The enforcing agency is authorized to waive the submission of construction documents and other data not required to be prepared by a licensed design professional.

102.2 Information on construction documents. Construction documents shall be of sufficient clarity to indicate the location, nature and scope of the proposed green building feature and show that it will conform to the provisions of this code, the California Building Standards Code and other relevant laws, ordinances, rules and regulations as determined by the enforcing agency.

102.3 Verification. Documentation of conformance for applicable green building measures shall be provided to the enforcing agency. Alternate methods of documentation shall be acceptable when the enforcing agency finds that the proposed alternate documentation is satisfactory to demonstrate substantial conformance with the intent of the proposed green building measure.

SECTION 104
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

104.1 Specific scope of application of the agency responsible for enforcement, the enforcement agency, and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.

1. **Housing construction.** Application – Hotels, motels, lodging houses, apartment houses, dwellings, dormitories, condominiums, shelters for homeless persons, congregate residences, employee housing, factory-built housing and other types of dwellings containing sleeping accommodations with or without common toilet or cooking facilities including accessory buildings, facilities and uses thereto. Sections of this code which pertain to applications listed in this section are identified in the Matrix Adoption Table using the abbreviation "HCD 1."

   Enforcing agency—Local building department or the Department of Housing and Community Development.

   Authority Cited—Health and Safety Code Sections 17921, 17922 and 19990.
   Reference—Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

CHAPTER 2

DEFINITIONS

SECTION 201
GENERAL

201.1 Scope. Unless otherwise stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

201.2 Interchangeability. Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

201.3 Terms defined in other documents. Where terms are not defined in this code and are defined in the California Building Standards Code or other referenced documents, such terms shall have the meanings ascribed to them as in those publications.

201.4 Terms not defined. Where terms are not defined as specified in this section, such terms shall have ordinarily accepted meanings such as the context implies.

SECTION 202
DEFINITIONS

AUTOMATIC. Automatic means capable of operating without human intervention.

BUILDING ENVELOPE. The ensemble of exterior and demising partitions of a building that enclose conditioned space.

CALIFORNIA BUILDING CODE. The current version of the California Building Code.

CALIFORNIA ELECTRICAL CODE. The current version of the California Electrical Code.

CALIFORNIA ENERGY CODE. The current version of the California Energy Code unless otherwise specified.

CALIFORNIA MECHANICAL CODE. The current version of the California Mechanical Code.

CALIFORNIA PLUMBING CODE. The current version of the California Plumbing Code.

CALIFORNIA RESIDENTIAL CODE. The current version of the California Residential Code.

CONDITIONED FLOOR AREA. The floor area (in square feet) of enclosed conditioned space on all floors of a building, as measured at the floor level of the exterior surfaces of exterior walls enclosing the conditioned space.

CONDITIONED SPACE. A space in a building that is either directly conditioned or indirectly conditioned.

CONDITIONED SPACE, DIRECTLY. Is an enclosed space that is provided with wood heating, is provided with mechanical heating that has a capacity exceeding 10 Btu/(hr. ft.^{2}), or is provided with mechanical cooling that has a capacity exceeding 5 Btu/(hr. ft.^{2}), unless the space-conditioning system is designed for a process space. (See **PROCESS SPACE**.)

CONDITIONED SPACE, INDIRECTLY. Is enclosed space, including, but not limited to, unconditioned volume in atria, that (1) is not directly conditioned space; and (2) either (a) has a thermal transmittance area product (UA) to directly conditioned space exceeding that to the outdoors or to unconditioned space and does not have fixed vents or openings to the outdoors or to unconditioned space, or (b) is a space through which air from directly conditioned spaces is transferred at a rate exceeding three air changes per hour.

COOLING EQUIPMENT. Equipment used to provide mechanical cooling for a room or rooms in a building.

DISPOSAL. Means the management of solid waste through landfilling or transformation at permitted solid waste facilities.

DIVERSION. Means activities which reduce or eliminate the amount of solid waste from solid waste disposal for purposes of this code.

ENERGY COMMISSION. The California State Energy Resources Conservation and Development Commission.

ENFORCING AGENCY. The designated department or agency as specified by statute or regulation.

EXFILTRATION. The uncontrolled outward air leakage from inside a building, including leakage through cracks and interstices, around windows and doors, and through any other exterior partition or duct penetration.

GREEN BUILDING. A holistic approach to design, construction, and demolition that minimizes the building's impact on the environment, the occupants, and the community.

HAZARDOUS WASTE. (a) Means a waste, defined as a "hazardous waste" in accordance with Section 25117 of the Health and Safety Code, or a combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may do either of the following:

(1) Cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness.

(2) Pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

(b) Unless expressly provided otherwise, "hazardous waste" includes extremely hazardous waste and acutely hazardous waste.

INERT SOLIDS OR INERT WASTE. Inert solids or inert waste means a non-liquid solid waste including, but not limited to, soil and concrete, that does not contain hazardous waste or soluble pollutants at concentrations in excess of water-quality objectives established by a regional water board pursuant to Division 7 (commencing with Section 13000) of the California Water Code and does not contain significant quantities of decomposable solid waste.

INFILTRATION. An uncontrolled inward air leakage from outside a building or unconditioned space, including leakage through cracks and interstices, around windows and doors and through any other exterior or demising partition or pipe or duct penetration.

KITCHEN. That portion in a residential dwelling unit that is a room or area used for cooking, food storage and preparation and washing dishes, including associated counter tops and cabinets, refrigerator, stove, ovens and floor area.

LOW-RISE RESIDENTIAL BUILDING. A building~~, other than a hotel/motel,~~ that is of Occupancy Group R~~, Division 1~~, and is three stories or less, or that is ~~of Occupancy Group R, Division 3~~ a one- or two- family dwelling or townhouse.

NEWLY CONSTRUCTED. A newly constructed building does not include additions, alterations or repairs.

OUTDOOR AIR (Outside air). Air taken from outdoors and not previously circulated in the building.

PROCESS SPACE is a space that is thermostatically controlled to maintain a process environment temperature less than 55º F or to maintain a process environment temperature greater than 90º F for the whole space that the system serves, or that is a space with a space-conditioning system designed and controlled to be incapable of operating at temperatures above 55º F or incapable of operating at temperatures below 90º F at design conditions.

RECYCLE or RECYCLING. Means the process of collecting, sorting, cleansing, treating, and reconstituting materials that would otherwise become solid waste, and returning them to the economic mainstream in the form of raw material for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace. "Recycling" does not include transformation, as defined in Section 40201.

RESIDENTIAL BUILDING. (See “low-rise residential building.”)

RESILIENT FLOORING. Refers to non-textile flooring materials which have a relatively firm surface, yet characteristically have “give” and “bounce back” to their original surface profile from the weight of objects that compress its surface. Resilient flooring materials are made in various shapes and sizes including both tile and roll form. Common types of resilient flooring include, but are not limited to:

1. Vinyl composition tile
2. Vinyl tile and sheet flooring
3. Linoleum tile and sheet
4. Cork tile and sheet flooring
5. Rubber tile and sheet flooring
6. Polymeric poured seamless flooring
7. Other types of non-textile synthetic flooring

RE-USE. Means the use, in the same form as it was produced, of a material which might otherwise be discarded.

SOLID WASTE. (a) Solid waste means all putrescible and nonputrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, dewatered, treated, or chemically fixed sewage sludge which is not hazardous waste, manure, vegetable or animal solid and semisolid wastes, and other discarded solid and semisolid wastes.

(b) "Solid waste" does not include any of the following wastes:

(1) Hazardous waste, as defined in Public Resources Code Section 40141.

(2) Radioactive waste regulated pursuant to the Radiation Control Law (Chapter 8 (commencing with Section 114960) of Part 9 of Division 104 of the Health and Safety Code).

(3) Medical waste regulated pursuant to the Medical Waste Management Act (Part 14 commencing with Section 117600) of Division 104 of the Health and Safety Code). Untreated medical waste shall not be disposed of in a solid waste landfill, as defined in Section 40195.1. Medical waste that has been treated and deemed to be solid waste shall be regulated pursuant to this division.

VAPOR BARRIER. Material that has a permeance of one perm or less and that provides resistance to the transmission of water vapor.

Authority Cited—Health and Safety Code Sections 17921, 17922 and 19990.
Reference—Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

CHAPTER 3

GREEN BUILDING

SECTION 301
GENERAL

301.1 Scope. Buildings shall be designed to include the green building measures specified as mandatory in the application ~~matrices contained in Chapter 11 of~~ checklists contained in this code. Voluntary green building measures are also included in the application checklists and may be included in the design and construction of structures covered by this code but are not mandatory unless adopted by a city, county, or city and county as specified in Section 101.7.

SECTION 302
MIXED OCCUPANCY BUILDINGS

302.1 Mixed occupancy buildings. 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

303.1 Phased projects. For shell buildings and others constructed for future tenant improvements, only those code measures relevant to the building components and systems considered to be new construction (or newly constructed) shall apply.

303.1.1 Tenant improvements. The provisions of this code shall apply only to the initial tenant or occupant improvements to a project.

SECTION ~~303~~ 304
VOLUNTARY TIERS

~~**303.1 Purpose** It is the intent of this code to encourage buildings to achieve exemplary performance in the area of energy efficiency. Specifically, a green building should achieve more than a 15% reduction in energy usage when compared to the State's mandatory energy efficiency standards.~~

304.1 Purpose. Voluntary tiers are intended to further encourage building practices that improve public health, safety and general welfare by promoting the use of building concepts which minimize the building's impact on the environment, and promote a more sustainable design.

304.1.1 Tiers. The provisions of Appendices A4 and A5 outline means of achieving enhanced construction levels by incorporating additional measures. Buildings complying with tiers specified for each occupancy contain additional prerequisite and elective green building measures necessary to meet the threshold of each tier.

Authority Cited—Health and Safety Code Sections 17921, 17922 and 19990.
Reference—Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

CHAPTER 4

RESIDENTIAL MANDATORY MEASURES

DIVISION 4.1 – PLANNING AND DESIGN

SECTION 401 4.1.1
GENERAL

401.1 4.1.1.1 Purpose. The provisions of this chapter division outline planning, design and development methods that include environmentally responsible site selection, building design, building siting and development to protect, restore, and enhance the environmental quality of the site and respect the integrity of adjacent properties.

SECTION 402 4.1.2
DEFINITIONS

402.1 4.1.2.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

FRENCH DRAIN. A trench, hole or other depressed area loosely filled with rock, gravel, fragments of brick or similar pervious material used to collect or channel drainage or runoff water.

PLANTS.

Adaptive plants. Adaptive plants are plants that grow well in a given habitat with minimal attention in the form of winter protection, pest protection, irrigation and fertilization once established.

Note: Adaptive plants are considered low in maintenance and are not Invasive plants.

Invasive plants. Invasive plants are both indigenous and non-indigenous species with growth habits that are characteristically aggressive.

Note: Invasive plants typically have a high reproductive capacity and tendency to overrun the ecosystems they inhabit.

Native plants. Native plants are plants that have adapted to a given area and are not invasive.

WATTLES. Wattles are used to reduce sediment in runoff. Wattles are often constructed of natural plant materials such as hay, straw or similar material shaped in the form of tubes and placed on a downflow slope. Wattles are also used for perimeter and inlet controls.

SECTION 403 4.1.3
SITE SELECTION
(Reserved)

SECTION 404 4.1.4
SITE PRESERVATION
(Reserved)

SECTION 405 4.1.5
DECONSTRUCTION AND REUSE OF EXISTING STRUCTURES
(Reserved)

SECTION 406 4.1.6
SITE DEVELOPMENT

406.1 4.1.6.1 General. Preservation and use of available natural resources shall be accomplished through evaluation and careful planning to minimize negative effects on the site and adjacent areas. Preservation of slopes, management of storm water drainage and erosion controls shall comply with this section.

406.2 4.1.6.2 Storm water drainage and retention during construction. Projects which disturb less than one acre of soil and are not part of a larger common plan of development which in total disturbs one acre or more, shall develop a plan to manage storm water drainage during construction. A plan to In order to manage storm water

drainage during construction one or more of the following measures shall be implemented to prevent flooding of adjacent property, prevent erosion and retain soil runoff on the site. ~~One or more of the followings methods shall be utilized to manage storm water drainage~~:

1. Retention basins of sufficient size shall be utilized to retain storm water on the site.

2. Where storm water is conveyed to a public drainage system, collection point, gutter, or similar disposal method, water shall be filtered by use of a barrier system, wattle, or other method approved by the enforcing agency.

3. Compliance with a lawfully enacted storm water management ordinance.

4.1.6.3 Surface drainage. The site shall be planned and developed to keep surface water from entering buildings. Construction plans shall indicate how the site grading or drainage system will manage surface water flows. Example 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 building and aid in groundwater recharge.

Authority Cited—Health and Safety Code Sections 17921, 17922 and 19990.
Reference—Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

~~CHAPTER 5~~

DIVISION 4.2 – ENERGY EFFICIENCY

SECTION ~~501~~ 4.2.1
GENERAL

~~**501.1**~~ **4.2.1.1 Scope.** ~~The provisions of this chapter shall outline means of achieving enhanced building energy efficiency.~~ The Department of Housing and Community Development does not regulate mandatory energy efficiency standards in residential buildings. For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory building standards.

Note: It is the intent of this code to encourage buildings to achieve exemplary performance in the area of energy efficiency. For the purposes of energy efficiency standards, the California Energy Commission believes specifically, a green building should achieve at least a 15% reduction in energy usage when compared to the State's mandatory energy efficiency standards. The Department of Housing and Community Development's mandatory green building standards for residential buildings do not require compliance with levels of minimum energy efficiency beyond those required by the California Energy Commission.

~~SECTION 502~~
~~DEFINITIONS~~

~~**502.1 Definitions.** The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.~~

~~SECTION 503~~
~~PERFORMANCE APPROACH~~

~~**503.2 Minimum energy performance for low-rise residential buildings.** Low-rise residential buildings shall meet or exceed the minimum performance or prescriptive standard design required by the California Energy Code currently in effect.~~

~~SECTION 504~~
~~PRESCRIPTIVE APPROACH~~

~~**504.6 Minimum energy performance for low-rise residential buildings.** Low-rise residential buildings shall meet or exceed the minimum performance or prescriptive standard design required by the California Energy Code currently in effect.~~

~~**SECTION 505**~~
~~**BUILDING ENVELOPE**~~
~~**(Reserved)**~~
~~**SECTION 506**~~
~~**AIR SEALING PACKAGE**~~

~~**506.1 Joints and openings.** Openings in the building envelope separating conditioned space from unconditioned space needed to accommodate gas, plumbing, electrical lines and other necessary penetrations must be sealed in compliance with the California Energy Code.~~

~~**Exception:** Annular spaces around pipes, electric cables, conduits, or other openings in plates at exterior walls shall be protected against the passage of rodents by closing such openings with cement mortar, concrete masonry or similar method acceptable to the enforcing agency.~~

~~**506.1.1 Other openings.** Whole house exhaust fans shall have insulated louvers or covers which close when the fan is off. Covers or louvers shall have a minimum insulation value of R-4.2.~~

~~**SECTION 507**~~
~~**HVAC DESIGN, EQUIPMENT AND INSTALLATION**~~
~~**(Reserved)**~~

~~**SECTION 508**~~
~~**WATER HEATING DESIGN, EQUIPMENT AND INSTALLATION**~~
~~**(Reserved)**~~

~~**SECTION 509**~~
~~**LIGHTING**~~
~~**(Reserved)**~~

~~**SECTION 510**~~
~~**APPLIANCES**~~
~~**(Reserved)**~~

~~**SECTION 511**~~
~~**RENEWABLE ENERGY**~~
~~**(Reserved)**~~

~~**SECTION 512**~~
~~**ELEVATORS, ESCALATORS AND OTHER EQUIPMENT**~~
~~**(Reserved)**~~

~~**SECTION 513**~~
~~**ENERGY EFFICIENT STEEL FRAMING**~~

Authority Cited—Health and Safety Code Sections 17921, 17922 and 19990.
Reference—Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

~~**CHAPTER 6**~~

DIVISION 4.3 – WATER EFFICIENCY AND CONSERVATION

SECTION ~~601~~ 4.3.1
GENERAL

~~**601.1**~~ **4.3.1.1 Scope.** The provisions of this chapter shall establish the means of conserving water used indoors, outdoors and in wastewater conveyance.

SECTION ~~602~~ 4.3.2
DEFINITIONS

~~**602.1**~~ **4.3.2.1 Definitions.** The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

SECTION ~~603~~ 4.3.3
INDOOR WATER USE

~~603.2~~ 4.3.3.1 20% Savings. A schedule of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by at least 20% 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 20% reduction in potable water use shall be demonstrated by one of the following methods.

1. Each plumbing fixture and fitting shall meet ~~the 20%~~ reduced flow rates specified in Table ~~603.2~~ 4.3.3.2; or
2. A calculation demonstrating a 20% reduction in the building "water use" baseline as established in Table ~~603.1~~ 4.3.3.1 shall be provided. For low-rise residential occupancies, the calculation shall be limited to the following plumbing fixture and fitting types: water closets, urinals, lavatory faucets and showerheads.

~~603.2.1~~ 4.3.3.2 Multiple showerheads serving one shower. When single shower fixtures are served by more than one showerhead, the combined flow rate of all the showerheads shall not exceed the maximum flow rates specified in the 20% reduction column contained in Table ~~603.2~~ 4.3.3.2 or the shower shall be designed to only allow one showerhead to be in operation at a time.

Exception: The maximum flow rate for shower heads when using the calculation method specified in Section 4.3.3.1, Item 2 is 2.5 gpm @ 80 psi.

TABLE ~~603.1~~ 4.3.3.1
WATER USE BASELINE[1]

Fixture Type	Flow-rate[2]	Duration	Daily uses	Occupants[3,4]
~~Showerheads~~	~~2.5 gpm @ 80 psi~~	~~8 min.~~	~~1~~	~~X~~
Showerheads Residential	2.5 gpm @ 80 psi	8 min.	1	~~X~~
Lavatory Faucets Residential	2.2 gpm @ 60 psi	.25 min.	3	~~X~~
Kitchen Faucets	2.2 gpm @ 60 psi	4 min.	1	~~X~~
Replacement Aerators	2.2 gpm @ 60 psi			~~X~~
~~Wash Fountains~~	~~2.2 [rim space(in.) / 20 gpm @ 60 psi]~~			~~X~~
~~Metering Faucets~~	~~0.25 gallons/cycle~~	~~.25 min.~~	~~3~~	~~X~~
~~Metering Faucets for Wash Fountains~~	~~.25 [rim space(in.) / 20 gpm @ 60 psi]~~	~~.25 min.~~		~~X~~
Gravity tank type Water Closets	1.6 gallons/flush	1 flush	1 male~~[1]~~ 3 female	~~X~~
Flushometer Tank Water Closets	1.6 gallons/flush	1 flush	1 male~~[1]~~ 3 female	~~X~~
Flushometer Valve Water Closets	1.6 gallons/flush	1 flush	1 male~~[1]~~ 3 female	~~X~~
Electromechanical Hydraulic Water Closets	1.6 gallons/flush	1 flush	1 male[1] 3 female	~~X~~
Urinals	1.0 gallons/flush	1 flush	2 male	~~X~~

Fixture "Water Use" = Flow rate x Duration x Occupants x Daily uses

[1] ~~Except for low-rise residential occupancies, the daily use number shall be increased to three if urinals are not installed in the room~~ Use Worksheet WS-1 to calculate baseline water use.
[2] The Flow-rate is from the CEC Appliance Efficiency Standards, Title 20 California Code of Regulations; where a conflict occurs, the CEC standards shall apply.
[3] For low rise residential occupancies, the number of occupants shall be based on two persons for the first bedroom, plus one additional person for each additional bedroom.
[4] ~~For non-residential occupancies, refer to Table A, Chapter 4, 2007 California Plumbing Code, for occupant load factors.~~
[5] ~~Use Worksheet WS-1 to calculate baseline water use.~~

TABLE ~~603.2~~ 4.3.3.2
FIXTURE FLOW RATES

Fixture Type	Flow-rate	Maximum flow rate at ≥ 20% Reduction
Showerheads	2.5 gpm @ 80 psi	2 gpm @ 80 psi
Lavatory Faucets Residential	2.2 gpm @ 60 psi	~~1.8~~ 1.5gpm @ 60 psi[2]
Kitchen Faucets	2.2 gpm @ 60 psi	1.8 gpm @ 60 psi
~~Wash Fountains~~	~~2.2 [rim space(in.) / 20 gpm @ 60 psi]~~	~~1.8 (rim space(20 in.)) gpm @ 60 psi~~
~~Metering Faucets~~	~~0.25 gallons/cycle~~	~~0.2 gallons/cycle~~
~~Metering Faucets for Wash Fountains~~	~~.25 [rim space(in.) / 20 gpm @ 60 psi]~~	~~1.8 (rim space(20 in.)) gpm @ 60 psi~~
Gravity tank type Water Closets	1.6 gallons/flush	1.28 gallons/flush[1]
Flushometer Tank Water Closets	1.6 gallons/flush	1.28 gallons/flush[1]
Flushometer Valve Water Closets	1.6 gallons/flush	1.28 gallons/flush[1]
Electromechanical Hydraulic Water Closets	1.6 gallons/flush	1.28 gallons/flush[1]
Urinals	1.0 gallons/flush	.~~8~~ 5 gallons/flush

[1] Includes single and dual flush water closets with an effective flush of 1.28 gallons or less. ~~when tested ASME A112.19.2 and ASME A112.19.14.~~

Single Flush Toilets - The effective flush volume shall not exceed 1.28 gallons (4.8 liters). The effective flush volume is the average flush volume when tested in accordance with ASME A112.19.233.2.

Dual Flush Toilets - The effective flush volume shall not exceed 1.28 gallons (4.8 liters). The effective flush volume is defined as the composite, average flush volume of two reduced flushes and one full flush. Flush volumes will be tested in accordance with ASME A112.19.2 and ASME A112.19.14.

[2] Lavatory Faucets shall not have a flow rate less than 0.8 gpm at 20 psi.

4.3.3.3 Plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall meet the standards referenced in Table 4.3.3.3.

TABLE 4.3.3.3
STANDARDS FOR PLUMBING FIXTURES AND FIXTURE FITTINGS

REQUIRED STANDARDS	
Water closets (toilets) – flushometer valve type single flush, maximum flush volume	ASME A112.19.2/CSA B45.1 – 1.28 gal (4.8 L)
Water closets (toilets) – flushometer valve type dual flush, maximum flush volume	ASME A112.19.14 and USEPA WaterSense Tank-Type High Efficiency Toilet Specification – 1.28 gal (4.8 L).
Water closets (toilets) – tank-type	U.S. EPA WaterSense Tank-Type High-Efficiency Toilet Specification
Urinals, maximum flush volume	ASME A112.19.2CSA B45.1 – 0.5 gal (1.9 L)
Urinals, non-water urinals	ASME A112.19.19 (vitreous china) ANSI Z124.9–2004 or IAPMO Z124.9 (plastic)
Public lavatory faucets: Maximum flow rate – 0.5 gpm (1.9 L/min)	ASME A112.18.1/CSA B125.1
Public metering self-closing faucets: Maximum water use – 0.25 gal (1.0 L) per metering cycle	ASME A112.18.1/CSA B125.1
Residential bathroom lavatory sink faucets: Maximum flow rate – 1.5 gpm (5.7 L/min)	ASME A112.18.1/CSA B125.1

SECTION 4.3.4

OUTDOOR WATER USE
~~(Reserved)~~

4.3.4.1 Irrigation controllers. Automatic irrigation system controllers for landscaping provided by the builder and installed at the time of final inspection shall comply with the following:

1. Controllers shall be weather- or soil moisture-based controllers that automatically adjust irrigation in response to changes in plants' needs as weather conditions change.
2. Weather-based controllers without integral rain sensors or communication systems that account for local rainfall shall have a separate wired or wireless rain sensor which connects or communicates with the controller(s). Soil moisture-based controllers are not required to have rain sensor input.

Note: More information regarding irrigation controller function and specifications is available from the Irrigation Association at http://www.irrigation.org/SWAT/Industry/ia-tested.asp .

SECTION ~~605~~ 4.3.5
~~RECYCLED, RECLAIMED AND GRAYWATER SYSTEMS~~ WATER REUSE SYTEMS
(Reserved)

Authority Cited—Health and Safety Code Sections 17921, 17922 and 19990.
Reference—Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

~~CHAPTER 7~~

~~SECTION 505~~

DIVISION 4.4 – MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

SECTION ~~701~~ 4.4.1
GENERAL

~~701.1~~ 4.4.1.1 Scope. The provisions of this chapter shall outline means of achieving material conservation and resource efficiency through ~~reuse of existing building stock and materials; use of recycled, regional, rapidly renewable, and certified wood materials;~~ protection of buildings from exterior moisture, construction waste diversion, employment of techniques to reduce pollution through recycling of materials, and building commissioning or testing, adjusting and balancing. ~~and reduction of building pollutants prior to occupancy~~.

SECTION ~~702~~ 4.4.2
DEFINITIONS

~~702.1~~ 4.4.2.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

SECTION ~~703~~ 4.4.3
FOUNDATION SYSTEMS
(Reserved)

SECTION ~~704~~ 4.4.4
EFFICIENT FRAMING TECHNIQUES
(Reserved)

SECTION ~~705~~ 4.4.5
MATERIAL SOURCES
(Reserved)

SECTION ~~706~~ 4.4.6
ENHANCED DURABILITY AND REDUCED MAINTENANCE
~~(Reserved)~~

~~506.1~~ 4.4.6.1 Joints and openings. Openings in the building envelope separating conditioned space from unconditioned space needed to accommodate gas, plumbing, electrical lines and other necessary penetrations must be sealed in compliance with the California Energy Code.

Exception: Annular spaces around pipes, electric cables, conduits, or other openings in plates at exterior walls shall be protected against the passage of rodents by closing such openings with cement mortar, concrete masonry or similar method acceptable to the enforcing agency.

SECTION ~~707~~ 4.4.7
WATER RESISTANCE AND MOISTURE MANAGEMENT
(Reserved)

SECTION ~~708~~ 4.4.8
CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING

~~708.3~~ 4.4.8.1 Construction waste reduction of at least 50%. Recycle and/or salvage for reuse a minimum of 50% of the non-hazardous construction and demolition debris, or meet a local construction and demolition waste management ordinance, whichever is more stringent. ~~Calculate the amount of materials diverted by weight or volume, but not by both.~~

Exceptions:
1. Excavated soil and land-clearing debris.
2. Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist or are not located reasonably close to the jobsite.

4.4.8.2 Construction waste management plan. Where a local jurisdiction does not have a construction and demolition waste management ordinance, a construction waste management plan shall be submitted for approval to the enforcing agency that:

1. Identifies the materials to be diverted from disposal by recycling, reuse on the project or salvage for future use or sale.
2. Specifies if materials will be sorted on-site or mixed for transportation to a diversion facility.
3. Identifies the diversion facility where the material collected will be taken.
4. Identifies construction methods employed to reduce the amount of waste generated.
5. Specifies that the amount of materials diverted shall be calculated by weight or volume, but not by both.

4.4.8.2.1 Documentation. Documentation shall be provided to the enforcing agency which demonstrates compliance with Section 4.4.8.2, Items 1 through 4. The waste management plan shall be updated as necessary and shall be accessible during construction for examination by the enforcing agency.

4.4.8.2.2 Isolated jobsites. The enforcing agency may make exceptions to the requirements of this section when jobsites are located in areas beyond the haul boundaries of the diversion facility.

Notes:
1. Sample forms found in Chapter 8 may be used to assist in documenting compliance with the waste management plan.
2. Mixed construction and demolition debris (C&D) processors can be located at http://www.ciwmb.ca.gov/ConDemo/.

SECTION ~~709~~ 4.4.9
LIFE-CYCLE ASSESSMENT
(Reserved)

SECTION ~~710~~ 4.4.10
BUILDING MAINTENANCE AND OPERATION

~~**710.2**~~ **4.4.10.1 Operation and maintenance manual.** At the time of final inspection, a manual, compact disc, web-based reference or other media acceptable to the enforcing agency which includes all of the following shall be placed in the building:

1. Directions to the owner or occupant that the manual shall remain with the building throughout the life-cycle of the structure.
2. Operation and maintenance instructions for the following~~.~~ :
   a. Equipment and appliances, including water saving devices and systems, HVAC systems, water heating systems and other major appliances and equipment.
   b. Roof and yard drainage, including gutters and downspouts.
   c. Space conditioning systems including condenser and air filters.
   d. Landscape irrigation systems.
   e. Water reuse systems.
3. Information from local utility, water and waste recovery providers on methods to further reduce resource consumption ~~and~~ including recycle programs and locations.
4. Public transportation and/or carpool options available in the area.
5. Educational material on the positive impacts of an interior relative humidity between 30-60% and what methods an occupant may use to maintain the relative humidity level in that range.
6. Information about water conserving landscape and irrigation design and controllers which conserve water.
7. Instructions for maintaining gutters and downspouts and importance of diverting water at least five feet away from foundation.
8. Information on required routine maintenance measures, including, but not limited to, caulking, painting, grading around building, etc.
9. Information about State solar energy and incentive programs available.
10. A copy of all special inspection verifications required by the enforcing agency or this code.

Authority Cited—Health and Safety Code Sections 17921, 17922 and 19990.
Reference—Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

~~**CHAPTER 8**~~

DIVISION 4.5 – ENVIRONMENTAL QUALITY

SECTION ~~801~~ 4.5.1
GENERAL

~~**801.1**~~ **4.5.1.1 Scope.** The provisions of this chapter shall outline means of reducing the quantity of air contaminants that are odorous, irritating, and/or harmful to the comfort and well-being of a building's installers, occupants and neighbors.

SECTION ~~802~~ 4.5.2
DEFINITIONS

~~**802.1**~~ **4.5.2.1 Definitions.** The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

AGRIFIBER PRODUCTS. Agrifiber products include wheatboard, strawboard, panel substrates and door cores, not including furniture, fixtures and equipment (FF&E) not considered base building elements.

COMPOSITE WOOD PRODUCTS. Composite wood products include hardwood plywood, particleboard, and medium density fiberboard. Composite wood products does not include hardboard, structural plywood, structural panels, structural composite lumber, oriented strand board, glued laminated timber as specified in "Structural Glue Laminated Timber" (ANSI A190.1-2002) or prefabricated wood I-joists.

MAXIMUM INCREMENTAL REACTIVITY (MIR). The maximum change in weight of ozone formed by adding a compound to the "Base Reactive Organic Gas (ROG) Mixture" per weight of compound added, expressed to hundredths of a gram (g O3 /g ROC).

Note: MIR values for individual compounds and hydrocarbon solvents are specified in CCR, Title 17, Sections 94700 and 94701.

~~**MERV.** Filter minimum efficiency reporting value, based on ASHRAE 52.2-1999.~~

MOISTURE CONTENT. The weight of the water in wood expressed in percentage of the weight of the oven-dry wood.

PRODUCT-WEIGHTED MIR (PWMIR). The sum of all weighted-MIR for all ingredients in a product subject to this article. The PWMIR is the total product reactivity expressed to hundredths of a gram of ozone formed per gram of product (excluding container and packaging).

Note: PWMIR is calculated according to equations found in CCR, Title 17, Section 94521(a).

REACTIVE ORGANIC COMPOUND (ROC). Any compound that has the potential, once emitted, to contribute to ozone formation in the troposphere.

VOC. A volatile organic compound broadly defined as a chemical compound based on carbon chains or rings with vapor pressures greater than 0.1 millimeters of mercury at room temperature. These compounds typically contain hydrogen and may contain oxygen, nitrogen and other elements. See CCR Title 17, Section 94508(a).

Note: Where specific regulations are cited from different agencies such as SCAQMD, ARB, etc, the VOC definition included in that specific regulation is the one that prevails for the specific measure in question.

SECTION ~~803~~ 4.5.3
FIREPLACES
~~(Reserved)~~

4.5.3.1 General. Any installed gas fireplace shall be a direct-vent sealed-combustion type. Any installed woodstove or pellet stove shall comply with US EPA Phase II emission limits where applicable. Woodstoves, pellet stoves and fireplaces shall also comply with applicable local ordinances.

SECTION ~~804~~ 4.5.4
POLLUTANT CONTROL

~~**804.3**~~ **4.5.4.1 Covering of duct openings and protection of mechanical equipment during construction.** At the time of rough installation, or during storage on the construction site and until final startup of the heating and cooling equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheetmetal or other methods acceptable to the enforcing agency to reduce the amount of dust or debris which may collect in the system.

~~**804.4**~~ **4.5.4.2 Finish material pollutant control**. Finish materials shall comply with ~~Sections 804.4.1 through 804.4.4~~ this section.

~~**804.4.1**~~ **4.5.4.2.1 Adhesives, sealants and caulks.** Adhesives, sealants and caulks used on the project shall meet the requirements of the following standards unless more stringent local or regional air pollution or air quality management district rules apply:

1. Adhesives, adhesive bonding primers, ~~and~~ 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 ~~804.4.1~~ 4.5.4.1 or 4.5.4.2 as applicable. 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 ~~shall meet the requirements~~ ,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~~, http://ccr.oal.ca.gov/~~.

Note: Title 17 may be found at http://ccr.oal.ca.gov/.

~~804.4.2~~ 4.5.4.2.2 **Paints and coatings.** Architectural paints and coatings shall comply with VOC limits in Table I of the ARB Architectural Suggested Control Measure as shown in Table ~~804.4.2~~ 4.5.4.3 unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 4.5.4.3, shall be determined by classifying the coating as a Flat, Nonflat, or Nonflat-High Gloss coating, based on its gloss, as defined in subsections 4.21, 4.36, and 4.37 of the 2007 California Air Resources Board, Suggested Control Measure, and the corresponding Flat, Nonflat, or Nonflat-High Gloss VOC limit in 4.5.4.3 shall apply.

4.5.4.2.3 **Aerosol Paints and Coatings.** Aerosol paints and coatings shall meet the Product-Weighted MIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of California Code of Regulations, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49.

Notes:
1. Title 17 may be found at http://ccr.oal.ca.gov/
2. See Bay Area Air Quality Management District Regulation 8 Rule 49 at http://www.arb.ca.gov/DRDB/BA/CURHTML/R8-49.HTM

TABLE ~~804.4.1~~ 4.5.4.1
ADHESIVE VOC LIMIT[1]

Less Water and Less Exempt Compounds in Grams per Liter

Architectural Applications	**Current VOC Limit**
Indoor Carpet Adhesives	50
Carpet Pad Adhesives	50
Outdoor Carpet Adhesives	150
Wood Flooring Adhesive	100
Rubber Floor Adhesives	60
Subfloor Adhesives	50
Ceramic Tile Adhesives	65
VCT and Asphalt Tile Adhesives	50
Dry Wall and Panel Adhesives	50
Cove Base Adhesives	50
Multipurpose Construction Adhesives	70
Structural Glazing Adhesives	100
Single Ply Roof Membrane Adhesives	250
Other Adhesive not specifically listed	50
Specialty Applications	**Current VOC Limit**
PVC Welding	285
CPVC Welding	270
ABS Welding	325
Plastic Cement Welding	250
Adhesive Primer for Plastic	250
Contact Adhesive	80
Special Purpose Contact Adhesive	250
Structural Wood Member Adhesive	140
Top and Trim Adhesive	250
Substrate Specific Applications	**Current VOC Limit**
Metal to Metal	30
Plastic Foams	50
Porous Material (except wood)	50
Wood	30
Fiberglass	80

[1] For additional information regarding methods to measure the VOC content specified in this table, see South Coast Air Quality Management District Rule 1168, http://www.arb.ca.gov/DRDB/SC/CURHTML/R1168.PDF.

TABLE 4.5.4.2
SEALANT VOC LIMIT

Less Water and Less Exempt Compounds in Grams per Liter

Sealants	**Current VOC Limit**
Architectural	250
Marine Deck	760
Nonmembrane Roof	300
Roadway	250
Single-Ply Roof Membrane	450
Other	420
Sealant Primers	**Current VOC Limit**
Architectural	
Non Porous	250
Porous	775
Modified Bituminous	500
Marine Deck	760
Other	750

~~**TABLE 804.4.2**~~
~~**COATING VOC LIMITS**[1, 2]~~

~~**Grams of VOC Per Liter of Coating, Less Water and Less Exempt Compounds**~~

~~**COATING CATEGORY**~~	~~**CEILING LIMIT***~~	~~**CURRENT LIMIT**~~	~~**EFFECTIVE DATE 7/1/08**~~	~~**EFFECTIVE DATE**~~
~~Bond Breakers~~	~~350~~			
~~Clear Wood Finishes~~ ~~Varnish~~ ~~Sanding Sealers~~ ~~Lacquer~~	~~350~~ ~~350~~ ~~350~~ ~~680~~	~~275~~ ~~275~~ ~~275~~ ~~275~~		
~~Clear Brushing Lacquer~~	~~680~~	~~275~~		
~~Concrete Curing Compounds~~	~~350~~	~~100~~		
~~Dry Fog Coatings~~	~~400~~	~~150~~		
~~Fire Proofing Exterior Coatings~~	~~450~~	~~350~~		
~~Flats~~	~~250~~	~~100~~ 50	~~50~~	
~~Floor Coatings~~	~~420~~	~~50~~		
~~Graphic Arts (Sign) Coatings~~	~~500~~			
~~Industrial Maintenance (IM) Coatings~~ ~~High Temperature IM Coatings~~ ~~Zinc Rich IM Primers~~	~~420~~ ~~420~~	~~100~~ ~~420~~ ~~100~~		
~~Japans/Faux Finishing Coatings~~	~~700~~	~~350~~		
~~Magnesite Cement Coatings~~	~~600~~	~~450~~		
~~Mastic Coatings~~	~~300~~			
~~Metallic Pigmented Coatings~~	~~500~~			
~~Multi-Color Coatings~~	~~420~~	~~250~~		
~~Nonflat Coatings~~ ~~Nonflat High Gloss~~	~~250~~ ~~250~~	~~50~~ ~~50~~		
~~Pigmented Lacquer~~	~~680~~	~~275~~		
~~Pre Treatment Wash Primers~~	~~780~~	~~420~~		
~~Primers, Sealers and Undercoaters~~	~~350~~	~~100~~		
~~Quick Dry Enamels~~	~~400~~	~~50~~		
~~Quick Dry Primers, Sealers, and Undercoaters~~	~~350~~	~~100~~		
~~Recycled Coatings~~	~~250~~			
~~Roof Coatings~~ ~~Roof Coatings, Aluminum~~	~~300~~ ~~500~~	~~50~~ ~~100~~		
~~Roof Primers, Bituminous~~	~~350~~			

~~Rust Preventative Coatings~~	~~420~~	~~100~~		
~~Shellac~~ ~~Clear~~ ~~Pigmented~~	 ~~730~~ 	 ~~550~~		
~~Specialty Primers~~	~~350~~	~~100~~		
~~Stains~~ ~~Interior~~	~~350~~ ~~250~~	~~100~~		
~~Swimming Pool Coatings~~ ~~Repair~~ ~~Other~~	 ~~650~~ ~~340~~	 ~~340~~		
~~Waterproofing Sealers~~	~~400~~	~~100~~		
~~Waterproofing Concrete/Masonry Sealers~~	~~400~~	~~100~~		
~~Wood Preservatives~~ ~~Below-Ground~~ ~~Other~~	 ~~350~~ ~~350~~			

~~[1] The specified limits remain in effect unless revised limits are listed in subsequent columns in the Table.~~

~~[2] For additional information regarding methods to measure the VOC content specified in this table, see South Coast Air Quality Management District Rule 1113: http://www.arb.ca.gov/DRDB/SC/CURHTML/R1113.PDF.~~

TABLE 4.5.4.3

VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS[2, 3]

Grams of VOC Per Liter of Coating, Less Water and Less Exempt Compounds

Coating Category	Effective 1/1/2010	Effective 1/1/2012
Flat Coatings	50	
Nonflat Coatings	100	
Nonflat - High Gloss Coatings	150	
Specialty Coatings		
Aluminum Roof Coatings	400	
Basement Specialty Coatings	400	
Bituminous Roof Coatings	50	
Bituminous Roof Primers	350	
Bond Breakers	350	
Concrete Curing Compounds	350	
Concrete/Masonry Sealers	100	
Driveway Sealers	50	
Dry Fog Coatings	150	
Faux Finishing Coatings	350	
Fire Resistive Coatings	350	
Floor Coatings	100	
Form-Release Compounds	250	
Graphic Arts Coatings (Sign Paints)	500	
High Temperature Coatings	420	
Industrial Maintenance Coatings	250	
Low Solids Coatings[1]	120	
Magnesite Cement Coatings	450	
Mastic Texture Coatings	100	
Metallic Pigmented Coatings	500	
Multi-Color Coatings	250	
Pre-Treatment Wash Primers	420	
Primers, Sealers, and Undercoaters	100	
Reactive Penetrating Sealers	350	
Recycled Coatings	250	
Roof Coatings	50	
Rust Preventative Coatings	400	250
Shellacs: • Clear • Opaque	 730 550	
Specialty Primers, Sealers, and Undercoaters	350	100
Stains	250	
Stone Consolidants	450	
Swimming Pool Coatings	340	

Traffic Marking Coatings	100	
Tub and Tile Refinish Coatings	420	
Waterproofing Membranes	250	
Wood Coatings	275	
Wood Preservatives	350	
Zinc-Rich Primers	340	

[1] Grams of VOC per llter of coating, including water and including exempt compounds
[2] The specified limits remain in effect unless revised limits are listed in subsequent columns in the table.
[3] Values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008. More information is available at http://www.arb.ca.gov/coatings/arch/Approved_2007_SCM.pdf.

4.5.4.2.4 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:

1. Manufacturers product specification.
2. Field verification of on-site product containers.

~~**804.4.3**~~ **4.5.4.4 Carpet systems.** All carpet installed in the building interior shall meet the testing and product requirements of one of the following:

1. Carpet and Rug Institute's ~~Green Label or~~ Green Label Plus Program~~, http://www.carpet-rug.com/~~
2. California Department of Public Health ~~CDPH~~ Standard Practice for the testing of VOCs (Specification 01350)
3. Department of General Services, California Gold Sustainable Carpet Standard~~,~~ ~~http://www.green.ca.gov/EPP/standards.htm~~
4. Scientific Certifications Systems Indoor Advantage™ Gold~~,~~ ~~http://www.scscertified.com/iaq/indooradvantage.htm~~

Notes:
1. For Green Label Plus, see http://www.carpet-rug.com/.
2. For Department of General Services standards, see http://www.green.ca.gov/EPP/standards.htm.
3. For Indoor Advantage™ Gold, see http://www.scscertified.com/iaq/indooradvantage.htm.
4. Scientific Certifications Systems Indoor Advantage™ http://www.scscertified.com/iaq/indooradvantage.htm.

~~**804.4.3.1**~~ **4.5.4.4.1 Carpet cushion.** All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program.

~~**804.4.3.2**~~ **4.5.4.4.2 Carpet adhesive.** All carpet adhesive shall meet the requirements of Table ~~804.4.1~~ 4.5.4.1.

4.5.4.5 Resilient flooring systems. Where resilient flooring is installed, at least 50% of floor area receiving resilient flooring shall comply with the VOC-emission limits defined in the Collaborative for High Performance Schools (CHPS) Low-emitting Materials List or certified under the Resilient Floor Covering Institute (RCFI) FloorScore program.

~~**804.4.4**~~ **4.5.4.6 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 for Composite Wood (17 CCR 93120 et seq.), by or before the dates specified in those sections as shown in Table ~~804.4~~ 4.5.4.6.

~~**804.4.4.2**~~ **4.5.4.6.1 Documentation.** Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following~~.~~ :

1. Product certifications and specifications.
2. Chain of custody certifications.
3. Other methods acceptable to the enforcing agency.

TABLE ~~804.4.4~~ 4.5.4.6
FORMALDEHYDE LIMITS[1]

Maximum formaldehyde emissions in parts per million.

~~Phase 1~~			~~Phase 2~~			
Product	~~Jan 1, 2009~~ Current Limit	~~Jul 1, 2009~~	~~Jan 1, 2010~~	~~Jan 1, 2011~~	Jan 1, 2012	Jul 1, 2012
Hardwood Plywood Veneer Core	~~0.08~~ 0.05		~~0.05~~			
Hardwood Plywood Composite Core	0.08	~~0.08~~				0.05
Particle Board	~~0.18~~ 0.09			~~0.09~~		
Medium Density Fiberboard	~~0.21~~ 0.11			~~0.11~~		
Thin Medium Density Fiberboard~~1~~[2]	0.21				0.13	

[1]Values in this table are ~~consistent with~~ derived from those ~~developed~~ specified by the California Air Resources Board, Air Toxics Control Measure for Composite Wood as tested in accordance with ASTM E1333-96 (2002). 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 eight millimeters.

SECTION ~~805~~ 4.5.5
INTERIOR MOISTURE CONTROL

~~805.1~~ 4.5.5.1 ~~Indoor moisture control~~ General. Buildings shall meet or exceed the provisions of ~~California Building Code, CCR, Title 24, Part 2, Section 1203 and Chapter 14~~ the California Building Standards Code. ~~For additional measures not applicable to low-rise residential occupancies, see Section 707.2 of this code.~~

~~805.2~~ 4.5.5.2 Concrete slab foundations. Concrete slab foundations required to have a vapor retarder by California Building Code, CCR, Title 24, Part 2, Chapter 19 shall also comply with this section.

~~805.2.1~~ 4.5.5.2.1 Capillary break. A capillary break shall be installed in compliance with at least one of the following~~.~~ :

1. A 4 inch (101.6 mm) thick base of ½ inch (12.7 mm) or larger clean aggregate shall be provided with a vapor barrier in direct contact with concrete and a concrete mix design which will address bleeding, shrinkage, and curling shall be used. For additional information, see American Concrete Institute, ACI 302.2R-06.
2. Other equivalent methods approved by the enforcing agency.
3. A slab design specified by a licensed design professional.

~~805.3~~ 4.5.5.3 Moisture content of building materials. Building materials with visible signs of water damage shall not be installed. Wall and floor framing shall not be enclosed when the framing members exceed 19% moisture content. Moisture content shall be verified in compliance with the following:

1. Moisture content shall be determined with either a probe-type or a contact-type moisture meter.
2. Moisture readings shall be taken at a point 2 feet (610 mm) to 4 feet (1219 mm) from the gradestamped end of each piece to be verified.
3. At least three random moisture readings shall be performed on wall and floor framing with documentation acceptable to the enforcing agency provided at the time of approval to enclose the wall and floor framing.

Insulation products which are visibly wet or have a high moisture content shall be replaced or allowed to dry prior to enclosure in wall or floor cavities. Wet applied insulation products shall follow the manufacturers drying recommendations prior to enclosure.

SECTION ~~806~~ 4.5.6
INDOOR AIR QUALITY AND EXHAUST

~~806.3~~ 4.5.6.1 Bathroom exhaust fans. Mechanical exhaust fans which exhaust directly from bathrooms shall comply with the following:

1. Fans shall be ENERGY STAR compliant and be ducted to terminate outside the building.

2. Unless functioning as a component of a whole house ventilation system, fans must be controlled by a humidistat which shall be readily accessible.

a. Humidistat controls shall be capable of adjustment between a relative humidity range of 50 to 80 percent.

Note: For the purposes of this section, a bathroom is a room which contains a bathtub, shower, or tub/shower combination.

~~**806.4 Filters.** Heating and air conditioning filters shall be rated at MERV 6 or higher. Duct system design shall account for pressure drop across the filter.~~

SECTION ~~807~~ 4.5.7
ENVIRONMENTAL COMFORT
~~(Reserved)~~

~~**506.1.1**~~ **4.5.7.1** ~~**Other openings**~~ **Openings.** Whole house exhaust fans shall have insulated louvers or covers which close when the fan is off. Covers or louvers shall have a minimum insulation value of R-4.2.

~~**A507.1.1**~~ **4.5.7.2** ~~**Duct**~~ **Heating and air conditioning system design.** Heating and air conditioning systems shall be sized, designed, and equipment is selected using the following methods:

1. The heat loss and heat gain is established according to ACCA Manual J, ASHRAE handbooks or other equivalent design software or methods.

2. Duct systems are sized according to ACCA 29-D Manual D, ASHRAE handbooks or other equivalent design software or methods.

3. Select heating and cooling equipment according to ACCA 36-S Manual S or other equivalent design software or methods.

Exception: Use of alternate design temperatures necessary to ensure the systems function are acceptable.

SECTION ~~808~~ 4.5.8
OUTDOOR AIR QUALITY
(Reserved)

Authority Cited—Health and Safety Code Sections 17921, 17922 and 19990.
Reference—Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

CHAPTER ~~9~~ 6

REFERENCED ORGANIZATIONS AND STANDARDS

SECTION ~~901~~ 601
GENERAL

~~901.1~~ 601.1 This chapter lists the organizations and standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard.

Organization	Standard	Referenced Section
ACCA Air Conditioning Contractors of America		
2800 Shirlington Road, Suite 300	ACCA Manual J	4.5.7.2
Arlington, VA 22206	ACCA 29-D Manual D	4.5.7.2
www.acca.org	ACCA 36-S Manual S	4.5.7.2
ANSI American National Standards Institute		
Operations Office	ANSI A190.1-2002	4.5.2.1
25 West 43rd Street	ANSI Z124.9–2004	4.3.3.3
Fourth Floor		
New York, NY 10036		
www.ansi.org		
ASHRAE American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.		
1791 Tullie Circle, NE	ASHRAE 52.2-1999	4.5.2.1
Atlanta, GA 30329	ASHRAE 62.2	4.4.6.1
www.ashrae.org		
ASME American Society of Mechanical Engineers		
Three Park Avenue	ASME A112.19.2	
New York, NY 10016-5990	ASME A112.19.14	
www.asme.org	ASME A112.18.1	
ASTM ASTM International		
100 Barr Harbor Drive	ASTM C-1371-98	
West Conshohocken, PA 19428-2859	ASTM E408-71(2002)	
www.astm.org	ASTM E1333-96 (2002)	
CSA Canadian Standards Association		
5060 Spectrum Way, Suite 100	CSA B125.1	
Mississauga, Ontario, Canada L4W 5N6		
www.csa.ca		
IAPMO International Association of Plumbing and Mechanical Officials		
5001 E. Philadelphia St.	IAPMO Z124.9	
Ontario, CA 91761		
iapmo@iapmo.org		

Authority Cited—Health and Safety Code Sections 17921, 17922 and 19990.
Reference—Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

CHAPTER ~~10~~ 7

INSTALLER AND SPECIAL INSPECTOR QUALIFICATIONS

SECTION ~~1001~~ 701
GENERAL
(Reserved)

SECTION ~~1002~~ 702
QUALIFICATIONS
~~(Reserved)~~

~~A507.1.4~~ **702.1 Installer training.** HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 Special inspection. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition to other certifications or qualifications acceptable to the enforcing agency, the following certifications or education may be considered by the enforcing agency when evaluating the qualifications of a special inspector.

1. Certification by a national or regional green building program or standard publisher.
2. Certification by a statewide energy consulting or verification organization, such as HERS raters, building performance contractors, and home energy auditors.
3. Successful completion of a third party apprentice training program in the appropriate trade.
4. Other programs acceptable to the enforcing agency.

Notes:

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

SECTION ~~1003~~ 703
VERIFICATIONS
~~(Reserved)~~

703.1 Documentation. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified in the application checklist.

Authority Cited—Health and Safety Code Sections 17921, 17922 and 19990.
Reference—Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

CHAPTER ~~11~~ 8

~~APPLICATION MATRIX (AM-HCD)~~ FORMS AND WORKSHEETS

~~GREEN BUILDING MEASURE~~	~~REQUIRED~~	~~VOLUNTARY~~
~~**PLANNING AND DESIGN**~~		
~~**Site Development (406.2)**~~		
~~**406.2** A plan is developed and implemented to manage storm water drainage during construction.~~	~~2010 CBC[1]~~	
~~**ENERGY EFFICIENCY**~~		
~~**Performance Approach. (503)**~~		
~~**503.2 Minimum requirements.** Low rise residential buildings shall meet or exceed the minimum standard design required by the California Energy Standards currently in effect.~~	~~2010 CBC[1]~~	
~~**Prescriptive Approach. (504)**~~		
~~**504.6 Minimum requirements.** Low-rise residential buildings shall meet or exceed the minimum standard design required by the California Energy Standards currently in effect.~~	~~2010 CBC[1]~~	
~~**AIR SEALING PACKAGE (506)**~~		
~~**506.1 Joints and openings.** Joints and other openings at the following locations: 1. Exterior joints around window and door frames, including doors between the house and garage, between interior HVAC closets and unconditioned space, between attic and underfloor access and conditioned space and between wall sole plates, floors, exterior panels and all siding materials. 2. Openings for plumbing, electrical and gas lines in exterior walls and interior wall, ceilings and floors. 3. Openings into the attic. 4. Exhaust ducts from clothes dryers and other exhaust fans shall have a damper. 5. Cuts or notches in exterior wall plates.~~	~~2010 CBC[1]~~	
~~**506.1.1 Other openings.** Whole house fan louvers shall close tightly and be insulated or covered to a minimum of R-4.2.~~		
~~**WATER EFFICIENCY AND CONSERVATION**~~		
~~**Indoor Water Use (603)**~~		
~~**603.2** Indoor water use shall be reduced by 20% using one of the follow methods. 1. Water saving fixtures or flow restrictors shall be used. 2. A 20% reduction in baseline water use shall be demonstrated.~~	~~7/01/2011~~	
~~**603.2.1** Multiple showerheads shall not exceed maximum flow rates.~~	~~7/01/2011~~	

~~**MATERIAL CONSERVATION AND RESOURCE EFFICIENCY**~~		
~~**Construction Waste Reduction, Disposal and Recycling (708)**~~		
~~**708.3** A minimum of 50% of the construction waste generated at the site is diverted to recycle or salvage.~~ ~~Exception: Alternate waste reduction methods are developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist.~~	~~2010 CBC[1]~~	
~~**Building Maintenance and Operation (710)**~~		
~~**710.2** An operation and maintenance manual shall be provided to the building occupant or owner.~~	~~2010 CBC[1]~~	
~~**INDOOR ENVIRONMENTAL QUALITY**~~		
~~**Pollutant Control (804)**~~		
~~**804.3** Duct openings and other related air distribution component openings shall be covered.~~	~~2010 CBC[1]~~	
~~**804.4.1** Adhesives shall be No- or Low-VOC.~~	~~2010 CBC[1]~~	
~~**804.4.2** Paints, stains and other coatings shall be No- or Low-VOC.~~	~~2010 CBC[1]~~	
~~**804.4.3** Carpet and carpet systems shall be Low-VOC.~~	~~2010 CBC[1]~~	
~~**804.4.4**Particleboard, medium density fiberboard (MDF), and plywood used in interior finish systems shall comply with low formaldehyde emission standards.~~	~~2010 CBC[1]~~	
~~**Interior Moisture Control (805)**~~		
~~**805.2** Vapor retarder and capillary break is installed at slab on grade foundations.~~	~~2010 CBC[1]~~	
~~**805.3** Moisture content of wood used in wall and floor framing is checked before enclosure.~~	~~2010 CBC[1]~~	
~~**Air Quality and Exhaust (806)**~~		
~~**806.3** Exhaust fans which terminate outside the building are provided in every bathroom.~~	~~2010 CBC[1]~~	
~~**806.4** MERV 6, or higher filters are installed on central air and heating systems.~~	~~2010 CBC[1]~~	

~~[1]Unless specified otherwise, this measure shall become effective on the effective date of the 2010 California Building Code.~~

WORKSHEET (WS-1)
BASELINE WATER USE

BASELINE WATER USE CALCULATION TABLE											
Fixture Type	**Quantity**		**Flow-rate (gpm)**		**Duration**		**Daily uses**		**Occupants[3,4]**		**Gallons per day**
Showerheads		X	2.5	X	5 min.	X	1	X		=	
Showerheads Residential		X	2.5	X	8 min.	X	1	X		=	
Lavatory Faucets Residential		X	2.2	X	.25 min.	X	3	X		=	
Kitchen Faucets		X	2.2	X	4 min.	X	1	X		=	
Replacement Aerators		X	2.2	X		X		X		=	
Wash Fountains		X	2.2	X		X		X		=	
Metering Faucets		X	0.25	X	.25 min.	X	3	X		=	
Metering Faucets for Wash Fountains		X	2.2	X	.25 min.	X		X		=	
Gravity tank type Water Closets		X	1.6	X	1 flush	X	1 male[1] 3 female	X		=	
Flushometer Tank Water Closets		X	1.6	X	1 flush	X	1 male[1] 3 female	X		=	
Flushometer Valve Water Closets		X	1.6	X	1 flush	X	1 male[1] 3 female	X		=	
Electromechanical Hydraulic Water Closets		X	1.6	X	1 flush	X	1 male[1] 3 female	X		=	
Urinals		X	1.0	X	1 flush	X	2 male	X			
Total daily baseline water use (BWU)										=	
_____ (BWU) X .80 = _____ Allowable water use											

[1] Except for low-rise residential occupancies, the daily use number shall be increased to three if urinals are not installed in the room.
[2] The Flow-rate is from the CEC Appliance Efficiency Standards, Title 20 California Code of Regulations; where a conflict occurs, the CEC standards shall apply.
[3] For low-rise residential occupancies, the number of occupants shall be based on two persons for the first bedroom, plus one additional person for each additional bedroom.
[4] For non-residential occupancies, refer to Table A, Chapter 4, 2007 California Plumbing Code, for occupant load factors.

WORKSHEET (WS-2)
20% REDUCTION WATER USE CALCULATION TABLE

20% REDUCTION WATER USE CALCULATION TABLE											
Fixture Type	**Quantity**		**Flow-rate (gpm)[2,]**		**Duration**		**Daily uses**		**Occupants[3,4]**		**Gallons per day**
Showerheads		X		X	5 min.	X	1	X		=	
Showerheads Residential		X		X	8 min.	X	1	X		=	
Lavatory Faucets Residential		X		X	25 min.	X	3	X		=	
Kitchen Faucets		X		X	4 min.	X	1	X		=	
Replacement Aerators		X		X		X		X		=	
Wash Fountains		X		X		X		X		=	
Metering Faucets		X		X	.25 min.	X	3	X		=	
Metering Faucets for Wash Fountains		X		X	.25 min.	X		X		=	
Gravity tank type Water Closets		X		X	1 flush	X	1 male[1] 3 female	X		=	
HET [5] High Efficiency Toilet		X	1.28	X	1 flush	X	1 male[1] 3 female	X		=	
Flushometer Tank Water Closets		X		X	1 flush	X	1 male[1] 3 female	X		=	
Flushometer Valve Water Closets		X		X	1 flush	X	1 male[1] 3 female	X		=	
Electromechanical Hydraulic Water Closets		X		X	1 flush	X	1 male[1] 3 female	X		=	
Urinals		X		X	1 flush	X	2 male	X			
Urinals Non-Water Supplied		X	0.0	X	1 flush	X	2 male	X		=	
Proposed water use										=	
_____ (BWU from WS-1) X .80 = _____ Allowable water use											

[1] Except for low-rise residential occupancies, the daily use number shall be increased to three if urinals are not installed in the room.
[2] The Flow-rate is from the CEC Appliance Efficiency Standards, Title 20 California Code of Regulations; where a conflict occurs, the CEC standards shall apply.
[3] For low-rise residential occupancies, the number of occupants shall be based on two persons for the first bedroom, plus one additional person for each additional bedroom.
[4] For non-residential occupancies, refer to Table A, Chapter 4, 2007 California Plumbing Code, for occupant load factors.
[5] ~~Includes water closets with an effective flush rate of 1.28 gallons or less when tested per ASME A112.19.2 and ASME A112.19.14.~~
Single Flush Toilets - The effective flush volume shall not exceed 1.28 gallons (4.8 liters). The effective flush volume is the average flush volume when tested in accordance with ASME A112.19.233.2.
Dual Flush Toilets - The effective flush volume shall not exceed 1.28 gallons (4.8 liters). The effective flush volume is defined as the composite, average flush volume of two reduced flushes and one full flush. Flush volumes will be tested in accordance with ASME A112.19.2 and ASME A112.19.14.

CONSTRUCTION WASTE MANAGEMENT (CWM) PLAN

Note: This sample form may be used to assist in documenting compliance with the waste management plan.

Project Name: _____
Job #: _____
Project Manager: _____
Waste Hauling Company: _____
Contact Name: _____

All Subcontractors shall comply with the project's Construction Waste Management Plan.
All Subcontractor foremen shall sign the CWM Plan Acknowledgement Sheet.

Subcontractors who fail to comply with the Waste Management Plan will be subject to backcharges or withholding of payment, as deemed appropriate. For instance, Subcontractors who contaminate debris boxes that have been designated for a single material type will be subject to backcharge or withheld payment, as deemed appropriate.

1. The project's overall rate of waste diversion will be _____%.

2. This project shall generate the least amount of waste possible by planning and ordering carefully, following all proper storage and handling procedures to reduce broken and damaged materials and reusing materials whenever possible. The majority of the waste that is generated on this jobsite will be diverted from the landfill and recycled for other use.

3. Spreadsheet 1, enclosed, identifies the waste materials that will be generated on this project, the diversion strategy for each waste type and the anticipated diversion rate.

4. Waste prevention and recycling activities will be discussed at the beginning of weekly subcontractor meetings. As each new subcontractor comes on-site, the WMP Coordinator will present him/her with a copy of the CWM Plan and provide a tour of the jobsite to identify materials to be salvaged and the procedures for handling jobsite debris. Each Subcontractor foremen will acknowledge in writing that they have read and will abide by the CWM Plan. Subcontractor Acknowledgement Sheet enclosed. The CWM Plan will be posted at the jobsite trailer.

5. Salvage: Excess materials that cannot be used in the project, nor returned to the vendor, will be offered to site workers, the owner, or donated to charity if feasible.

6. [HAULING COMPANY] will provide a commingled drop box at the jobsite for most of the construction waste. These commingled drop boxes will be taken to [Sorting Facility Name and Location]. The average diversion rate for commingled waste will be _____%. As site conditions permit, additional drop boxes will be used for particular phases of construction (e.g. concrete and wood waste) to ensure the highest waste diversion rate possible.

7. In the event that the waste diversion rate achievable via the strategy described in (6) above, is projected to be lower than what is required , then a strategy of source-separated waste diversion will be implemented. Source separated waste refers to jobsite waste that is not commingled but is instead allocated to a debris box designated for a single material type, such as clean wood or metal

   Notes:
   1. Waste stream reduction refers to efforts taken by the builder to reduce the amount of waste generated by the project to below four (4) pounds per square foot of building area.
   2. When using waste stream reduction measures, the gross weight of the product is subtracted from a base weight of four (4) pounds per square foot of building area. This reduction is considered additional diversion and can be used in the waste reduction percentage calculations.

8. [HAULING COMPANY] will track and calculate the quantity (in tons) of all waste leaving the project and calculate the waste diversion rate for the project. [HAULING COMPANY] will provide Project Manager with an updated monthly report on gross weight hauled and the waste diversion rate being achieved on the project. [HAULING COMPANY's] monthly report will track separately the gross weights and diversion rates for commingled debris and for each source-separated waste stream leaving the project. In the event that [HAULING COMPANY] does not service any or all of the debris boxes on the project, the [HAULING COMPANY] will work with the responsible parties to track the material type and weight (in tons) in such debris boxes in order to determine waste diversion rates for these materials.

9. In the event that Subcontractors furnish their own debris boxes as part of their scope of work, such Subcontractors shall not be excluded from complying with the CWM Plan and will provide [HAULING COMPANY] weight and waste diversion data for their debris boxes.

10. In the event that site use constraints (such as limited space) restrict the number of debris boxes that can be used for collection of designated waste the project Superintendent will, as deemed appropriate, allocate specific areas onsite where individual material types are to be consolidated. These collection points are not to be contaminated with non-designated waste types.

11. Debris from jobsite office and meeting rooms will be collected by [DISPOSAL SERVICE COMPANY]. [DISPOSAL SERVICE COMPANY] will, at a minimum, recycle office paper, plastic, metal and cardboard.

CONSTRUCTION WASTE MANAGEMENT (CWM) WORKSHEET

Note: This sample form may be used to assist in documenting compliance with the waste management plan.

Project Name:

Job Number:

Project Manager:

Waste Hauling Company:

Construction Waste Management (CWM) Plan

Waste Material Type	Diversion Method:		Projected Diversion Rate
	Commingled and Sorted Off-site	Source Separated Onsite	
Asphalt			
Concrete			
Shotcrete			
Metals			
Wood			
Rigid Insulation			
Fiberglass Insulation			
Acoustic Ceiling Tile			
Gypsum Drywall			
Carpet/Carpet Pad			
Plastic Pipe			
Plastic Buckets			
Plastic			
Hardiplank Siding and Boards			
Glass			
Cardboard			
Pallets			
Job office trash, paper, glass & plastic bottles, cans, plastic			
Alkaline and rechargeable, batteries, toner cartridges, and electronic devices			
Other:			
Other:			
Other:			
Other:			

CONSTRUCTION WASTE MANAGEMENT (CWM) ACKNOWLEDGMENT

Project Name: _____
Job Number: _____
Project Manager: _____
Waste Hauling Company: _____

CWM Plan Acknowledgment

The Foreman for each new Subcontractor that comes on site is to receive a copy of the Construction Waste Management Plan and complete this Acknowledgement Form.

I have read Waste Management Plan for project; I understand the goals of this plan and agree to follow the procedures described in this plan.

Date	Subcontractor Company	Foreman	Signature

Authority Cited—Health and Safety Code Sections 17921, 17922 and 19990.
Reference—Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

APPENDIX A4

~~COMMENTARY OF ADDITIONAL DESIGN CONSIDERATIONS~~
RESIDENTIAL VOLUNTARY MEASURES

~~A101.1 General~~ ~~The~~ Some of the measures contained in this appendix are not mandatory unless adopted by a city, county, or city and county as specified in Section 101.7 and provide additional ~~considerations~~ measures that designers, builders, and property owners may wish to consider during the planning, design and construction process. ~~The standards in this appendix will continue to be developed through the next code adoption cycle for placement in the body of this code.~~

~~SECTION A301~~
~~GREEN BUILDING~~

~~**A301.1 A4.3.1 Scope.** Buildings shall be designed to include the green building measures specified as mandatory in the application matrices contained in Chapter 11 of this code. Voluntary green building measures may be included but are not required. Additional considerations which designers, builders, and property owners may wish to consider during the planning, design and construction process are contained in this appendix.~~

~~SECTION A401~~
~~PLANNING AND DESIGN~~

DIVISION A4. 1 – PLANNING AND DESIGN

PREFACE

Given that land use and planning are largely regulated locally, cities, counties and cities and counties should consider reducing greenhouse gas emissions associated with development through local land-use practices in conjunction with enforcing the provisions of this code. Specific land use strategies a city, county, or city and county may wish to consider include but are not limited to the following:

Site selection. Develop sites for buildings, hardscape, roads or parking areas consistent with the local general plan and regional transportation plan pursuant to SB 375 (Stats 2008, Ch. 728).

Regional sustainable communities strategy. Site selection and building design and use shall conform the project with the prevailing regional sustainable communities strategy or alternative planning strategy, whichever meets the greenhouse gas target established by the California Air Resources Board pursuant to SB375 (Stats. 2008, Ch. 728), including the general location of uses, residential densities, and building intensities.

Transit priority projects. To qualify as a transit priority project, the project shall meet three criteria:

(1) (a) contain at least 50 percent residential use, based on total building square footage and, if the project contains between 26 and 50 percent nonresidential uses, a floor area ratio of not less than 0.75; (b) provide a minimum net density of at least 20 dwelling units per acre; and (c) be within one-half mile of a major transit stop or high-quality transit corridor included in a regional transportation plan as described in Section 21155 of Stats. 2008, Ch. 728;

(2) be consistent with the prevailing sustainable communities strategy or alternative planning strategy, whichever meets the greenhouse gas target established by the California Air Resources Board, including the general location of uses, residential densities, and building intensities; and

(3) have all necessary entitlements required by the applicable local government.

Note: For additional information, see Government Code Sections 65080, 65080.1, 65400, and Public Resources Code Sections 21061.3 and 21155.

SECTION A4.1.1
GENERAL

~~A401.1 General~~ A4.1.1.1 Scope. The provisions of this ~~chapter~~ division outline planning, design and development methods that include environmentally responsible site selection, building design, building siting and development to protect, restore, and enhance the environmental quality of the site and respect the integrity of adjacent properties.

SECTION ~~A201~~ A4.1.2
DEFINITIONS

~~A201.1~~ **A4.1.2.1 Scope.** Unless otherwise stated, the words and terms used in this ~~appendix~~ division shall, for the purposes of this ~~chapter~~ division, have the meanings shown in this code.

BROWNFIELD SITE. Real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant, with certain legal exclusions and additions.

Note: See the full text at EPA's web site at: http://www.epa.gov/brownfields/glossary.htm.

DEVELOPMENT FOOTPRINT. The total area of the building footprint, hardscape, access roads, and parking.

GREENFIELDS. Sites that are not previously developed or graded and remain in a natural state able to support agriculture, open space, or habitat.

> **Note:** Previously developed sites are those that previously contained buildings, roadways, parking lots, or were graded or altered by direct human activities.

GREYFIELD SITE. Any site previously developed with at least 50% of the surface area covered with impervious material.

INFILL SITE. A site in an urbanized area that meets criteria defined in Public Resources Code Section 21061.3.

PERMEABLE PAVING. Permeable paving materials and techniques which allow the movement of water around the paving material and allow precipitation to percolate through the paving surface to the soil below.

SECTION ~~403.1~~ A4.1.3
SITE SELECTION
~~(Reserved)~~

A4.1.3.1 Selection. A site which complies with at least one of the following characteristics is selected:

1. An infill site is selected.
2. A greyfield site is selected.
3. An EPA-recognized and remediated Brownfield site is selected.

SECTION ~~404.1~~ A4.1.4
SITE PRESERVATION
~~(Reserved)~~

A4.1.4.1 Supervision and education. Individuals with oversight authority on the project who have been trained in areas related to environmentally friendly development can teach green concepts to other members of the development staff and ensure that training is provided to all parties associated with the development of the project.

Prior to beginning the construction activities, all parties involved with the development process shall receive a written guideline and instruction specifying the green goals of the project.

> **Note:** Lack of adequate supervision and dissemination of the project goals can result in negative effects on green building projects. If the theme of green building is not carried throughout the project the overall benefit can be substantially reduced by the lack of knowledge and information provided to the various entities involved with the construction of the project.

SECTION ~~A405.1~~ A4.1.5
DECONSTRUCTION AND REUSE OF EXISTING ~~STRUCTURES~~ MATERIALS

~~**A405.1.1** If feasible, disassemble existing buildings instead of demolishing to allow for reuse or recycling of building materials.~~

A4.1.5.1 General. Existing buildings on the site are deconstructed and the salvaged materials are reused. Reused materials or products must comply with current building standards requirements or be an accepted alternate method or material.

A4.1.5.2 Reuse of Materials. Materials which can be easily reused include but are not limited to the following:

1. Light fixtures
2. Plumbing fixtures
3. Doors and trim
4. Masonry
5. Electrical devices
6. Appliances
7. Foundations or portions of foundations

Note: Reused material must be in compliance with the appropriate Title 24 requirements.

SECTION ~~A406.1~~ A4.1.6
SITE DEVELOPMENT

~~**A406.1.1**~~ **A4.1.6.1 Building Orientation.** Orient buildings to optimize the use of solar energy with the long side of the house oriented within 30° of south.

A4.1.6.2 Soil Analysis and Protection. The soils at the building site are analyzed and protected as specified in this section.

A4.1.6.2.1 Soil Analysis. ~~**AA 406.3.1**~~ Soil analysis is performed by a licensed design professional and the findings utilized in the structural design of the building.

A4.1.6.2.2 Soil Protection. ~~**AA 406.3**~~ The effect of development on building sites is evaluated and ~~addressed~~ the soil is protected by one or more of the following:

~~**AA 406.3.2**~~ 1. Natural drainage patterns are evaluated and erosion controls are implemented to minimize erosion during construction and after occupancy.
~~**AA 406.3.3**~~ 2. Site access is accomplished by minimizing the amount of cut and fill needed to install access roads and driveways.
~~**AA 406.3.4**~~ 3. As allowed by other parts of the California Building Standards Code underground construction activities are coordinated to utilize the same trench, minimize the amount of time the disturbed soil is exposed and the soil is replaced using accepted compaction methods.

A4.1.6.2.3 Topsoil Protection. ~~**AA 406.3.5** Displaced topsoil is stockpiled in a designated area covered or protected from erosion~~ Topsoil shall be protected or saved for reuse as specified in this section.

Tier 1. Displaced topsoil shall be stockpiled for reuse in a designated area and covered or protected from erosion. Note: Protection from erosion includes covering with tarps, straw, mulch, chipped wood, vegetative cover, or other means acceptable to the enforcing agency to protect the topsoil for later use.

Tier 2. The construction area shall be identified and delineated by fencing or flagging to limit construction activity to the construction area. Heavy equipment or vehicle traffic and material storage outside the construction area shall be limited to areas that are planned to be paved.

~~**A406.1.2**~~ **A4.1.6.3 Landscape Design.** Post construction landscape designs shall accomplish ~~as many~~ one or more of the following ~~as possible~~:

1. Areas disrupted during construction are restored to be consistent with native vegetation species and patterns.
2. Limit turf areas to the greatest extent possible.

   Tier 1 not more than 50% of the total landscaped area.

   Tier 2 not more than 25 % of the total landscaped area .

3. Utilize at least 75% native Californian or drought tolerant plant and tree species appropriate for the climate zone region.
4. Hydrozoning irrigation techniques are incorporated into the landscape design.

A4.1.6.4 Water permeable surfaces. Permeable paving is utilized for the parking, walking, or patio surfaces in compliance with the following.

Tier 1. Not less than 20% of the total parking, walking, or patio surfaces shall be permeable.

Tier 2. Not less than 30% of the total parking, walking, or patio surfaces shall be permeable.

Exceptions:

1. The primary driveway, primary entry walkway and entry porch or landing shall not be included when calculating the area required to be a permeable surface.

2. Required accessible routes for persons with disabilities as required by California Code of Regulations, Title 24, Part 2, Chapter 11A and/or Chapter 11B as applicable.

A4.1.6.5 Cool roof. Roofing materials shall have a minimum 3-year aged solar reflectance and thermal emittance or a minimum aged Solar Reflectance Index (SRI) equal to or greater than the values specified in Table A4.1.6.5(1) for Tier 1 and Table A4.1.6.5(2) for Tier 2.

Exceptions:

1. Install roof constructions that have a thermal mass over the roof membrane with a weight of at least 25 lb/sf.

2. Install a combination of highly reflective and roof constructions with thermal mass over the roof membrane with a weight of at least 25 lb/sf.

Note: If SRI values are used to comply with this section, they shall be calculated using the Solar Reflective Index (SRI) Calculation Worksheet (SRI-WS) developed by the California Energy Commission. The thermal emittance values used for the worksheet may be either the initial value or the three year aged value listed by the Cool Roof Rating Council (CRRC).

TABLE A4.1.6.5(1)
Tier 1

Roof Slope	Roof Weight	Climate Zone	Minimum 3-year Aged		
			Solar Reflectance	Thermal Emittance	SRI
≤ 2 : 12	N.A	13 & 15	0.55	0.75	64
> 2 : 12	< 5 lbs./ft^2	10-15	0.20	0.75	16
	≥ 5 lbs./ft^2	1-16	0.15	0.75	10

TABLE 4.1.6.5(2)
Tier 2

Roof Slope	Roof Weight	Climate Zone	Minimum 3-year Aged		
			Solar Reflectance	Thermal Emittance	SRI
≤ 2 : 12	N/A	2,4,6-15	0.65	0.85	78
> 2 : 12	N/A	2,4,6-15	0.25	0.85	23

A4.1.6.5.1 Verification. Inspection shall be conducted to ensure roofing materials meet cool roof aged solar reflectance and thermal emittance or SRI values.

SECTION A4.1.7
INNOVATIVE CONCEPTS AND LOCAL ENVIRONMENTAL CONDITIONS

A4.1.7.1 Innovative concepts and local environmental conditions. The provisions of this code are not intended to prevent the use of any alternate material, appliance, installation, device, arrangement, method, design or method of construction not specifically prescribed by this code. This code does not limit the authority of city, county, or city and county government to make necessary changes to the provisions contained in this code pursuant to Section 101.7.1.

~~**SECTION A501**~~
~~**ENERGY EFFICIENCY**~~

DIVISION A4. 2 – ENERGY EFFICIENCY

SECTION A4.2.1
GENERAL

~~**A501.1 General**~~ **A4.2.1.1 Scope.** For the purposes of energy efficiency standards in this ~~code~~ appendix, the California Energy Commission will continue to adopt mandatory ~~building~~ standards. It is the intent of this code to encourage ~~green~~ buildings to achieve exemplary performance in the area of energy efficiency. Specifically, a green building should achieve at least a 15% reduction in energy usage when compared to the State's mandatory energy efficiency standards.

SECTION ~~A502.1~~ A4.2.2
DEFINITIONS
(Reserved)

SECTION ~~A503.1~~ A4.2.3
PERFORMANCE APPROACH

A4.2.3.1 Energy performance. Using an Alternative Calculation Method (ACM) approved by the California Energy Commission, calculate each building's energy and CO_2 emissions, and compare it to the standard or "budget" building to achieve the following:

Tier 1. Exceed the California Energy Code based on the 2008 energy standards requirements by 15%.

Tier 2. Exceed the California Energy Code based on the 2008 energy standards requirements by 30%.

Field verify and document the measures and calculations used to reach the desired level of efficiency following the requirements specified in the Title 24 Reference Appendices.

~~**A503.1.1** Incorporate the California Energy Commission, New Solar Homes Partnership (NSHP)[1, 2] specifications for building energy performance requirements.~~
~~Using an Alternative Calculation Method (ACM) approved by the California Energy Commission, calculate each building's energy and CO_2 emissions, and compare it to the standard or "budget" building to achieve the following:~~

~~Tier I. Exceed 2007 the California Energy Code requirements by 15%.~~
~~Tier II. Exceed 2007 the California Energy Code requirements by 35% 30% and cooling energy requirements by 40%.~~
~~Solar water heating may be used to assist in meeting the energy efficiency requirements of either Tier I or Tier II.~~
~~Document and field verify the measures and calculations used to reach the desired level of efficiency following the requirements specified in the Title 24 Residential Alternative Calculation Manual.~~

~~[1] In addition, for either Tier I or II, each appliance provided by the builder must be Energy Star if an Energy Star designation is applicable for that appliance. Solar water heating may be used to assist in meeting the energy efficiency requirements of either Tier I or Tier II.~~
~~[2] Information on NSHP incentives available through the California Energy Commission may be obtained at the "Go Solar California" website: www.GoSolarCalifornia.ca.gov/nshp/index.html.~~

SECTION ~~A504.1~~ A4.2.4
PRESCRIPTIVE APPROACH
(Reserved)

SECTION ~~A505.1~~ A4.2.5
BUILDING ENVELOPE
~~**(Reserved)**~~

A4.2.5.1 Radiant roof barriers. Radiant roof barrier is installed in Climate Zones 2, 4, and 8 through 15. The radiant barrier must be tested according to ASTM C-1371-98 or ASTM E408-71(2002) and must be certified by the Department of Consumer Affairs. Radiant barriers must also meet installation criteria specified in Section 4.2.1 of the California Energy Commission *Residential ACM Manual*.

A4.2.5.2 Window shading. Exterior shading at least 18 inches in depth is provided on south and west windows by at least one of the following methods:

1. Moveable exterior awnings or louvers.
2. Porch or patio covers.
3. Overhangs.

SECTION ~~A506.1~~ A4.2.6
AIR SEALING PACKAGE
~~(Reserved)~~

A.4.2.6.1 Reduced infiltration. Infiltration is reduced and verified by third party testing to comply with requirements contained in the California Energy Code.

SECTION ~~A507.1~~ A4.2.7
HVAC DESIGN, EQUIPMENT AND INSTALLATION
~~(Reserved)~~

~~**A507.1.1** Duct systems are sized, designed, and equipment is selected using the following methods:~~
~~1. Size duct systems according to ACCA 29-D (Manual D) or equivalent.~~
~~2. Select heating and cooling equipment according to ACCA 36-S (Manual S) or equivalent.~~
~~3. Establish heat loss and heat gain values according to ACCA Manual J or equivalent.~~

~~**A507.1.2**~~ **A4.2.7.1 Innovative systems.** Radiant, hydronic, ground source and other innovative space heating and cooling systems included in the proposed design shall be designed using generally accepted industry-approved guidelines and design criteria.

~~**A507.1.3**~~ **A4.2.7.2 Commissioning.** A commissioning plan shall be developed to document specified building components meet the project design and performance goals. ~~The following items pertaining to the heating and cooling systems are inspected and certified by an independent third party agency:~~

A.4.2.7.2.1 Commissioning of HVAC Systems. In addition to other items in the commissioning plan the following items, as appropriate, pertaining to the heating, ventilating, and cooling systems shall be inspected and certified by an independent third party that is trained or certified to inspect and test building systems as specified in Section 702.2.

1. Verify compliance with the manufacturers recommended start-up procedures.
2. Verify refrigerant charge by super-heat or other methods specified by the manufacturer.
3. Burner is set to fire at the nameplate input rating.
4. Temperature drop across the evaporator is within the manufacturers recommended range.
5. Test and verify air flow to be within 10% of the initial design air flow.
6. Static pressure within the duct system is within the manufacturer's acceptable range.
7. Verify that the whole house and exhaust ventilation systems meet Title 24 requirements.
8. Verify that the recommended maintenance procedures and schedules are documented and provided to the home owner.

A.4.2.7.2.3 Commissioning Checklist. Results of the commissioning inspection shall be included in the Operation and Maintenance Manual required in Section 4.4.10.1.

~~**A507.1.4** The HVAC contractor and installer are certified for equipment and duct installation by a nationally or regionally recognized training or certification program.~~

~~**A507.1.5**~~ **A4.2.7.4 Gas-fired heating equipment.** ~~When possible, use~~ Install gas-fired (natural or propane) space heating equipment with an Annual Fuel Utilization Ratio (AFUE) of ~~.92~~ .90 or higher.

~~**A507.1.6**~~ **A4.2.7.5 Heat pumps.** If an electric heat pump must be used, select equipment with a Heating Seasonal Performance Factor (HSPF) of 8.0 or higher.

~~**A507.1.7**~~ **A4.2.7.6 Cooling equipment.** When climatic conditions necessitate the installation of cooling equipment, select cooling equipment with a Seasonal Energy Efficiency Ratio (SEER) higher than 13.0 and an Energy Efficiency Ratio (EER) of at least 11.5.

~~A507.1.8~~ **A4.2.7.7 Ducts location.** ~~If possible, install~~ Install ductwork to comply with ~~as many~~ at least one of the following ~~as possible~~:

1. Install ducts within the conditioned envelope of the building.
2. Install ducts in an underfloor crawl space.
3. Use ducts with an R-6 insulation value or higher.
4. Install ductwork which is buried in the ceiling insulation.

~~A507.1.9~~ **A4.2.7.8 Duct leakage.** Perform duct leakage testing to verify a total leakage rate of less than 6% of the total fan flow.

~~A507.1.10~~ **A4.2.7.9 Whole house fans.** In ~~cooling~~ climate zones 2,4, and 8 through 15, install a whole-house fan with insulated louvers or an insulated cover.

A4.2.7.10 Ceiling Fans. ENERGY STAR ceiling fans are installed in all bedrooms and living areas.

SECTION ~~A508.1~~ A4.2.8
WATER HEATING DESIGN, EQUIPMENT AND INSTALLATION

~~A508.1.1~~ **A4.2.8.1 Tank type water heater efficiency.** The Energy Factor (EF) for a gas fired storage water heater is ~~.62 or~~ higher than .60.

A4.2.8.2 Tankless water heater efficiency. The Energy Factor (EF) for a gas-fired tankless water heater is .80 or higher.

A4.2.8.3 Distribution systems. Where the hot water source is more than 10 feet from a fixture, the potable water distribution system shall convey hot water using one of the following methods:

1. A central manifold plumbing system with parallel piping configuration ("home-run system") is installed using the smallest diameter piping allowed by the California Plumbing Code or an approved alternate.
2. The plumbing system design incorporates the use of a demand controlled circulation pump.
3. A gravity-based hot water recirculation system is used.
4. A timer-based hot water recirculation system is used.
5. Other methods approved by the enforcing agency.

~~A508.1.3 Insulate all hot water lines with a minimum of R-6 insulation.~~

~~SECTION~~ ~~A509.1~~ A4.2.9
LIGHTING
~~(Reserved)~~

A4.2.9.1 Lighting. Building lighting consists of at least 90% ENERGY STAR qualified hard-wired fixtures.

SECTION ~~A510.1~~ A4.2.10
APPLIANCES

~~A510.1.1~~ **A4.2.10.1 Appliance rating.** Each appliance provided by the builder meets ENERGY STAR if an ENERGY STAR designation is applicable for that appliance.

SECTION ~~A511.1~~ A4.2.11
RENEWABLE ENERGY

~~A511.1.1~~ **A4.2.11.1 New solar homes partnership.** Install a solar photovoltaic (PV) system in compliance with the California Energy Commission New Solar Homes Partnership (NSHP).[1, 2] Install energy efficiency measures meeting either Tier I or Tier II below.

Tier I. Exceed ~~2007~~ the California Energy Code requirements, based on the 2008 Energy Efficiency Standards by 15%.

Tier II. Exceed ~~2007~~ the California Energy Code requirements, based on the 2008 Energy Efficiency Standards by ~~35%~~ 30% ~~and cooling energy requirements by 40%~~.

Solar water heating may be used to assist in meeting the energy efficiency requirements of either Tier I or Tier II.

[1] In addition, for either Tier I or II, each appliance provided by the builder must be Energy Star if an Energy Star designation is applicable for that appliance. ~~Solar water heating may be used to assist in meeting the energy efficiency requirements of either Tier I or Tier II.~~
[2] Information on NSHP incentives available through the California Energy Commission may be obtained at the "Go Solar California" website: www.GoSolarCalifornia.ca.gov/nshp/index.html.

A4.2.11.2 Solar water heating system. A Solar Rating and Certification Corporation (SRCC) OG 300 solar water heating system is installed. The SRCC Solar Energy Factor (SE) shall be used to determine the Solar Fraction (SF). The SF shall be at least 0.5.

A4.2.11.3 Space for future solar installation. A minimum of 300 square feet of unobstructed roof area facing within 30° of south is provided for future solar collector or photovoltaic panels. Rough-in penetrations through the roof surface within 24 inches (610 mm) of the boundary of the unobstructed roof area are provided for electrical conduit and water piping.

A4.2.11.4 Future access for solar system. A minimum one inch (25.4 mm) electrical conduit is provided from the electrical service equipment to an accessible location in the attic or other location approved by the enforcing agency.

SECTION ~~A512.1~~ A4.2.12
ELEVATORS, ESCALATORS AND OTHER EQUIPMENT
(Reserved)

SECTION A4.2.13
INNOVATIVE CONCEPTS AND LOCAL ENVIRONMENTAL CONDITIONS

A4.2.13.1 Innovative concepts and local environmental conditions. The provisions of this code are not intended to prevent the use of any alternate material, appliance, installation, device, arrangement, method, design or method of construction not specifically prescribed by this code. This code does not limit the authority of city, county, or city and county government to make necessary changes to the provisions contained in this code pursuant to Section 101.7.1.

~~SECTION A601~~
~~WATER EFFICIENCY AND CONSERVATION~~

DIVISION A4. 3 – WATER EFFICIENCY AND CONSERVATION

SECTION ~~A601.1~~ A4.3.1
GENERAL
(Reserved)

SECTION ~~A602.1~~ A4.3.2
DEFINITIONS
~~**(Reserved)**~~

LANDSCAPE (PLANT) COEFFICIENT [Kl]. The product of the species factor multiplied by the density factor and the microclimate factor. {Kl=Ks x Kd X Kmc} The landscape coefficient is used in the landscape water budget calculation. (UCCE, 2000)

REFERENCE EVAPOTRANSPIRATION (ETo). The estimated rate of evapotranspiration from a standardized surface of well watered, actively growing cool season turfgrass clipped to 12 cm with sufficient density to fully shade the soil. The water needs of a landscape planting can be calculated by multiplying the Landscape Coefficient [Kl] and Reference Evapotranspiration {ETo}

SECTION ~~A603.1~~ A4.3.3
INDOOR WATER USE

~~**A603.1.1** Hot water distribution systems should utilize at least one of the following methods or features in the distribution system:~~

~~1. An on-demand hot water recirculation system.~~
~~2. A point of use hot water system.~~
~~3. A centrally located hot water heater to minimize the length of piping between the fixtures and water heater.~~
~~4. Hot water piping is sized to meet the minimum pipe size diameters allowed by the California Plumbing Code.~~
~~5. A hot water distribution system is designed to keep all hot water piping runs as short as possible.~~

A4.3.3.1 Kitchen faucets and dishwashers. Kitchen faucets and dishwashers in Tier 1 and tier 2 buildings shall comply with this section.

Tier 1. The maximum flow rate at a kitchen sink faucet shall not be greater than 1.5 gallons per minute at 60 psi.

Note: Rated flow rates for the default function of the faucet shall be used to demonstrate compliance with this section.

Tier 2. In addition to the kitchen faucet requirements for Tier 1, dishwashers in Tier 2 building shall be ENERGY STAR qualified and not use more than 5.8 gallons of water per cycle.

A4.3.3.2 Non-water supplied urinals and waterless toilets. Non-water supplied urinals or composting toilets are installed.

SECTION ~~A604.1~~ A4.3.4
OUTDOOR WATER USE

~~**A604.1.1**~~ **A4.3.4.1 Low-water consumption irrigation system.** Install a low-water consumption irrigation system which ~~does not rely on~~ minimizes the use of spray type heads. Spray type irrigation may only be used at turf areas. The remaining irrigation systems shall use only the following types of low-volume irrigation systems:

1. Drip irrigation.
2. Bubblers.
3. Drip emitters.
4. Soaker hose.
5. Stream-rotator spray heads.
6. Other systems acceptable to the enforcing agency.

~~**A604.1.2** Use a zoned Irrigation system.~~

A4.3.4.2 Rainwater Systems. A rainwater capture, storage and re-use system is designed and installed to use rainwater generated by at least 65% of the available roof area.

~~**A604.1.3** Use weather based irrigation controllers to automatically by pass the irrigation schedule if rain is forecast.~~

A4.3.4.3 Water budget. When landscaping is provided by the builder, a water budget shall be developed for landscape irrigation use that conforms to the local water efficient landscape ordinance or to the California Department of Water Resources Model Water Efficient Landscape Ordinance where no local ordinance is applicable.

A4.3.4.4 Potable water reduction. When landscaping is provided by the builder, a water efficient landscape irrigation system shall be installed that reduces potable water use. The potable water use reduction shall be calculated beyond the initial requirements for plant installation and establishment. Calculations for the reduction shall be based on the water budget developed pursuant to Section A4.3.4.3.

Tier 1. Reduce the use of potable water to a quantity that does not exceed 65% of ETo times the landscape area.

Tier 2. Reduce the use of potable water to a quantity that does not exceed 60% of ETo times the landscape area.

Note: Methods used to comply with this section must be designed to the meet the requirements of the other parts of the California Building Standards Code and may include, but are not limited to, the following:

1. Plant coefficient.
2. Irrigation efficiency and distribution uniformity.
3. Use of captured rainwater.
4. Use of recycled water.
5. Water treated for irrigation purposes and conveyed by a water district or public entity.
6. Use of graywater.

A4.3.4.4.1 Verification. A calculation demonstrating the applicable potable water use reduction required by this section shall be provided.

A4.3.4.5 Potable water elimination. When landscaping is provided by the builder and as allowed by local ordinance, a water efficient landscape irrigation design that eliminates the use of potable water beyond the initial requirements for plant installation and establishment. Methods used to accomplish the requirements of this section must be designed to the requirements of the *California Building Standards Code* and shall include, but not be limited to, the following:

1. Plant coefficient.
2. Irrigation efficiency and distribution uniformity.
3. Use of captured rainwater.
4. Use of recycled water.
5. Water treated for irrigation purposes and conveyed by a water district or public entity.
6. Use of graywater.

SECTION ~~A605.1~~ A4.3.5

~~RECYCLED, RECLAIMED AND GRAYWATER SYSTEMS~~ WATER REUSE SYTEMS

~~**A605.1.1**~~ **A4.3.5.1 Graywater.** ~~If feasible, utilize a graywater underground irrigation system in compliance with Chapter 16 of the California Plumbing Code~~ Alternative plumbing piping is installed to permit the discharge from the clothes washer or other fixtures to be used for an irrigation system in compliance with Chapter 16A of the California Plumbing Code.

A4.3.5.2 Recycled water piping. Based on projected availability, dual water piping is installed for future use of recycled water at the following locations:

1. Interior piping for the use of recycled water is installed to serve all water closets, urinals, floor drains.
2. Exterior piping is installed to transport recycled water from the point of connection to the structure.

A4.3.5.3 Recycled water for landscape irrigation. Recycled water is used for landscape irrigation.

SECTION A4.3.6
INNOVATIVE CONCEPTS AND LOCAL ENVIRONMENTAL CONDITIONS

A4.3.6.1 Innovative concepts and local environmental conditions. The provisions of this code are not intended to prevent the use of any alternate material, appliance, installation, device, arrangement, method, design or method of construction not specifically prescribed by this code. This code does not limit the authority of city, county, or city and county government to make necessary changes to the provisions contained in this code pursuant to Section 101.7.1.

~~SECTION A701~~
~~MATERIAL CONSERVATION AND RESOURCE EFFICIENCY~~

DIVISION A4. 4 – MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

SECTION ~~A701.1~~ A4.4.1
GENERAL
(Reserved)

SECTION ~~A702.1~~ A4.4.2
DEFINITIONS
(Reserved)

SECTION ~~A703.1~~ A4.4.3
FOUNDATION SYSTEMS

~~**A703.1.1**~~ **A4.4.3.1 Frost protected foundation systems.** As allowed by local conditions, utilize a Frost-Protected Shallow Foundation (FPSF) in compliance with the International Residential Code. When an FPSF foundation system is installed the manual required by Section 4.4.10.1 shall include instructions to the owner or occupant regarding the necessity for heating the structure as required in Section R403.3 of the California Residential Code.
A4.4.3.2 Reduction in cement use. As allowed by the enforcing agency cement used in foundation mix design shall be reduced as follows.

Tier 1. Not less than a 20% reduction in cement use.

Tier 2. Not less than a 25% reduction in cement use.

Note: Products commonly used to replace cement in concrete mix designs include, but are not limited to:

1. Fly ash.
2. Slag.
3. Silica fume.
4. Rice hull ash.

SECTION ~~A704.1~~ A4.4.4
EFFICIENT FRAMING TECHNIQUES

A4.4.4.1 Lumber size. Beams and headers and trimmers are sized and installed as specified in CRC Table R502.5(1) and 502.5(2). Other calculations acceptable to the enforcing agency which use the minimum size member for the tributary load shall be acceptable.

~~**A704.1.1**~~ **A4.4.4.2** ~~When possible, minimize the cutting of framing material and eliminate waste by designing building dimensions in 2 foot increments and by placing windows and doors at stud positions established by a running layout~~. Building dimensions and layouts are designed to minimize waste by one or more of the following measures in at least 80% of the structure:

1. Building design dimensions in 2 foot increments are used.
2. Windows and doors are located at regular 16” or 24” stud positions.
3. Other methods acceptable to the enforcing agency.

~~A704.1.2~~ **A4.4.4.3 Building systems.** Use pre-manufactured ~~floor and roof~~ building systems to eliminate solid sawn lumber whenever possible. One or more of the following pre-manufactured building systems is used:

1. Composite floor joist or pre-manufactured floor truss framing.
2. Composite roof rafters or pre-manufactured roof truss framing.
3. Panelized (SIPS, ICF or similar) wall framing system.
4. Other methods approved by the enforcing agency.

A4.4.4.4 Pre-cut materials and details. Material lists are included in the plans which specify the material quantity and provide direction for on-site cuts to be made from the material provided. Material lists and direction shall be provided for the following systems:

1. Floor framing.
2. Wall framing.
3. Ceiling and roof framing.
4. Structural panels and roof sheathing.

SECTION ~~A705.1~~ A4.4.5
MATERIAL SOURCES

~~A705.1.1~~ **A4.4.5.1 Pre-finished building materials.** Utilize pre-finished building materials which do not require additional painting or staining when possible. One or more of the following building materials that do not require additional resources for finishing are used:

1. Exterior trim not requiring paint or stain.
2. Windows not requiring paint or stain.
3. Siding or exterior wall coverings which do not require paint or stain.

~~A705.1.2~~ **A4.4.5.2 Concrete floors.** ~~Use sealed concrete floors instead of other floor coverings when possible.~~ Floors that do not require additional coverings are used including but not limited to stained, natural, or stamped concrete floors.

~~A705.1.3~~ **A4.4.5.3 Recycled content.** ~~Use recycled or salvaged building materials if possible.~~ Use materials, equivalent in performance to virgin materials, with post-consumer or pre-consumer recycled content value (RCV) for a minimum of 10% of the total value, based on estimated cost of materials on the project. Provide documentation as to the respective values.

Tier 1. Not less than a 10% recycled content value.

Tier 2. Not less than a 15% recycled content value.

Note: Sources and recycled content of some recycled materials can be found at http://www.ciwmb.ca.gov/RCP/Product.asp?VW=CAT&CATID=257.

A4.4.5.3.1 Determination of recycled content value (RCV). The following equation shall be used to calculate recycled content value. RCV = (% PC X material cost) + 0.5(% PI X material cost)

Notes:

1. PC means post consumer waste.
2. PI means post industrial waste.

~~**A705.1.4** Utilize building materials manufactured from renewable resources when possible.~~

~~**A705.1.5** Utilize wood products harvested from certified forests when available.~~

~~**A705.1.6** Incorporate sufficient space for recycling containers into the design of the building.~~

A4.4.5.4 Use of building materials from renewable sources. One or more of the following materials manufactured from rapidly renewable sources or agricultural by-products is used:

1. Insulation.
2. Bamboo or cork.
3. Engineered wood products.
4. Agricultural based products.
5. Solid wood products.
6. Other products acceptable to the enforcing agency.

Note: The intent of this section is to utilize building materials and products which are typically harvested within a 10-year or shorter cycle.

SECTION ~~A706.1~~ A4.4.6
ENHANCED DURABILITY AND REDUCED MAINTENANCE
(Reserved)

SECTION ~~A707.1~~ A4.4.7
WATER RESISTANCE AND MOISTURE MANAGEMENT

~~A707.1.1~~ **A4.4.7.1 Drainage around foundations.** Install foundation and landscape drains which discharge to a dry well, sump, bioswale or other approved on-site location..

~~A707.1.2~~ **A4.4.7.2 Roof drainage.** Install gutter and downspout systems to route water at least 5 feet away from the foundation or connect to landscape drains which discharge to a dry well, sump, bioswale, rainwater capture system or other approved on-site location.

~~A707.1.3~~ **A4.4.7.3 Flashing details.** Provide flashing details on the building plans ~~and~~ which comply with accepted industry standards or manufacturers instructions. Details are shown on house plans at all of the following locations:

1. Around windows and doors.
2. Roof valleys.
3. Deck connections to the structure .
4. Roof-to-wall intersections.
5. Chimneys to roof intersections.
6. Drip caps above windows and doors with architectural projections.

Note: Reference details may be found in the Residential Sheet Metal Guidelines published by the Sheet Metal and Air Conditioning Contractors National Association Inc.

~~A707.1.4~~ **A4.4.7.4 Material protection.** Protect building materials delivered to the construction site from rain and other sources of moisture.

A.4.4.7.5 Ice and water barriers. In Climate zone 16 an ice and water barrier is installed at valley, eaves and wall to roof intersections. The ice and water barrier shall extend at least 24" inside the exterior wall line or as specified by the manufacturers installation instructions.

A.4.4.7.6 Door protection. Exterior doors to the dwelling are covered to prevent water intrusion by one or more of the following:

1. An awning at least 4 feet in depth is installed.
2. The door is protected by a roof overhang at least 4 feet in depth.
3. The door is recessed at least 4 feet.
4. Other methods which provide equivalent protection.

A4.4.7.7 Roof overhangs. A permanent overhang or awning at least 2 feet in depth is provided at all exterior walls.

SECTION ~~A708.1~~ A4.4.8
CONSTRUCTION WASTE DISPOSAL REDUCTION, DISPOSAL AND RECYCLING
~~(Reserved)~~

A4.4.8.1 Enhanced construction waste reduction. Non-hazardous construction and demolition debris generated at the site is diverted to recycle or salvage in compliance with one of the following:

Tier 1. At least a 65% reduction.

Tier 2. At least a 75% reduction.

Exceptions:

1. Equivalent or alternative waste reduction methods are developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist.

2. The enforcing agency may make exceptions to the requirements of this section when jobsites are located in areas beyond the haul boundaries of the diversion facility.

A4.4.8.1.1 Documentation. Documentation shall be provided to the enforcing agency which demonstrates compliance with this section. Documentation shall be in compliance with Section 4.4.8.2.

SECTION ~~A709.1~~ A4.4.9
LIFE-CYCLE ASSESSMENT
(Reserved)

SECTION ~~A710.1~~ A4.4.10
BUILDING MAINTENANCE AND OPERATION
(Reserved)

SECTION A4.4.11
INNOVATIVE CONCEPTS AND LOCAL ENVIRONMENTAL CONDITIONS

A4.4.11.1 Innovative concepts and local environmental conditions. The provisions of this code are not intended to prevent the use of any alternate material, appliance, installation, device, arrangement, method, design or method of construction not specifically prescribed by this code. This code does not limit the authority of city, county, or city and county government to make necessary changes to the provisions contained in this code pursuant to Section 101.7.1.

~~SECTION A801~~
~~ENVIRONMENTAL QUALITY~~

DIVISION A4. 5 – ENVIRONMENTAL QUALITY

SECTION ~~A801.1~~ A4.5.1
GENERAL
(Reserved)

SECTION ~~A802.1~~ A4.5.2
DEFINITIONS
~~(Reserved)~~

MERV. Filter minimum efficiency reporting value, based on ASHRAE 52.2-1999.

NO ADDED FORMALDEHYDE RESIN (NAF). Resin formulated with no added formaldehyde as part of the cross linking structure for making hardwood plywood, particle board or medium density fiberboard. No added formaldehyde resins include, but are not limited to, resins made from soy, polyvinyl acetate, or methylene diisocyanate.

ULTRA-LOW EMITTING FORMALDEHYDE RESINS (ULEF). Resins formulated such that average formaldehyde emissions are consistently below the Phase 2 emission standards in Section 93120.2, as provided in Section 93120.3(d) of Title 17, California Code of Regulations.

SECTION ~~A803.1~~ A4.5.3
FIREPLACES
(Reserved)

SECTION ~~A804.1~~ A4.5.4
POLLUTANT CONTROL
~~(Reserved)~~

~~**A4.5.4.1 Low emission carpet.** Carpet and carpet cushions installed in the building interior shall meet the testing and product requirements of one of the following:~~

~~1. Carpet and Rug Institute's Green Label Plus Program.~~
~~2. California Department of Public Health Standard Practice for the testing of VOCs (Specification 01350).~~
~~3. Department of General Services, California Gold Sustainable Carpet Standard.~~
~~4. Scientific Certifications Systems Indoor Advantage™ Gold,~~

~~**Notes:**~~

~~1. For Green Label Plus, see http://www.carpet-rug.com/.~~
~~2. For Department of General Services standards, see http://www.green.ca.gov/EPP/standards.htm.~~
~~3. For Indoor Advantage™ Gold, see http://www.scscertified.com/iaq/indooradvantage.htm.~~
~~4. Scientific Certifications Systems Indoor Advantage™ Gold, http://www.scscertified.com/iaq/indooradvantage.htm.~~

A4.5.4.1 Early compliance with formaldehyde limits. Meet the Phase 2 formaldehyde limits contained in Table4.5.4.4 before the mandatory compliance date, or use composite wood products made with either California Air Resources Board approved no-added formaldehyde (NAF) resins or ultra-low emitting formaldehyde (ULEF) resins.

Note: Documentation must be provided that verifies that finish materials are certified to meet the pollutant emission limits.

A4.5.4.2 Resilient flooring systems. Resilient flooring systems installed in the building shall meet the percentages specified in this section and comply with the VOC-emission limits defined in the Collaborative for High Performance Schools (CHPS) Low-emitting Materials List or certified under the Resilient Floor Covering Institute (RCFI) FloorScore program.

Tier 1. At least 80% of the total area of resilient flooring installed shall comply.

Tier 2. At least 90% of the total area of resilient flooring installed shall comply.

Notes:

1. Information regarding CHPS Low-emitting Materials List may be found at www.chps.net/manual/lem_table.htm.

2. Information regarding RCFI certified products may be found at http://www.rfci.com/int_FS-ProdCert.htm.

3. Documentation must be provided that verifies that finish materials are certified to meet the pollutant emission limits in this section.

A4.5.4.3 Thermal insulation. Thermal insulation installed in the building shall meet the following requirements:

Tier 1. Install thermal insulation in compliance with the VOC-emission limits defined in Collaborative for High Performance Schools (CHPS) Low-emitting Materials List.

Tier 2. Install insulation which contains No-Added Formaldehyde (NAF) and is in compliance with the VOC-emission limits defined in Collaborative for High Performance Schools (CHPS) Low-emitting Materials List.

Notes:

1. CHPS Low-emitting Materials List may be found at www.chps.net/manual/lem_table.htm.

2. Documentation must be provided that verifies the materials are certified to meet the pollutant emission limits in this section.

SECTION ~~A805.1~~ A4.5.5
INTERIOR MOISTURE CONTROL
(Reserved)

SECTION ~~A806.1~~ A4.5.6
INDOOR AIR QUALITY AND EXHAUST

~~A806.1.1~~ A4.5.6.1 Filters. ~~Install a fan controlled by a humidistat in each room containing a shower or bathtub, or use a whole house humidity control system~~ Filters with a higher value than MERV 6 are installed on central air or ventilation systems. Pressure drop across the filter shall not exceed .1 inches water column.

~~A803.1.1~~ A4.5.6.2 Direct vent appliances. ~~If possible, use~~ Direct-vent heating and cooling equipment is utilized if the equipment will be located in the conditioned space or install the space heating and water heating equipment in an isolated mechanical room.

SECTION ~~A807.1~~ A4.5.7
ENVIRONMENTAL COMFORT
(Reserved)

SECTION ~~A808.1~~ A4.5.8
OUTDOOR AIR QUALITY
(Reserved)

SECTION A4.5.9
INNOVATIVE CONCEPTS AND LOCAL ENVIRONMENTAL CONDITIONS

A4.5.9.1 Innovative concepts and local environmental conditions. The provisions of this code are not intended to prevent the use of any alternate material, appliance, installation, device, arrangement, method, design or method of construction not specifically prescribed by this code. This code does not limit the authority of city, county, or city and county government to make necessary changes to the provisions contained in this code pursuant to Section 101.7.1.

DIVISION A4.6 – TIER I AND TIER 2

SECTION A4.6.1
GENERAL

A4.6.1.1 Scope. The measures contained in this appendix are not mandatory unless adopted by a city, county, or city and county as specified in Section 101.7. The provisions of this section outline means of achieving enhanced construction or reach levels by incorporating additional green building measures. In order to meet one of the tier levels designers, builders, or property owners are required to incorporate additional green building measures necessary to meet the threshold of each level.

A4.6.1.2 Prerequisite measures. Tier 1 and Tier 2 thresholds require compliance with the mandatory provisions of this code and incorporation of the required prerequisite measures listed in Section A4.6.1.4.2 for Tier 1 and A4.6.1.5.2 for Tier 2. Prerequisite measures are also identified in the Residential Application Checklist in Section A4.6.2.

As specified in Section 101.7, additional prerequisite measures may be included by the enforcing agency to address specific local environmental conditions and may be listed in the Innovative Concepts and Local Environmental Conditions portions of the checklist.

A4.6.1.3 Elective measures. In addition to the required measures, Tier 1 and Tier 2 buildings must incorporate at least the number of elective measures specified in Sections A4.6.1.4.2 and A4.6.1.5.2.

A4.6.1.4 Tier 1. To achieve Tier 1, status a project must comply with the following:

A4.6.1.4.1 Mandatory measures for Tier 1. The project shall meet or exceed all of the mandatory measures in Chapter 4, Divisions 4.1 through 4.5 and Chapter 7 as applicable.

A4.6.1.4.2 Prerequisite and elective measures for Tier 1. In addition to the mandatory measures, compliance with the following prerequisite and elective measures from Appendix A4 is also required to achieve Tier 1 status:

1. From Division A4.1, Planning and Design.
   1.1 Comply with the topsoil protection requirements in Section A4.1.6.2.3.
   1.2 Comply with the 20% permeable paving requirements in Section A4.1.6.4.
   1.3 Comply with the cool roof requirements in Section A4.1.6.5.
   1.4 Comply with at least two elective measures selected from Division A4.1.

2. From Division A4.2, Energy Efficiency.
1.1 Exceed the California Energy Code requirements, based on the 2008 Energy Efficiency Standards by 15%.
1.2 Comply with at least four elective measures selected from Division A4.2.

3. From Division A4.3, Water Efficiency and Conservation.
1.1 Comply with the reduced flow rate for kitchen sink faucets in Section A4.3.3.1
1.2 Comply with the Tier 1 potable water use reduction for landscape irrigation design in Section A4.3.4.4.
1.3 Comply with at least one elective measure selected from Division A4.3.

4. From Division A4.4, Material Conservation and Resource Efficiency.
1.1 Comply with the 20% cement reduction requirements in Section A4.4.3.2.
1.2 Comply with the 10% recycled content requirements in Section A4.4.5.3.
1.3 Comply with the 65% reduction in construction waste in Section A4.4.8.1.
1.4 Comply with at least two elective measures selected from Division A4.4.

5. From Division A4.5, Environmental Quality.
1.1 Comply with the 80% resilient flooring systems requirements in Section A4.5.2.
1.2 Comply with the thermal insulation requirements for Tier 1 in Section A4.5.4.3.
1.3 Comply with at least one elective measure selected from Division A4.3.

Note: The Residential Application Checklist contained in Section A4.6.2 may be used to show which elective measures are selected.

A4.6.1.5 Tier 2. To achieve Tier 2, status a project must comply with the following:

Note: The measures necessary to achieve Tier 2 status are very stringent. Cities, counties and cities and counties considering adoption of Tier 2 as mandatory should carefully consider the stringency of each measure and ensure that the measures are achievable in their location.

A4.6.1.5.1 Mandatory measures for Tier 2. The project shall meet or exceed all of the mandatory measures in Chapter 4, Divisions 4.1 through 4.5 and Chapter 7 as applicable.

A4.6.1.5.2 Prerequisite and elective measures for Tier 2. In addition to the mandatory measures, compliance with the following prerequisite and elective measures from Appendix A4 is also required to achieve Tier 2 status.

1. From Division A4.1, Planning and Design.
1.1 Comply with the topsoil protection requirements for Tier 1and Tier 2 in Section A4.1.6.3.
1.2 Comply with the 30% permeable paving requirements in Section A4.1.6.4.
1.3 Comply with the cool roof requirements in Section A4.1.6.5.
1.4 Comply with at least four elective measures selected from Division A4.1.

2. From Division A4.2, Energy Efficiency.
1.1 Exceed the California Energy Code requirements, based on the 2008 Energy Efficiency Standards by 30%.
1.2 Comply with at least six elective measures selected from Division A4.2.
3. From Division A4.3, Water Efficiency and Conservation.
1.1 Comply with the Tier 1reduced flow rate for kitchen sink faucets in Section A4.3.3.1
1.2 Comply with the Tier 2 dishwasher requirements in Section A4.3.3.1.
1.3 Comply with the Tier 2 potable water use reduction for landscape irrigation design in Section A4.3.4.4.
1.4 Comply with at least two elective measure selected from Division A4.3.

4. From Division A4.4, Material Conservation and Resource Efficiency.
1.1 Comply with the 25% cement reduction requirements in Section A4.4.3.2.
1.2 Comply with the 15% recycled content requirements in Section A4.4.5.3.
1.3 Comply with the 75% reduction in construction waste in Section A4.4.8.1.
1.4 Comply with at least four elective measures selected from Division A4.4.

5. From Division A4.5, Environmental Quality.
1.1 Comply with the 90% resilient flooring systems requirements in Section A4.5.2.
1.2 Comply with the thermal insulation requirements for Tier 1 and Tier 2 in Section A4.5.4.3.
1.3 Comply with at least one elective measure selected from Division A4.3.

Note: The Residential Application Checklist contained in Section A4.6.2 may be used to show which elective measures are selected.

SECTION A4.6.2
RESIDENTIAL OCCUPANCIES
APPLICATION CHECKLIST

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
PLANNING AND DESIGN						
Site Selection						
A4.1.3.1 A site which complies with at least one of the following characteristics is selected: 1. An infill site is selected. 2. A greyfield site is selected. 3. An EPA-recognized Brownfield site is selected.		☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐
Site Preservation						
4.1.4.1 A site plan and inventory of the site is developed and used to minimize site disturbance in order preserve desirable existing natural resources and minimize future adverse effects on the proposed structure.	☒					
A4.1.4.1 An individual with oversight responsibility for the project has participated in an educational program promoting environmentally friendly design or development and has provided training or instruction to appropriate entities.		☐	☐	☐	☐	☐
Deconstruction and Reuse of Existing ~~Structures~~ Materials						
~~**A405.1.1** If feasible, disassemble existing buildings instead of demolishing to allow for reuse or recycling of building materials.~~ **A4.1.5.2** Existing buildings are disassembled for reuse or recycling of building materials. The proposed structure utilizes at least one of the following materials which can be easily reused: 1. Light fixtures 2. Plumbing fixtures 3. Doors and trim 4. Masonry 5. Electrical devices 6. Appliances 7. Foundations or portions of foundations		☐	☐	☐	☐	☐

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
Site Development						
~~406.2~~ **4.1.6.2** A plan is developed and implemented to manage storm water drainage during construction.	☒					
4.1.6.3 The site shall be planned and developed to keep surface water away from buildings. Construction plans shall indicate how site grading or a drainage system will manage all surface water flows.	☒					
A4.1.6.1 Orient buildings to optimize the use of solar energy with the long side of the house oriented within 30° of south.		☐	☐	☐	☐	☐
A4.1.6.2.1 Soil analysis is performed by a licensed design professional and the findings utilized in the structural design of the building.		☐	☐	☐	☐	☐
A4.1.6.2.2 Soil disturbance and erosion are minimized by at least one of the following: 1.Natural drainage patterns are evaluated and erosion controls are implemented to minimize erosion during construction and after occupancy. 2.Site access is accomplished by minimizing the amount of cut and fill needed to install access roads and driveways. 3. Underground construction activities are coordinated to utilize the same trench, minimize the amount of time the disturbed soil is exposed and the soil is replaced using accepted compaction methods.		☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐
A4.1.6.2.3 Topsoil shall be protected or saved for reuse as specified in this section. Tier 1. Displaced topsoil shall be stockpiled for reuse in a designated area and covered or protected from erosion. Tier 2. The construction area shall be identified and delineated by fencing or flagging to limit construction activity to the construction area.		☒[2]	☒[2] ☒[2]	☐	☐	☐
~~A406.1.2~~ **A4.1.6.3** Post construction landscape						

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
designs accomplish ~~as many~~ one or more of the following ~~as possible~~:						
1. Areas disrupted during construction are restored to be consistent with native vegetation species and patterns.		☐	☐	☐	☐	☐
2. Limit turf areas to the greatest extent possible.						
a. Not more than 50% for Tier 1.		☐		☐	☐	☐
b. Not more than 25% for Tier 2.			☐	☐	☐	☐
3. Utilize at least 75% native Californian or drought tolerant plant and tree species appropriate for the climate zone region.		☐	☐	☐	☐	☐
4.Hydrozoning irrigation techniques are incorporated into the landscape design.		☐	☐	☐	☐	☐
A4.1.6.4 Permeable paving is utilized for the parking, walking, or patio surfaces in compliance with the following.						
Tier 1. Not less than 20 % of the total parking, walking, or patio surfaces shall be permeable.		☒[2]		☐	☐	☐
Tier 2. Not less than 30 % of the total parking, walking, or patio surfaces shall be permeable.			☒[2]	☐	☐	☐
A4.1.6.5 Roofing materials shall have a minimum 3-year aged solar reflectance and thermal emittance or a minimum aged Solar Reflectance Index (SRI) equal to or greater than the values specified in Tables 4.1.6.5(1) and 4.1.6.5(2).						
Tier 1 roof covering shall meet or exceed the values contained in Table 4.1.6.5(1).		☒[2]				
Tier 2 roof covering shall meet or exceed the values contained in Table 4.1.6.5(2).			☒[2]			
Innovative Concepts and Local Environmental Conditions						
A4.1.7.1 Items in this section are necessary to address innovative concepts or local environmental conditions.						
Item 1.	☐	☐	☐	☐	☐	☐
Item 2.	☐	☐	☐	☐	☐	☐

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
Item 3.	☐	☐	☐	☐	☐	☐
ENERGY EFFICIENCY						
General						
~~**503.2**~~ **4.2.1.1** ~~**Minimum requirements.**~~ Low-rise residential buildings shall meet or exceed the minimum standard design required by the California Energy Standards.	☒					
Performance Approach						
A4.2.3.1 Exceed ~~2008~~ the California Energy Code requirements, based on the 2008 Energy Efficiency Standards requirements by 15%.		☒[2]				
A4.2.3.1 Exceed ~~2008~~ the California Energy Code requirements, based on the 2008 Energy Efficiency Standards requirements by 30%.			☒[2]			
~~**A503.1.1** Incorporate the California Energy Commission, New Solar Homes Partnership (NSHP) [1, 2] specifications for building energy performance requirements.~~ ~~Using an Alternative Calculation Method (ACM) approved by the California Energy Commission, calculate each building's energy and CO_2 emissions, and compare it to the standard or "budget" building to achieve the following:~~ ~~Tier I. Exceed 2007 California Energy Code requirements by 15%.~~ ~~Tier II. Exceed 2007 California Energy Code requirements by 35% and cooling energy requirements by 40%.~~ ~~Solar water heating may be used to assist in meeting the energy efficiency requirements of either Tier I or Tier II.~~ ~~Document and field verify the measures and calculations used to reach the desired level of efficiency following the requirements specified in the Title 24 Residential Alternative Calculation Manual.~~		~~☐~~	~~☐~~			~~☒~~

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
~~[1] In addition, for either Tier I or II, each appliance provided by the builder must be Energy Star if an Energy Star designation is applicable for that appliance. Solar water heating may be used to assist in meeting the energy efficiency requirements of either Tier I or Tier II.~~ ~~[2] Information on NSHP incentives available through the California Energy Commission may be obtained at the "Go Solar California" website: www.GoSolarCalifornia.ca.gov/nshp/index.html.~~						
Prescriptive Approach						
Building Envelope						
A4.2.5.1 Radiant roof barrier is installed in Climate Zones 2, 4, and 8 through 15.		☐	☐	☐	☐	☐
A4.2.5.2 Exterior shading at least 18 inches in depth is provided on south and west windows.		☐	☐	☐	☐	☐
Air Sealing Package						
A.4.2.6.1 Third party blower door test is conducted and passed to verify building envelope tightness.		☐	☐	☐	☐	☒
HVAC Design, Equipment and Installation						
~~**A507.1.2**~~ **A4.2.7.1** Radiant, hydronic, ground source and other innovative space heating and cooling systems included in the proposed design shall be designed using generally accepted industry-approved guidelines and design criteria.		☐	☐	☐	☐	☐

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
~~A507.1.3~~ A4.2.7.2.2 An HVAC system commissioning plan is developed and the following items, as appropriate, pertaining to the heating and cooling systems are inspected and certified by an independent third party agency: 1. Verify compliance with the manufacturers recommended start-up procedures. 2. Verify refrigerant charge by super-heat or other methods specified by the manufacturer. 3. Burner is set to fire at the nameplate input rating. 4. Temperature drop across the evaporator is within the manufacturers recommended range. 5. Test and verify air flow to be within 10% of the initial design air flow. 6. Static pressure within the duct system is within the manufacturers' acceptable range. 7. Verify that the whole house and exhaust ventilation systems meet Title 24 requirements. 8. Verify that the recommended maintenance procedures and schedules are documented and provided to the home owner.		☐	☐	☐	☐	☒
A4.2.7.2.3 Results of the commissioning inspection shall be included in the Operation and Maintenance Manual required in Section 4.4.10.1.		☐	☐	☐	☐	☐
~~A507.1.5~~ A4.2.7.4 ~~When possible, use~~ Install gas-fired (natural or propane) space heating equipment with an Annual Fuel Utilization Ratio (AFUE) of ~~.92~~ .90 or higher.		☐	☐	☐	☐	☐
~~A507.1.6~~ A4.2.7.5 If an electric heat pump must be used, select equipment with a Heating Seasonal Performance Factor (HSPF) of 8.0 or higher.		☐	☐	☐	☐	☐
~~A507.1.7~~ A4.2.7.6 When climatic conditions necessitate the installation of cooling equipment, select cooling equipment with a Seasonal Energy Efficiency Ratio (SEER) higher than 13.0 and an Energy Efficiency Ratio (EER) of at least 11.5.		☐	☐	☐	☐	☐
~~A507.1.8~~ A4.2.7.7 ~~If possible, install~~ Install ductwork to comply with ~~as many~~ at least one of the following ~~as possible~~: 1. Install ducts within the conditioned envelope of the building. 2. Install ducts in an underfloor crawl space.		☐ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
3. Use ducts with an R-6 insulation value or higher. 4. Install ductwork which is buried in the ceiling insulation.		☐ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐
~~A507.1.9~~ **A4.2.7.8** Perform duct leakage testing to verify a total leakage rate of less than 6% of the total fan flow.		☐	☐	☐	☐	☐
A~~507.1.10~~ **A4.2.7.9** In ~~cooling~~ climate zones 2,4, and 8 through 15 install a whole-house fan with insulated louvers or an insulated cover.		☐	☐	☐	☐	☐
A4.2.7.10 ENERGY STAR ceiling fans are installed in all bedrooms and living areas.		☐	☐	☐	☐	☐
Water Heating Design, Equipment and Installation						
~~A508.1.1~~ **A4.2.8.1**The Energy Factor (EF) for a gas fired storage water heater is ~~.62 or~~ higher than .60.		☐	☐	☐	☐	☐
~~A508.1.2~~ **A4.2.8.2** The Energy Factor (EF) for a gas fired tankless water heater is .80 or higher.		☐	☐	☐	☐	☐
A4.2.8.3 Where the hot water source is more than 10 feet from a fixture, the potable water distribution system shall convey hot water using a method designed to minimize wait time for hot water to arrive at the fixture.		☐	☐	☐	☐	☐
Lighting						
A4.2.9.1 Building lighting consists of at least 90% ENERGY STAR qualified hard-wired fixtures.		☐	☐	☐	☐	☐
Appliances						
~~A510.1.1~~ **A4.2.10.1** Each appliance provided by the builder meets ENERGY STAR if an ENERGY STAR designation is applicable for that appliance.		☐	☐	☐	☐	☐
Renewable Energy						

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
~~**A406.1.1** Orient buildings to optimize the use of solar energy with the long side of the house oriented within 30° of south.~~		~~☐~~	~~☐~~			
~~**A511.1.1**~~ **A4.2.11.1** Install a solar photovoltaic (PV) system in compliance with the California Energy Commission New Solar Homes Partnership (NSHP).[1, 2] Install energy efficiency measures meeting either Tier I or Tier II below. Tier 1. Exceed ~~2007~~ the California Energy Code requirements, based on the 2008 Energy Efficiency Standards requirements by 15%. Tier 2. Exceed ~~2007~~ the California Energy Code requirements, based on the 2008 Energy Efficiency Standards requirements by ~~35%~~ 30% ~~and cooling energy requirements by 40%~~. Solar water heating may be used to assist in meeting the energy efficiency requirements of either Tier I or Tier II. [1] In addition, for either Tier I or II, each appliance provided by the builder must be Energy Star if an Energy Star designation is applicable for that appliance. ~~Solar water heating may be used to assist in meeting the energy efficiency requirements of either Tier I or Tier II.~~ [2] Information on NSHP incentives available through the California Energy Commission may be obtained at the "Go Solar California" website: www.GoSolarCalifornia.ca.gov/nshp/index.html.		☐ ☐	☐			☒ ☒
A4.2.11.2 A solar water heating system is installed.		☐	☐	☐	☐	☐
A4.2.11.3 Space on the roof surface and penetrations through the roof surface are provided for future solar installation.		☐	☐	☐	☐	☐
A4.2.11.4 A minimum one inch conduit is provided from the electrical service equipment for the future installation of a photovoltaic (PV) system.		☐	☐	☐	☐	☐
Elevators, Escalators and Other Equipment						
Innovative Concepts and Local Environmental Conditions						

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
A4.2.13.1 Items in this section are necessary to address innovative concepts or local environmental conditions.						
Item 1.	☐	☐	☐	☐	☐	☐
Item 2.	☐	☐	☐	☐	☐	☐
Item 3.	☐	☐	☐	☐	☐	☐
WATER EFFICIENCY AND CONSERVATION						
Indoor Water Use						
~~603.2~~ 4.3.3.1 Indoor water use shall be reduced by at least 20% using one of the follow methods. 1. Water saving fixtures or flow restrictors shall be used. 2. A 20% reduction in baseline water use shall be demonstrated.	☒ 7/01/2011			☐	☐	☐
~~603.2.1~~ 4.4.3.2 Except when using when using the calculation method specified in Section 4.3.3.1, multiple showerheads shall not exceed maximum flow rates.	☒ 7/01/2011			☐	☐	☐
4.3.3.3 Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with specified performance requirements.	☒ 7/01/2011			☐	☐	☐
A4.3.3.1 Kitchen faucets and dishwashers shall comply with this section. Tier 1. The maximum flow rate at a kitchen sink faucet shall not be greater than 1.5 gallons per minute at 60 psi. Tier 2. In addition to the kitchen faucet requirements for Tier 1, dishwashers in Tier 2 building shall be ENERGY STAR qualified and not use more than 5.8 gallons of water per cycle.		☒[2]	☒[2] ☒[2]	☐	☐	☐
A4.3.3.2 Non-water supplied urinals or waterless toilets are installed.		☐	☐	☐	☐	☐

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
Outdoor Water Use						
4.3.4.1 Automatic irrigation systems installed at the time of final inspection shall be weather-based.	☒			☐	☐	☐
~~**A604.1.1**~~ **A4.3.4.1** Install a low-water consumption irrigation system which ~~does not rely on~~ minimizes the use of spray type heads.		☐	☐	☐	☐	☐
A4.3.4.2 A rainwater capture, storage and re-use system is designed and installed.		☐	☐	☐	☐	☐
A4.3.4.3 A water budget shall be developed for landscape irrigation.		☐	☐	☐	☐	☐
A4.3.4.4 Provide water efficient landscape irrigation design that reduces the use of potable water. Tier 1. Does not exceed 65% of ETo times the landscape area.. Tier 2. Does not exceed 60% of ETo times the landscape area.		☒[2]	☒[2]	☐	☐	☐
A4.3.4.5 A landscape design is installed which does not utilize potable water.		☐	☐	☐	☐	☐
~~**RECYCLED, RECLAIMED AND GRAYWATER SYSTEMS**~~ **WATER REUSE SYTEMS**						
A4.3.5.1 Piping is installed to permit future use of a graywater irrigation system served by the clothes washer or other fixtures.		☐	☐	☐	☐	☐
A4.3.5.2 Recycled water piping is installed.		☐	☐	☐	☐	☐
A4.3.5.3 Recycled water is used for landscape irrigation.		☐	☐	☐	☐	☐
Innovative Concepts and Local						

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
Environmental Conditions						
A4.3.6.1 Items in this section are necessary to address innovative concepts or local environmental conditions.						
Item 1.	☐	☐	☐	☐	☐	☐
Item 2	☐	☐	☐	☐	☐	☐
Item 3.	☐	☐	☐	☐	☐	☐
MATERIAL CONSERVATION AND RESOURCE EFFICIENCY						
Foundation Systems						
A4.4.3.1 A Frost-Protected Shallow Foundation (FPSF) is designed and constructed.		☐	☐	☐	☐	☐
A4.4.3.2 Cement use in foundation mix design is reduced. Tier 1. Not less than a 20% reduction in cement use. Tier 2. Not less than a 25% reduction in cement use.		☒[2]	☒[2]	☐	☐	☐
Efficient Framing Techniques						
A4.4.4.1 Beams and headers and trimmers are the minimum size to adequately support the load.		☐	☐	☐	☐	☐
A4.4.4.2 Building dimensions and layouts are designed to minimize waste.		☐	☐	☐	☐	☐
~~**A704.1.2**~~ **A4.4.4.3** Use pre-manufactured ~~floor and roof~~ building systems to eliminate solid sawn lumber whenever possible.		☐	☐	☐	☐	☐
A4.4.4.4 Material lists are included in the plans which specify material quantity and provide direction		☐	☐	☐	☐	☐

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
for on-site cuts.						
Material Sources						
A4.4.5.1 One or more of the following building materials, that do not require additional resources for finishing are used: 1. Exterior trim not requiring paint or stain. 2. Windows not requiring paint or stain. 3. Siding or exterior wall coverings which do not require paint or stain.		☐	☐	☐	☐	☐
A4.4.5.2 Floors that do not require additional coverings are used including but not limited to stained, natural, or stamped concrete floors.		☐	☐	☐	☐	☐
A4.4.5.3 Post-consumer or pre-consumer recycled content value (RCV) materials are used on the project. Tier 1. Not less than a 10% recycled content value. Tier 2. Not less than a 15% recycled content value.		☒[2]	☒[2]	☐	☐	☐
A4.4.5.4 Renewable source building products are used.		☐	☐	☐	☐	☐
Enhanced Durability and Reduced Maintenance						
~~**506.1**~~ **4.4.6.1 Joints and openings.** Annular spaces around pipes, electric cables, conduits, or other openings in plates at exterior walls shall be protected against the passage of rodents by closing such openings with cement mortar, concrete masonry or similar method acceptable to the enforcing agency.	☒			☐	☐	☐
Water Resistance and Moisture Management						
~~**A707.1.1**~~ **A4.4.7.1** Install foundation and landscape drains.		☐	☐	☐	☐	☐

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
~~A707.1.2~~ **A4.4.7.2** Install gutter and downspout systems to route water at least 5 feet away from the foundation or connect to landscape drains which discharge to a dry well, sump, bioswale, rainwater capture system or other approved on-site location.		☐	☐	☐	☐	☐
~~A707.1.3~~ **A4.4.7.3** Provide flashing details on the building plans and comply with accepted industry standards or manufacturers instructions.		☐	☐	☐	☐	☐
~~A707.1.4~~ **A4.4.7.4** Protect building materials delivered to the construction site from rain and other sources of moisture.		☐	☐	☐	☐	☐
A4.4.7.5 In Climate Zone 16 an ice/water barrier is installed at roof valleys, eaves and wall to roof intersections.		☐	☐	☐	☐	☐
A4.4.7.6 Exterior doors to the dwelling are protected to prevent water intrusion.		☐	☐	☐	☐	☐
A4.4.7.7 A permanent overhang or awning at least 2 feet in depth is provided.		☐	☐	☐	☐	☐
Construction Waste Reduction, Disposal and Recycling						
~~708.3~~ **4.4.8.1** A minimum of 50% of the construction waste generated at the site is diverted to recycle or salvage.	☒			☐	☐	☐
4.4.8.2 Where a local jurisdiction does not have a construction and demolition waste management ordinance, a construction waste management plan shall be submitted for approval to the enforcing agency.	☒			☐	☐	☐
A4.4.8.1 Construction waste generated at the site is diverted to recycle or salvage in compliance with one of the following: 1. Tier 1 at least a 65% reduction 2. Tier 2 at least a 80% reduction Exception: Equivalent waste reduction methods		☒[2]	☒[2]	☐ ☐	☐ ☐	☐ ☐

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
are developed by working with local agencies.						
Building Maintenance and Operation						
~~710.2~~ **4.4.10.1** An operation and maintenance manual shall be provided to the building occupant or owner.	☒			☐	☐	☐
Innovative Concepts and Local Environmental Conditions						
A4.4.11.1 Items in this section are necessary to address innovative concepts or local environmental conditions.						
Item 1.	☐	☐	☐	☐	☐	☐
Item 2	☐	☐	☐	☐	☐	☐
Item 3.	☐	☐	☐	☐	☐	☐
ENVIRONMENTAL QUALITY						
Fireplaces						
4.5.3.1 Install only a direct-vent sealed-combustion gas or sealed wood-burning fireplace, or a sealed woodstove.	☒			☐	☐	☐
Pollutant Control						
~~804.3~~ **4.5.4.1** Duct openings and other related air distribution component openings shall be covered during construction.	☒			☐	☐	☐

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
~~804.4.1~~ **4.5.4.2.1** Adhesives, sealants and caulks shall be ~~No- or Low-VOC~~ compliant with VOC and other toxic compound limits.	☒			☐	☐	☐
~~804.4.2~~ **4.5.4.2.2** Paints, stains and other coatings shall be ~~No- or Low-VOC~~ compliant with VOC limits.	☒			☐	☐	☐
4.5.4.2.3 Aerosol paints and coatings shall be compliant with product weighted MIR limits for ROC and other toxic compounds.	☒			☐	☐	☐
4.5.4.3 Documentation shall be provided to verify that compliant VOC limit finish materials have been used.	☒			☐	☐	☐
~~804.4.3~~ **4.5.4.4** Carpet and carpet systems shall be ~~Low-VOC~~ compliant with VOC limits.	☒			☐	☐	☐
4.5.4.5 50% of floor area receiving resilient flooring, shall comply with the VOC-emission limits defined in the Collaborative for High Performance Schools (CHPS) Low-emitting Materials List or be certified under the Resilient Floor Covering Institute (RCFI) FloorScore program.	☒					
~~804.4.4~~ **4.5.4.6** Particleboard, medium density fiberboard (MDF), and hardwood plywood used in interior finish systems shall comply with low formaldehyde emission standards.	☒			☐	☐	☐
~~**A4.5.4.1** Carpet with very low emission rates are selected and installed.~~		~~☐~~	~~☐~~	~~☐~~	~~☐~~	~~☐~~
A4.5.4.1 Meet the formaldehyde limits contained in Table4.5.4.6 before the mandatory compliance date, or use composite wood products made with either California Air Resources Board approved no-added formaldehyde (NAF) resins or ultra-low emitting formaldehyde (ULEF) resins.		☐	☐	☐	☐	☐
A4.5.4.2 Install VOC compliant resilient flooring systems.				☐	☐	☐

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
Tier 1. At least 80% of the resilient flooring installed shall comply. Tier 2. At least 90% of the resilient flooring installed shall comply.		☒[2]	☒[2]			
A4.5.4.3 Thermal insulation installed in the building shall meet the following requirements: Tier 1. Install thermal insulation in compliance with the VOC-emission limits defined in Collaborative for High Performance Schools (CHPS) Low-emitting Materials List. Tier 2. Install insulation which contains No-Added Formaldehyde (NAF) and is in compliance with the VOC-emission limits defined in Collaborative for High Performance Schools (CHPS) Low-emitting Materials List.		☒[2]	☒[2]	☐	☐	☐
Interior Moisture Control						
~~**805.2**~~ **4.5.5.2** Vapor retarder and capillary break is installed at slab on grade foundations.	☒			☐	☐	☐
~~**805.3**~~ **4.5.5.3** Moisture content of ~~wood~~ building materials used in wall and floor framing is checked before enclosure.	☒			☐	☐	☐
Indoor Air Quality and Exhaust						
~~**806.3**~~ **4.5.6.1** Exhaust fans which terminate outside the building are provided in every bathroom.	☒			☐	☐	☐
~~**806.4** MERV 6, or higher filters are installed on central air and heating systems.~~	~~☒~~					
A4.5.6.1 Higher than MERV 6 filters are installed on central air or ventilation systems.		☐	☐	☐	☐	☐
~~**A803.1.1**~~ **A4.5.6.2** Direct vent appliances are used or isolated from the conditioned space.		☐	☐	☐	☐	☐
Environmental Comfort						
~~**506.1.1**~~ **4.5.7.1** ~~**Other openings**~~ Whole house	☒			☐	☐	☐

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
exhaust fans shall have insulated louvers or covers which close when the fan is off. Covers or louvers shall have a minimum insulation value of R-4.2.						
~~A507.1.1~~ **4.5.7.2.** Duct systems are sized, designed, and equipment is selected using the following methods: 1. Establish heat loss and heat gain values according to ACCA Manual J or equivalent. 2. Size duct systems according to ACCA 29-D (Manual D) or equivalent. 3. Select heating and cooling equipment according to ACCA 36-S (Manual S) or equivalent.	☒			☐	☐	☐
Outdoor Air Quality						
Innovative Concepts and Local Environmental Conditions						
A4.5.9.1 Items in this section are necessary to address innovative concepts or local environmental conditions.						
Item 1.		☐	☐	☐	☐	☐
Item 2.		☐	☐	☐	☐	☐
Item 3.		☐	☐	☐	☐	☐
INSTALLER AND THIRD PARTY QUALIFICATIONS						
Qualifications						
702.1 HVAC system installers are trained and certified in the proper installation of HVAC systems.	☒			☐	☐	☐
702.2 Special inspectors employed by the enforcing agency must be qualified and able to demonstrate competence in the discipline they are inspecting.	☒			☐	☐	☐
Verifications						
703.1 Verification of compliance with this code may include construction documents, plans, specifications builder or installer certification,	☒			☐	☐	☐

Feature or Measure	Levels Applicant to select elective measures			Verifications Enforcing Agency to specify verification method		
	Mandatory	Prerequisites and electives [1]		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	☐ All	☐ All	☐ All
inspection reports, or other methods acceptable to the enforcing agency which show substantial conformance.						

[1]Green building measures listed in this table may be mandatory if adopted by a city, county, or city and county as specified in Section 101.7.
[2] Required prerequisite for this Tier.

Authority Cited—Health and Safety Code Sections 17921, 17922 and 19990.
Reference—Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

DIVISION A4.7– RESIDENTIAL MODEL ORDINANCE

A4.8.1 General. The voluntary measures of this code are designed and promulgated to be adopted by reference and made mandatory by local ordinance pursuant to Section 101.7. Jurisdictions wishing to adopt the voluntary provisions of this code as an enforceable regulation governing structures and premises should ensure that certain factual information is included in the adopting ordinance and that the measures are appropriate and achievable and are considered to be suitable as mandatory by the city, county, or city and county. The following sample adoption ordinance addresses several key elements of a code adoption ordinance, including the information required for insertion into the code text.

This code does not limit the authority of city, county, or city and county government to make necessary changes to the provisions contained in this code

SAMPLE RESOLUTION FOR ADOPTION OF THE TIER 1 OR TIER 2 PROVISIONS OF THE CALIFORNIA GREEN BUILDING STANDARDS CODE WITH OR WITHOUT ADDITIONAL ITEMS NECESSARY TO ADDRESS INNOVATIVE CONCEPTS OR LOCAL ENVIRONMENTAL CONDITIONS.

ATTACHMENT .

SAMPLE RESOLUTION ADOPTING THE CALIFORNIA GREEN BUILDING STANDARDS CODE APPENDICES AS A MANDATORY REFERENCE STANDARD

CITY OF _____

RESOLUTION # _____

Resolution Adopting Enhanced Green Building Measures For New Home Construction.

WHEREAS, the City/County of _____ 's (City or County) General Plan sets forth goals for preserving and improving the natural and built environment of the City/County, protecting the health of its residents and visitors, and fostering its economy; and

WHEREAS, green building is a holistic approach to design, construction, and demolition that minimizes the building's impact on the environment, the occupants, and the community; and

WHEREAS, green buildings benefit building industry professionals, residents, and communities by improving construction quality; increasing building durability; reducing utility, maintenance, water and energy costs; creating healthier homes; and enhancing comfort and livability; and

WHEREAS, The *California Green Building Standards Code* appendices have included voluntary tiers to provide a city, county, or city and county, building professionals, and the general public with a range of voluntary green building measures for builders to choose from when constructing homes in California; and

WHEREAS, the *California Green Building Standards Code* appendices benefited from extensive input from a city, county, or city and county, building professionals, State agencies, and recognized green building professionals and the practices contained in these guidelines were selected for their viability in today's market and their ability to promote sustainable buildings and communities; and

WHEREAS, adoption of the *California Green Building Standards Code* appendices promotes statewide consistency and predictability for building professionals; and

NOW THEREFORE, BE IT RESOLVED, that the City/County hereby finds that green building design, construction and operation furthers the goals set forth in the City's General Plan, including land use, conservation, open space and _____ (include others, if applicable.)

NOW THEREFORE, BE IT RESOLVED, that newly constructed low-rise residential buildings shall meet the _____ (Tier 1 or Tier 2) measures contained in the *California Green Building Standards Code* appendices and the green building design, construction, and operation innovative concepts or additions or amendment thereto contained in Attachment _____ to address local environmental conditions; and;

NOW THEREFORE, BE IT FURTHER RESOLVED, that the City Council or County Board of Supervisors of the City/County of _____ adopts the *California Green Building Standards Code* appendices, as they may be amended from time to time, as a City/County mandatory reference document and directs City staff to enforce these green building measures as mandatory standards within the City/County.

ADOPTED BY THE FOLLOWING VOTE:

AYES:

NOES:

ABSENT: