TCAC Sustainable Building Methods Worksheet - CALGreen Checklist v 1.03

Building Name:	Building Address:
Verifier Name and Company:	Verifier Company:
Verifier GreenPoint Rater ID #:	Verifier HERS Whole House Rater ID #:
Verifier Phone # and E-mail:	Application Date: 6/18/12

Worksheet instructions: Please ensure that **excel macros are enabled**. Complete CALGreen Compliance is required for all New Construction projects, and on a measure-by-measure basis for all Rehabilitation projects. The CALGreen verifier (a HERS II Rater or Multifamily GreenPoint Rater) will indicate whether each specific CALGreen requirement is met, unmet, or not applicable, and provide notes on how the building has met each requirement.

The verifier should keep all verification documentation in the case that it is requested by TCAC. Note that while this worksheet provides a summary of all mandatory measures required by TCAC, the verifier should always refer to the complete CALGreen code documentation for complete descriptions of all measures. Please fill out all fields, marking fields that do not apply to your specific project with an "N/A."

Documentation of compliance shall include, but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the local enforcing agency. Other specific documentation or special inspections necessary to verify compliance are specified in appropriate sections of CALGreen. Referenced worksheets and full CALGreen text can be found at: http://www.hcd.ca.gov/CALGreen.html

Division 4.1 - PLANNING AND DESIGN (SITE DEVELOPMENT)

SECTION	MEASURE NAME	REQUIREMENTS	VERIFICATION METHOD	RESULTS OF VERIFICATION	VERIFIER NOTES
4.106.2	**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 shall manage storm water drainage during construction to prevent flooding of adjacent property, prevent erosion and retain soil runoff on site. One or more of the following measures shall be implemented: **1.** Retention basin sized to retain storm water on site **2.** Installation of barrier system, wattle or other method to filter water prior to entry into public drainage system or other collection point **3.** Compliance with local storm water management ordinance	Field verification of installed method to comply with measure.	Please Select	
4.106.3	**Grading and Paving**	Construction plans shall indicate how the site grading or drainage system will manage all surface water flows to keep water from entering buildings. Examples of acceptable methods include but are not limited to: Sloped ground; Roof overhangs; Swales; Berms; Water collection and disposal systems; French drains; Water retention gardens; Pervious paving systems with subsurface detention, drainage, and infiltration capacities; and Other measures which keep surface water away from buildings and aid in groundwater recharge.	Review of plans for elements to comply with measure and complete field verification for installed measures.	Please Select	

Division 4.3 - WATER EFFICIENCY AND CONSERVATION (INDOOR WATER USE)

SECTION	MEASURE NAME	REQUIREMENTS	VERIFICATION METHOD	RESULTS OF VERIFICATION	VERIFIER NOTES
4.303.1	**Twenty Percent Savings**	Fixtures and fixture fittings reducing the overall use of potable water within the building by at least 20% shall be provided. The 20% reduction shall be demonstrated by one of the following two methods:			
		1. Prescriptive Method: Toilets (≤ 1.28 gal/flush); Showerheads (≤ 2.0 gpm @ 80psi); Kitchen Faucets (≤ 1.8 gpm @ 60psi); Lavatory Faucets (≤ 1.5 gpm @ 60psi), Urinals (≤0.5 gal/flush). See full CALGreen code for notes and exceptions related to this method.	Field verification of flow rates. Cut sheets of fixtures and verification of installed fixtures.	Please Select	
		2. Performance Method: Provide a calculation demonstrating a 20% reduction of building "water use" baseline as established using the baseline values established in form WS 1 - Baseline Water Use.	The verifier will fill out CALGreen calculation forms WS 1 - Baseline Water Use and WS 2 - 20 Percent Reduction Water Use Calculation Table available here. Field verification of flow rates. Cut sheets of flow rates. Cut sheets of fixtures and verification of installed fixtures.	Please Select	
4.303.2	**Multiple Showerheads Serving One Shower**	When single shower fixtures are served by more than one showerhead, the combined flow rate of all the showerheads controlled by a single valve shall not exceed 2.0 gpm at 80 psi or the shower shall be designed to only allow one showerhead to be in operation at a time. Exception: The maximum flow rate for showerheads when using the performance method specified in Section 4.303.1, Item 2, is 2.5 gpm @ 80 psi.	Field verification of installed showerheads.	Please Select	
4.303.3	**Plumbing Fixtures and Fittings**	Plumbing fixtures and fittings shall meet the following standards: Toilets flushometer-valve single flush (ASME A112.19.2/CSA B45.1 – 1.28 gal (4.8 L)); Toilets flushometer-valve dual flush (ASME A112.19.14 and U.S. EPA WaterSense Tank-Type High-Efficiency Toilet Specification – 1.28 gal (4.8 L)); Tank-type toilets (U.S. EPA WaterSense Tank-Type High-Efficiency Toilet Specification); Urinals (ASME A112.19.2/CSA B45.1 – 0.5 gal (1.9 L)); Non-water urinals (ASME A112.19.19 (vitreous china) and ANSI Z124.9-2004 or IAPMO Z124.9 (plastic)); Faucets and showerheads (ASME A112.18.1/CSA B125.1)	Cut sheets of fixtures and verification of installed fixtures.	Please Select	

Division 4.3 - WATER EFFICIENCY AND CONSERVATION (OUTDOOR WATER USE)

SECTION	MEASURE NAME	REQUIREMENTS	VERIFICATION METHOD	RESULTS OF VERIFICATION	VERIFIER NOTES
4.304.1	**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' watering needs as weather or soil conditions change. **2.** Weather-based controllers without integral rain sensors or communication systems that account for rainfall shall have a separate wired or wireless rain sensor which connects or communicates with the controller(s).	Documentation that irrigation controller meets requirements. Field verification of installed controllers should be completed.	Please Select	

Division 4.4 - MATERIAL CONSERVATION & RESOURCE EFFICIENCY (ENHANCED DURABILITY & REDUCED MAINTENANCE)

SECTION	MEASURE NAME	REQUIREMENTS	VERIFICATION METHOD	RESULTS OF VERIFICATION	VERIFIER NOTES
4.406.1	**Rodent Proofing**	Annular spaces around pipes, electric cables, conduits, or other openings in plates at exterior walls shall be closed with cement mortar, concrete masonry or a similar method acceptable to the enforcing agency to prevent passage of rodents. 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 as required by the California Energy Code.	Field verification of sealed penetrations.	Please Select	

Division 4.4 - MATERIAL CONSERVATION & RESOURCE EFFICIENCY (CONSTRUCTION WASTE REDUCTION, DISPOSAL & RECYCLING)

SECTION	MEASURE NAME	REQUIREMENTS	VERIFICATION METHOD	RESULTS OF VERIFICATION	VERIFIER NOTES
4.408.1	**Construction Waste Reduction of at least 50%**	Recycle and/or salvage for reuse a minimum of 50% of the nonhazardous construction and demolition debris in accordance with 4.408.2, 4.408.3, or 4.408.4, or meet a more stringent local construction and demolition waste management ordinance. Exceptions: 1. Excavated soil and land-clearing debris. 2. Alternate waste reduction methods developed by working with local enforcing agencies if diversion or recycle facilities capable of compliance with this item do not exist or are not located reasonablv close to iobsite.	Waste Management form indicating waste generated and diverted. Demonstrated diversion rate must be 50% or greater. Sample forms provided by HCD can be found here.	Please Select	
4.408.2	**Construction Waste Management Plan**	Submit a construction waste management plan that complies ALL of the following items. The plan shall be updated as necessary and shall be available during construction for examination. **1.** Identify the materials to be diverted from disposal by recycling, reuse on the project or salvage for future use or sale. **2.** Specify if materials will be sorted on-site or mixed for transportation to a diversion facility. **3.** Identify the diversion facility where the material collected will be taken. **4.** Identify construction methods employed to reduce the amount of waste generated. **5.** Specify that the amount of materials diverted shall be calculated by weight or volume, but not by both.	Waste management plan or construction and demolition form documenting anticipated waste generation and diversion. Sample forms provided by HCD can be found here.	Please Select	
4.408.3	**Waste Management Company**	Use a waste management company approved by the enforcing agency which can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with Section 4.408.1.	Waste management plan or construction and demolition form documenting anticipated waste generation and diversion. Sample forms provided by HCD can be found here.	Please Select	
4.408.4	**Waste Stream Reduction Alternative**	Projects that generate a total combined weight of construction and demolition debris disposed of in landfills of below 4 pounds per square-foot of building area shall meet the minimum requirement of Section 4.408.1.	Waste management plan or construction and demolition form documenting anticipated waste generation and diversion. Sample forms provided by HCD can be found here.	Please Select	

Division 4.4 - MATERIAL CONSERVATION & RESOURCE EFFICIENCY (BUILDING MAINTENANCE & OPERATION)

SECTION	MEASURE NAME	REQUIREMENTS	VERIFICATION METHOD	RESULTS OF VERIFICATION	VERIFIER NOTES
4.410.1	**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 covers 10 specific subject areas shall be placed in the building. **1.** Directions to homeowner or occupant that the manual shall remain with the building throughout the lifecycle of the structure. **2.** Operation and maintenances instructions for: a. Equipment and appliances, including energy and water-saving devices and systems, HVAC systems, water-heating systems, lighting and other major appliances and electronic equipment. b. Roof and yard drainage, including gutters and downspouts. c. Space conditioning systems, including condensers, condensate drains and air filters d. Landscape irrigation systems e. Water reuse systems **3.** Information on ways to optimize water and energy use including household recycling opportunities and water/ energy reduction opportunities through utilities or recycling programs **4.** Information on routine maintenance to maintain integrity of building interior and exterior including painting and caulking, grading etc. **5.** Instructions for keeping gutters clean and directing downspouts to divert water away (at least 5 feet) from the home and importance of roof and yard drainage **6.** Instructions on the positive impacts of an interior relative humidity between 30–60 percent and what methods an occupant may use to maintain the relative	Homeowner Manual shall be reviewed and compared to list of required components for compliance with this measure.	Please Select	

Division 4.5 - ENVIRONMENTAL QUALITY (FIREPLACES)

SECTION	MEASURE NAME	REQUIREMENTS	VERIFICATION METHOD	RESULTS OF VERIFICATION	VERIFIER NOTES
4.503.1	**General**	Any installed gas fireplace shall be a direct-vent sealed-combustion type. Any installed woodstove or pellet stove shall comply with U.S. EPA Phase II emission limits where applicable. Woodstoves, pellet stoves and fireplaces shall also comply with all applicable local ordinances. The fireplace must be consistent with California Energy Code, Part6. Examples include having a closeable metal or glass doors covering the entire opening of the firebox, a 6 sq. in. combustion air duct from the outside, and equipped with a readily accessible, operable, and tight-fitting damper or combustion-air control device.	Field verification of installed fireplace and documentation of compliance with US EPA Phase II emissions if appropriate.	Please Select	

Division 4.5 - ENVIRONMENTAL QUALITY (POLLUTANT CONTROL)

SECTION	MEASURE NAME	REQUIREMENTS	VERIFICATION METHOD	RESULTS OF VERIFICATION	VERIFIER NOTES
4.504.1	**Covering of Duct Openings and Protection of Mechanical Equipment During Construction**	At the time of rough installation, 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. Tape, plastic, sheetmetal or other methods acceptable to the enforcing agency to reduce the amount of water, dust or debris entering the system may be used.	Field verification of protected ducts throughout construction process.	Please Select	
4.504.2.1	**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, 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 (www.aqmd.gov/rules/reg/reg11/r1168.pdf). VOC limits, as shown in Tables 4.504.1 or 4.504.2 (see right) as applicable. Such products shall also comply with Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products as specified in Subsection 2 below. **2.** Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than 1 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.	Documentation of VOC levels of product and invoice or equivalent to verify installed product. Sample documentation (PC 1 - PC 3) is available here.	Please Select	
4.504.2.2	**Paints and Coatings**	Architectural paints and coatings shall comply with VOC limits in Table 1 of the Air Resources Board Architectural Suggested Control Measure, as shown in Table 4.504.3 (see right) 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 4.504.3, shall be determined by classifying the coating as 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 Table 4.504.3 shall apply. As a reference the threshold for Flat is 50 g/l and the threshold for Nonflat is 110 g/l.	Documentation of VOC levels of product and invoice. Sample documentation (PC 5 - PC 7) is available here.	Please Select	

Division 4.5 - ENVIRONMENTAL QUALITY (POLLUTANT CONTROL)

SECTION	MEASURE NAME	REQUIREMENTS	VERIFICATION METHOD	RESULTS OF VERIFICATION	VERIFIER NOTES
4.504.3	**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 Plus Program **2.** California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as Specification 01350.) **3.** NSF/ANSI 140 at the Gold level **4.** Scientific Certifications Systems Indoor Advantage™ Gold	Documentation of certification of product and invoice or equivalent to verify installed product. Sample documentation (PC 9 - PC 11) is available here.	Please Select	
4.504.3.1	**Carpet Cushion**	All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label Program.	Documentation of certification of product and invoice or equivalent to verify installed product. Sample documentation (PC 9 - PC 11) is available here.	Please Select	
4.504.3.2	**Carpet Adhesive**	All carpet adhesives shall meet the requirements of Table 4.504.1 (see right).	Documentation of VOC levels of product and invoice or equivalent to verify installed product. Sample documentation (PC 1 - PC 3) is available here.	Please Select	
4.504.4	**Resilient Flooring Systems**	Where resilient flooring is installed, at least 50% of floor area receiving resilient flooring shall comply with one or more of the following: **1.** VOC emission limits defined in the Collaborative for High Performance Schools (CHPS) High Performance Products Database. **2.** Products compliant with CHPS criteria certified under the Greenguard Children & Schools program. **3.** Certification under the Resilient Floor Covering Institute (RFCI) FloorScore program. **4.** Meet the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers", Version 1.1, February 2010 (also known as Specification 01350.)	Documentation of certification of product and invoice or equivalent to verify installed product. Sample documentation (PC 9 - PC 11) is available here.	Please Select	
4.504.5	**Composite Wood Products**	Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in Air Resources Board's Air Toxics Control Measure for Composite Wood (17 CCR 93120 et. seq.), by or before the dates specified in those sections shown in Table 4.504.5 (see right). Definition of Composite Wood Products: Composite wood products include hardwood plywood, particleboard, and medium density fiberboard. "Composite wood products" do not include hardboard, structural plywood, structural panels, structural composite lumber, oriented strand board, glued laminated timber, prefabricated wood I-joists, or finger-jointed lumber, all as specified in CCR, Title 17, Section 93120.1(a).	Documentation of certification of product and invoice or equivalent to verify installed product. Sample documentation (PC 13 - PC 15) is available here.	Please Select	

Division 4.5 - ENVIRONMENTAL QUALITY (INTERIOR MOISTURE CONTROL)

SECTION	MEASURE NAME	REQUIREMENTS	VERIFICATION METHOD	RESULTS OF VERIFICATION	VERIFIER NOTES
4.505.2.1	**Capillary Break**	A capillary break shall be installed in compliance with at least one of the following: **1.** Install a vapor retarder in contact with concrete and in contact with a 4-inch thick base of ½ inch or larger aggregate. The concrete mix design shall be designed to address bleeding, shrinkage, and curing. The vapor barrier must overlap by a recommended 6 inches and taped with water resistant tape. 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. Note: Section 4.505.2 states Concrete slab foundations required to have a vapor retarder by the California Building Code, Chapter 19; or the California Residential Code, Chapter 5, shall also comply with this section.	Plan review of plans demonstrating vapor retarder to be installed and field verification of installed vapor barrier. Example of documentation can be found here.	Please Select	
4.505.3	**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 or other equivalent method approved by enforcing agency. **2.** Moisture readings shall be taken at a point 2 feet (610 mm) to 4 feet (1219 mm) from the grade-stamped 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.	A field verification of compliance. Builder or other responsible professional will demonstrate compliance. Example of documentation can be found here.	Please Select	

Division 4.5 - ENVIRONMENTAL QUALITY (INDOOR AIR QUALITY & EXHAUST)

SECTION	MEASURE NAME	REQUIREMENTS	VERIFICATION METHOD	RESULTS OF VERIFICATION	VERIFIER NOTES
4.506.1	**Bathroom Exhaust Fans**	Mechanical exhaust fans which exhaust directly from bathrooms shall comply with the following. Note: For the purposes of this section a bathroom is a room which contains a bathtub, shower, or tub/shower combination. Fans are required in each bathroom. **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 or humidity control device. Humidistat or humidity controls shall be capable of adjustment between a relative humidity range of 50% or less to a maximum of 80%. The humidity control does not have to be integral (i.e. built in).	Documentation of ENERGY STAR rating and humidistat control may be accomplished through field verification or verification of specification of installed model number.	Please Select	

Division 4.5 - ENVIRONMENTAL QUALITY (ENVIRONMENTAL COMFORT)

SECTION	MEASURE NAME	REQUIREMENTS	VERIFICATION METHOD	RESULTS OF VERIFICATION	VERIFIER NOTES
4.507.1	**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.	Field verification of installed whole house fan that complies with measure.	Please Select	
4.507.2	**Heating and Air Conditioning System Design**	Heating and air conditioning systems shall be sized, designed, and equipment selected using the following methods. Exception: Use of alternate design temperatures necessary to ensure the system functions are acceptable. **1.** The heat loss and heat gain is established according to ANSI/ACCA 2 Manual J - 2004 (Residential Load Calculation), ASHRAE handbooks or other equivalent design software or methods. **2.** Duct systems are sized according to ANSI/ACCA 1 Manual D - 2009 (Residential Duct Systems), ASHRAE handbooks or other equivalent design software or methods. **3.** Select heating and cooling equipment according to ANSI/ACCA 3 Manual S - 2004 (Residential Equipment Selection) or other equivalent design software or methods.	Documentation in the form of building-specific calculations and mechanical plans incorporating requirements of Manuals J, D, and S. Statement from HVAC designer indicating compliance with this measure.	Please Select	

By filling out this document and writing my name below, I verify that the information provided above is accurate, to the best of my knowledge. I have reviewed the measures listed above in every unit or completed allowable sampling. The above measures have been implemented to the full extent of CALGreen as outlined in the California Green Building Code. If necessary during any audit process, I can provide backup documentation for the measure(s) claimed above.

Verifier Name: