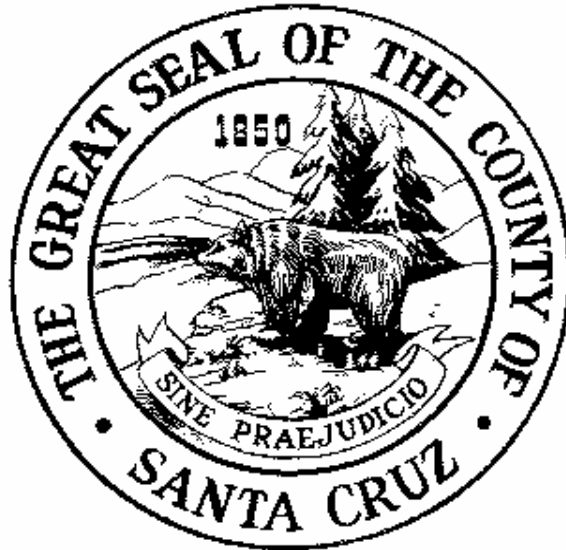


County of Santa Cruz Green Building Program



Green Points Checklist for Residential Additions and New Construction of 500 Square Feet* or Greater in Size

Effective Date: January 4, 2010

(* new residential construction or additions less than 500 sq. ft., and residential remodels of any size, must comply with the County's "Required Green Building Features List for Small Residential Projects")

Introduction: This County Green Points Checklist for residential projects helps to address global climate change by cutting greenhouse gas emissions in the County. This program, similar to those in the County’s four cities, involves modest requirements to upgrade energy efficiency in new residential buildings and additions. Indoor air quality and resource conservation (i.e., resources besides energy) are also addressed.

Compliance Process

The Residential Green Points Checklist applies to:

- Residential additions affecting 500 square feet or greater of conditioned space (i.e., heated and/or cooled floor area), and
- New residential construction of 500 square feet or greater in size, including accessory structures with 500 square feet or more of conditioned space (i.e., heated and/or cooled floor area).

The Residential Green Points Checklist does not apply to:

- Interior remodels of any size (These are subject to the “Required Green Building Features List for Small Projects”).
- Detached decks.
- Non-residential structures.
- Residential accessory structures with no conditioned space (non-habitable).
- New residential construction and additions less than 500 square feet in size.

Plan Submittal:

- The cover sheet of plans submitted for permit application must include an index of those green features and techniques to be implemented for each residential unit.
- The Index must include the point category, features, points and plan page number.
- The points must be taken from the Residential Green Points Checklist below.
- The Index must show the points required for the desired level of action (i.e., Permit Approval or Green Building Award).
- Exceeding the minimum point requirement by 15%-20% is suggested to allow for project modifications such as unavailability of materials.

Compliance Steps:

- The Green points for the projects are verified and totaled during the building plan check process. They must be shown on the plans with the necessary documentation (a conference may be held with the designers at this juncture to discuss required features and points).
- Green Features are checked and verified by the building inspectors during the inspections process. Changes/substitutions may be considered provided they are equal in merit to the original feature. Upgrades are also verified during inspection.
- All changes, substitutions or upgrades must be submitted in writing or revised plans for approval/ verification by the Planning Department and will become part of both the Job and County set of plans.
- As part of the final inspection process and prior to authorization for occupancy the project must successfully pass a final green point verification/inspection. The

- project must meet the points required for the level of action specified on the project plans green index. If the project does not pass final verification/inspection it will be incumbent upon permit holder to remedy any deficiencies or occupancy will be denied until inspection is successfully passed.
- Certain point choices may require inspections that could delay occupancy (e.g. landscape irrigation system installation, floor coverings, interior wall finishes, etc.). For owner-builders it is suggested that points be avoided in these areas.
 - For the Green Building Award an additional inspection may be required.

Square Footage Calculations

Each residential unit, whether a single-family dwelling, duplex unit or multi-family unit, must meet the Green Points based on the square footage of that particular unit. For the purposes of the Green Points system, a second unit shall be considered a part of the single-family dwelling.

The square footage is calculated for each unit as follows:

- New Construction:
 - Gross Floor Area (including second units) + Covered Porches
- Additions:
 - Gross Floor Area of Addition + New covered porch area

A. Integrated Design Features

	Maximum Possible Points	
	New Homes	Additions 500+ s.f.
1. Design Smaller Homes (See Chart on Following Page)	9	9*
2. Orient roof planes to maximize solar energy gain (i.e., with significant roof plane areas facing between southeast and southwest, with a pitch between about 4:12 and 9:12)	1	1
3. Orient Buildings on E/W Axis for Solar Access (or within 15 degrees of E-W)	1	1
4. To Promote Indoor Air Quality, Construct Detached Garage or Carport	2	2
5. Certified/Accredited Green Building Project Staff: a. Designer b. Builder	2 points each up to 4	2 points each up to 4
6. Design and Build a Zero External Energy Input Home (e.g., net zero energy consumption from utility provider)	10	10**
7. Provide a readily accessible recycling area for depositing, storage and collection of recyclable items***	1	1
Available Points	28	28

* Total square footage of house (existing + addition + new covered porch area)

** For whole house

*** Will be required when the 2010 Ca Building Code becomes effective

A-1. Home Size Chart

Number of Bedrooms

	2	3	4	5+	<u>Points</u>
A	1382	1890	2648	3424	0
R	1332	1825	2555	3296	1
E	1282	1756	2459	3172	2
A	1232	1688	2363	3048	3
<u>o</u>	1182	1619	2267	2925	4
H	1132	1551	2171	2801	5
O	1082	1482	2075	2677	6
M	1032	1414	1979	2553	7
E	982	1345	1883	2430	8
(Square Feet)	932	1277	1788	2306	9

(Chart Based on ANSI z765 3003)

B. Site

Maximum Possible Points

	New Homes	Additions 500+ s.f.
1. Demonstrate That 50% or More of All Recyclable/Reusable Job Site Construction and Demolition Waste Has Been Recycled, Salvaged and/or Donated. <i>Provide proof of recycling, salvage, or donation (e.g., landfill or donation receipts). Specify deconstruction process (if applicable) and itemize/quantify salvaged materials and indicate their ultimate uses/ recipients.</i>	50% - Required	50% -Required
	75% - 1	75% -1
	100% - 4	100%- 4
2. Protect Native Soil <i>Indicate areas to be protected and measures taken (i.e., mulches, coverings, etc.) with source verification for measures taken.</i>	1	0
3. Minimize Disruption of Existing Plants/ Trees <i>Show location and types of protective measures (i.e., temporary fencing, covering, etc.)</i>	1	1
4. Protect Water Quality with Landscape Design (as appropriate)* <i>Show location and types of measures implemented (i.e., bio-filters, swales, rain catchment systems, etc.).</i>	2	2
5. Design Resource and Water-Efficient Landscapes*/** <i>Provide landscape plan specifying the planting of non-invasive, drought tolerant species, etc.</i>	2	2
6. Reuse Materials/ Use Recycled Content Materials for Landscape Areas* <i>Specify locations and types of materials to be used</i>	2	2
7. Install High Efficiency Irrigation System*/** <i>Specify manufacturer and installation locations.</i>	2	2
8. Provide On-Site Stormwater Catchment/ Retention <i>Provide specifications and location(s), including source of water and distribution system.</i>	2	2
9. Utilize Permeable Paving for at least 50% of Non-Structural Site Paved Area*	2	2
10. Install Solar Walkway Lights*	2	2
11. Minimize Directly Connected Impervious Surfaces (e.g., direct downspouts to lawns or other non-erosive pervious surfaces)*	4	4
Available Points	24	23

* These items would typically be verified after the final structural inspection, and thus could delay Permit Final and Occupancy.

** Points allowed only if Section P, Required Feature #2 (Water Efficient Landscaping) is not applicable.

C. Foundation

Maximum Possible Points

	New Homes	Additions 500+ s.f.
1. Incorporate Recycled Flyash in Concrete up to 15% = 2 points; Add 1 Point for Every 10% Increase in Flyash, Up to 5 Points (up to 45% max. content)	5	5*
2. Reuse Form Boards	1	1
3. Re-usable Metal Forms	2	2
4. Use Recycle Content Aggregate for building pads, pathways, driveways etc.	2	2*
5. Insulate Foundation/ Slab Before Backfill	3	3
6. Install Rigid Foam, Insulated Concrete Forms (ICF's)	3	3
7. Rammed Earth Foundation (Must Meet Engineering Requirements for Seismic Design Category).	5	5
8. Use Non-Toxic Release Agents on Concrete Forms	1	1
9. Seal Crawl Space with Vapor Barrier (min. 6 mil. thick)	5	5
10. Install Sump Pump (for sub-floor or other areas subject to ponding)	5	5
Available Points	32	32

* For addition area only

D. Structural Frame

Maximum Possible Points

	New Homes	Additions 500+ s.f.
1. Substitute Solid Sawn Lumber with Engineered Lumber		
A. Floors	1	1
B. Headers (non-structural)	1	1
C. Structural Beams and Headers	1	1
2. Use Forest Stewardship Council (FSC) Certified Wood for Framing (For every 10% of FSC lumber used = 2 points, up to 10.	10	10
3. Use Wood I- Joists for Floor and Ceilings	2	2
4. Use Steel Interior Web Trusses	2	2
5. Use Energy Heels on Trusses	2	2
6. Use Oriented Strand Board (OSB)		
A. Sub-floors	1	1
B. Sheathing	1	1
7. Use Finger- Jointed Studs for Non- Structural Vertical Applications	2	2
8. Use Engineered Studs for Vertical Applications	2	2
Continued on Next Page		

	New Homes	Additions 500+ s.f.
9. Use Recycled Content Steel Studs for Interior Framing	2	2
10. Reduce Lumber Framing by Utilizing Alternative Wall Construction, such as: -Insulated concrete forms** -Rammed-earth and pressed earthen block** -Straw bale** -Structural bamboo** -2 points for every 10% reduction in framing compared to standard framing. <i>*Steel framing is not eligible for this point due to thermal performance.</i> <i>** Must meet code requirements for Seismic Design Category</i>	20	20
11. Design with 8 foot high ceiling: 2 points for each floor where used	6	6
12. Design Using 2' Modules, 1 Point Per Dimension (Length/Width) Up To 2 points	2	2
13. Apply Advanced Framing Techniques	4	4
14. Use Reclaimed Lumber for Non-Structural Applications	3	3
Available Points	62	62

E. Exterior Finish

Maximum Possible Points

	New Homes	Additions 500+ s.f.
1. Use Sustainable Decking Materials		
A. Recycled Content	3	3
B. FSC Certified Wood	3	3
2. Use Non-CCA (chromium/copper/arsenic) Treated Wood (e.g., C-A, ACQ, etc.)	1	1
3. Install House Wrap Under Siding	1	1
4. Use Alternative Siding Materials (e.g, recycled content, fiber-cement, earth and/or plaster, fly ash stucco, etc.)	3	3
5. Use Low/No VOC Exterior Paint	2	2
6. Use Advanced Flashing Techniques (show weather proofing details on plans)	2	2
Available Points	15	15

F. Plumbing

Maximum Possible Points

	New Homes	Additions 500+ s.f.
1. Insulate any hot water pipes in unconditioned space (i.e., areas not heated/cooled) that are new or become exposed due to construction or are accessible in the attic or under-floor areas	Required	Required
2. New plumbing fixtures shall have a net saving of 20 percent over minimum requirements (as defined in Chap. 4 of Calif. Plumbing Code). Multiple showerheads serving one shower shall have a total water usage no greater than 2gpm @ 80psi*	2	2
3. Install Dual Flush Toilets (1 point each up to 4 points)	4	4
4. Install Chlorine Filter on Showerhead (1 Point Per Showerhead up to 4) or A Whole House Chlorine Filter (4 Points)	4	4
5. Install Tankless/On-Demand Water Heater	2	2
6. Pre-Plumb for Grey Water Conversion	4	4
7. Install Listed Indoor Grey Water Recovery/ Reuse System	10	10
8. Install Water Filtration Units at Faucets (2 points each up to 4 points)	4	4
9. Install On-Demand Hot Water Circulation Pump (with timer)	4	4
10. Install Pans/ Drains Under Clothes Washers and/or Dishwashers (1 point each) up to 2 points	2	2
11. Install Rainwater Collection and Storage		
A. 2500 Gallon Capacity	5	5
B. 5000 Gallon Capacity	10	10
12. Install Drain Water Heat Recovery Fixtures	3	3
Available Points	54	54

* Will be required when the 2010 Ca Building Code becomes effective

G. Electrical

	Maximum Possible Points	
	New Homes	Additions 500+ s.f.
1. Install High Efficacy* Light Bulbs in Existing Fixtures -6 bulbs = 2 points -12 bulbs = 4 points **up to a max of 4 points	0	4**
2. Install Lighting Controls (e.g., dimmers, motion sensors, etc.) (1 point per fixture up to 4 points)	0	4
3. Install High Efficiency Ceiling Fans (with High Efficacy Light Bulbs if Unit Includes Lights) (1 point each up to 4 points)	4	4
Available Points	4	12

* “High Efficacy” light bulbs include Compact Fluorescent Light (CFL) bulb and most (but not all) Light Emitting Diode (LED) bulbs. See 2008 Calif. Energy Standards, Table 6-1, for lumens per watt requirements.

** Only High Efficacy bulbs located in the existing portion of the home/project are counted. High Efficacy Lighting or Energy Efficient Switches are required for all new light fixtures installed in both new and existing structures per the California Energy Code.

H. Appliances

Maximum Possible Points

	New Homes	Additions 500+ s.f.
1. Install ENERGY STAR* dishwasher	Required**	Required**
2. Install ENERGY STAR* or Horizontal Axis (for lower water consumption) Washing Machine	1	1
3. Install ENERGY STAR* clothes dryer	Required**	Required**
4. Install ENERGY STAR* refrigerator	Required**	Required**
5. Install ENERGY STAR* forced air units	Required**	Required**
6. Install ENERGY STAR* air conditioner	Required**	Required**
7. Install ENERGY STAR* storage water heater	Required**	Required**
Available Points	1	1

* Energy Star or other equivalent energy efficiency certification, if available

** As applicable – if said appliance is being installed as part of project

I. Insulation

Maximum Possible Points

	New Homes	Additions 500+ s.f.
1. Install minimum R-13 wall insulation in new exterior (weather) walls.	Required	Required
2. Install minimum R-19 floor insulation under the new floors.	Required	Required
3. Install minimum R-30 attic insulation, or minimum R-19 ceiling insulation for vaulted ceilings, in new ceilings.	Required	Required
4. Upgrade Insulation to Exceed Title 24 Requirements by 20%		
A. Walls (min. R-15.6)	2	2
B. Attics/Roofs (min. R-22.8)	2	2
5. Install Recycled-Content, Formaldehyde-Free Fiberglass Insulation	1	1
6. Practice Proper Insulation Installation, Using Advanced Infiltration Reduction Practices*	Required	Required
7. Use Environmentally preferable Insulation Materials (Wool, Foamed Concrete, Soy-Based Polyurethane)		
A. Walls (min. R-13)	4	4
B. Attics/Roofs (min. R-19)	4	4
8. Install Straw Bale Insulation at Least 18" thick	6	6
Available Points	19	19

* See following webpages:

<http://www.energy.ca.gov/efficiency/qualityhomes/insulation.html>

http://www.energy.ca.gov/efficiency/qualityhomes/caulking_sealing.html

J. Windows

	New Homes	Additions 500+ s.f.
1. Install Extra Energy-Efficient Windows		
A. Triple-Paned (all)	1	1
B. Low-Emissivity (Low-E)*	0	2*
C. Low Conductivity Frames (i.e., wood or vinyl)*	0	2*
Available Points	1	5
	Maximum Possible Points	

* Points awarded for replacing all windows in existing (non-addition) portion of home/structure

K. Heating, Ventilation and Air Conditioning

Maximum Possible Points

	New Homes	Additions 500+ s.f.
1. Use Duct Mastic on All Duct Joints*	1	1*
2. Install Ductwork Within Conditioned Space	3	3
3. Vent Range Hood to the Outside*	1	1*
4. Clean All Ducts Before Occupancy	1	1
5. Install Attic Ventilation System	1	1
6. Install Whole House fan	3	3
7. Install Sealed Combustion Units		
A. Furnaces	3	3
B. Water Heaters	3	3
8. Install 13 SEER/11 EER or Higher AC with a TXV	3	3
9. Install Furnace with >90% Annual Fuel Utilization Efficiency (AFUE)	2	2
10. Install Zoned Hydronic Radiant Heating	3	3
11. Install High Efficiency Air Filter (MERV 6+)**	4	4
12. Install Heat Recovery Ventilation Unit (HRV)	5	5
13. Install Separate Garage Exhaust Fan	3	3
14. Provide HERS Certification for Duct Work of Forced Air Systems	5	5***
Available Points	41	41

* Points awarded for work in the existing (non-addition) portion of home/structure

** Will be required when the 2010 Ca Building Code becomes effective

*** Must include all duct work in existing portion of house as well as addition

L. Renewable Energy and Roofing

Maximum Possible Points

	New Homes	Additions 500+ s.f.
1. Pre-Plumb for Solar Hot Water	4	4
2. Install Solar Hot Water Heating System*	14	14
3. Pre-Wire for Future Photovoltaic Installation	4	4
4. Install Photovoltaic Panels*	14	14
5. Install Solar Tubes (1 point each up to 5 points)	5	5
6. Select Durable Roofing Material, (Class 'A', 40 year)	3	3
7. Install Radiant Barrier Roof Sheathing Material	3	3
8. Select EPA ENERGY STAR Cool Roofing Material (California Cool Roof Rated)	3	3
9. Use Roofing Materials with at least 33% Recycled Content	3	3
10. Install a Green Roof (Living Roof)	12	12
Available Points	65	65

* Points may be counted for each unit that benefits from the installation. If a certain unit (or units) benefit unequally, points will be counted proportionally to the amount of benefit.

M. Natural Heating and Cooling

Maximum Possible Points

	New Homes	Additions 500+ s.f.
1. Incorporate Passive Solar Heating/Cooling** <i>Provide information on the thermal mass characteristics of the house; window locations and specifications (including solar heat gain coefficient and low-e ratings and varying placement of these windows to allow for solar heating qualities); house orientation with the long axis running east-west, etc.</i>	Up to 15*	Up to 15*
2. Install Subterranean Cooling Tubes (Ground Coupled Heat Exchangers)	3	3
3. Install Overhangs or Awnings on South Facing Walls and Windows Sized to Minimize Summer Solar Heat Gain for Building, But Allow Winter Sun.	3	3
4. Install Oversized Overhangs Around Entire Structure for Summer Shading and Increased Weather Proofing: 16" = 1 point 24" = 2 points	2	2
5. Plant Only Deciduous Trees on the West and South Sides (greater than 3-ft. from building)	3	3
Available Points	26	26

* Points awarded on a sliding scale

** See following websites for info on passive solar design:

http://www.southface.org/web/resources&services/publications/technical_bulletins/PSD-Passivesolar%2000-790.pdf

http://www.esru.strath.ac.uk/EandE/Web_sites/01-02/RE_info/passive_solar.htm

N. Indoor Air Quality and Finishes

Maximum Possible Points

	New Homes	Additions 500+ s.f.
1. Install wood products meeting the formaldehyde limits in Table 804.4.4 of the California Green Building Code*	2	2
2. Cover and seal duct openings during construction for all new and existing ductwork in proximity of the construction*	1	1
3. Use only interior paints/wood finishes and adhesives that contain low, or no volatile organic compounds (VOCs)*	3	3
4. Install Whole House Vacuum System	3	3
5. Use Solvent-Free Adhesives	3	3
6. Use Formaldehyde Free Particleboard	6	6
7. Use Exterior Grade Plywood for Interior Uses	1	1
8. Use Formaldehyde-Free Medium Density Fiberboard (MDF) and Materials	4	4
9. Seal All Exposed Particleboard or MDF	4	4
10. Use FSC Certified Materials for Interior Finish	4	4
11. Use Finger-Jointed or Recycled Content Trim	1	1
12. Use Recycled Content Counter Tops and Finishes	3	3
Available Points	35	35

* Will be required when the 2010 Ca Building Code becomes effective

O. Flooring

Maximum Possible Points
(based on % of floor area covered)

	New Homes	Additions 500+ s.f.
1. Use Forest Stewardship Council (FSC) Certified Wood Flooring	6	6
2. Use Rapidly Renewable Flooring Materials (e.g., bamboo, cork, etc.)	4	4
3. Use Salvaged or at least 20% Recycled Content Ceramic Tiles	3	3
4. Install Natural Linoleum	5	5
5. Install Recycled Content Carpet with Low Volatile Organic Compounds (VOC's)	4	4
6. Use Finished or Exposed Concrete for 50% or More of the Project Floor Area on the Ground Floor (not counting garage)	6	6
Available Points	9	9

P. Other

	Maximum Possible Points	
	New Homes	Additions 500+ s.f.
1. Provide an operation and maintenance binder/manual for all new appliances and systems installed as part of the scope of work*	1	1
2. If subject to the requirements of AB 1881 (the Water Conservation in Landscaping Act of 2006), a landscaping plan shall be developed that conforms to the California Department of Water Resources Model Water Efficient Landscape Ordinance, or other applicable local regulations	Required	Required
3. Energy Ratings: Every 1 % Reduction in Whole House Energy Beyond Title 24 = 1 point up to 30 points. Use Energy Software to Show Improvement over California Residential Energy Standards (Title 24)	30	30
4. Innovation Points – These points are given for innovations or new approaches, new materials or practices		
a. Design, Provide and Install Compost Bin	1	1
b. Turf Less than 10% of Total Lot Area Minus Building Footprint, Decking, Patios, Driveways	8	8
c. After Installation of Finishes, Indoor Air Tests Show Formaldehyde Level <27 ppb, Install Carbon Monoxide (CO) Monitors, Install Humidity Monitors	5	5
d. Conduct and Pass a Duct Blower Test	5	5
e. Install Mudroom with Bench, Shoe Rack, and Hard Floor to Protect Indoor Air Quality (IAQ)	3	3
f. Install Permanent Clothes Line	1	1
g. Increased Damp Proofing of Bathrooms	2	2
h. Features Not Listed: Requires Submittal of Verification Form and Must be Approved by Building Section (e.g., use of locally produced wood products, etc.)		
Available Points	56	56

* Will be required when the 2010 Ca Building Code becomes effective

Tables:

TABLE 1: RESIDENTIAL NEW CONSTRUCTION ACTIONS AND POINT REQUIREMENTS (PER UNIT)

Total Points Available	472	
<i>Action</i>	<i>Points required to receive action:</i>	
	<i>First 500 Square Feet</i>	<i>Each Additional 100 Square Feet</i>
Receipt of building permit	40	1.5
Green Building Award	95	3.5

*Exceptions:

- These points are not required for stand-alone decks or other non-habitable structures that require a building permit.

TABLE 2: RESIDENTIAL ADDITION ACTION POINT REQUIREMENTS

Total Points Available	483	
<i>Action</i>	<i>Points required to receive action:</i>	
	<i>First 500 Square Feet</i>	<i>Each Additional 100 Square Feet</i>
Receipt of building permit*	30	1.1
Green Building Award	60	2.5

*Exceptions:

- These points are not required for additions of less than 500 square feet, or remodels of any size, that require a building permit.
- These points are not required for stand-alone decks or other non-habitable structures that require a building permit.

To Calculate Project Square Footage Add The Following:

New Construction:

- Building Gross Floor Area (including second units) + Covered Porches

Addition:

- Gross Floor Area of Addition + All new covered porches

Permit Number:_____	Square Footage:_____
<u>Type of Project: (Check One)</u>	New:_____ Addition:_____
<u>Level of Action Desired: (Check One)</u>	-Permit Issuance: _____
	-Green Building Award: _____
<u>Points By Category:</u>	
A: Integrated Design Features: _____	I: Insulation _____
B: Site: _____	J: Windows _____
C: Foundation _____	K: HVAC _____
D: Structural Frame _____	L: Renewable Energy & Roofing _____
E: Exterior Finish _____	M: Natural Heating & Cooling _____
F: Plumbing _____	N: Indoor Air Quality & Finishes _____
G: Electrical _____	O: Flooring _____
H: Appliances _____	P: Other _____
Total Points: _____	Verified By: _____