

Draft County of Santa Cruz Green Building Program



Green Points Checklist for Residential Additions and New Construction Over 500 Square Feet* in Size

(* 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 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.

Costs vs. Benefits of Building Green: Studies have shown that additional costs associated with “going green” are negligible, and are generally offset within 1-3 years by the energy savings that result from incorporating energy efficient practices and features.

Compliance Process

This 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).
- Interior remodels of any size are exempt from this checklist, but are still subject to the “Required Green Building Features List for Small Projects” (a.k.a . “Green List for Small Projects”).
- Stand-alone decks are exempt.

Plan Submittal:

- The cover sheet of plans submitted for permit application must include an index of those green features and techniques to be implemented.
- 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 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 are allowed 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 Building Section 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.
- For the Green Building Award an additional inspection may be required.

Square Footage Calculations

One to Two-Family Residential

To calculate square footage of one to two-family residential project (i.e., single family dwellings and duplexes), add the following:

- New Construction:
 - Building Gross Floor Area + Covered Porches
- Additions:
 - Gross Floor Area of Addition + All new covered porch area

Multi-Family Residential

Multi-Family residential projects have one or more of the following characteristics:

1. The housing units have shared utility meters.
Or
2. The project has common spaces such as community rooms, lobbies, meeting rooms, offices, central laundry, or hallways within the same building envelope as the residential units,
Or
3. Are the residential portion of a mixed-use development,
Or
4. The project has 3 or more housing units included within the same building envelope.

If the project qualifies as multi-family, there are three methods for determining the square footage that is to be used for the calculation of points required for permit issuance or a green building award. (Use gross floor area, plus any covered porches).

1. The square footage of the largest unit if all fixtures in all of the units are similar.
Or
2. The average square footage of the units provided the fixtures in all units are similar, and the largest unit is not more than 25% larger than the rest of the units being averaged.
Or
3. The square footage of each unit type, if each unit is to be considered separately.

Multi-Family Additions

As with one to two-family additions, the square footage of multi-family additions are calculated as follows:

Floor Area of Addition + All new covered porch area

A. Integrated Design Features

	Maximum Possible Points	
	New Homes	Additions over 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	1	1
4. Deconstruct Existing Structure and Salvage Material (where applicable) <i>Specify deconstruction process and itemize/quantify salvaged materials and indicate their ultimate use(s) or recipient(s).</i>	5	5
5. To Promote Indoor Air Quality, Construct Detached Garage or Carport	2	2
6. Design and Build a Zero External Energy Input Home	10	10**
Available Points	28	28

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

** For whole house

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>of</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 over 500 s.f.
<p>1. Recycle Job Site Construction and Demolition waste - 50% required 65% Recycling Rate = 1 point 75% Recycling Rate = 2 points 80% Recycling Rate = 4 points <i>Designate how and what materials will be recycled. Provide an index of materials to be recycled by types and volumes and their final disposition. Show location on site plan where materials will be stored and classified during construction phase.</i></p>	Maximum of 4 points	Maximum of 4 points
<p>2. Donate Unused Materials <i>Specify types and quantities of materials and indicate recipient (Goodwill, church group, etc.)</i></p>	2	2
<p>3. Protect Native Soil <i>Indicate areas to be protected and measures taken (i.e., mulches, coverings, etc.) with source verification for measures taken.</i></p>	1	0
<p>4. Minimize Disruption of Existing Plants/ Trees <i>Show location and types of protective measures (i.e., temporary fencing, covering, etc.)</i></p>	1	1
<p>5. Protect Water Quality with Landscape Design* <i>Show location and types of measures implemented (i.e., bio-filters, swales, rain catchment systems, etc.).</i></p>	2	0
<p>6. Design Resource and Water- Efficient Landscapes* <i>Provide landscape plan specifying the planting of non-invasive, drought tolerant species, etc.</i></p>	2	2
<p>7. Reuse Materials/ Use Recycled Content Materials for Landscape Areas* <i>Specify locations and types of materials to be used</i></p>	2	2
<p>8. Install High Efficiency Irrigation System* <i>Specify manufacturer and installation locations.</i></p>	2	2
<p>9. Provide On-Site Stormwater Catchment/ Retention <i>Provide specifications and location(s), including source of water and distribution system.</i></p>	2	2
<p>10. Utilize Permeable Paving for 50% of Non-Structural Site Paved Area*</p>	2	2
<p>11. Install Solar Walkway Lights*</p>	2	2
Available Points	22	19

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

C. Foundation

Maximum Possible Points

	New Homes	Additions over 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	5	5
10. Install Sump Pump	5	5
Available Points	32	32

D. Structural Frame

Maximum Possible Points

	New Homes	Additions over 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
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	New Homes	Additions over 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 plate: 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 over 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. Provide Advanced Flashing/ Weather Proofing Details	2	2
Available Points	15	15

F. Plumbing

Maximum Possible Points

	New Homes	Additions over 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. Multiple showerheads serving one shower shall have a total water usage no greater than 2gpm @ 80psi	Required**	Required**
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 High Efficiency (i.e., tankless) 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 as 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 Water Using Appliances	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	52	52

** Required as part of Calif. Green Building Code as of July 1, 2011

G. Electrical

	Maximum Possible Points	
	New Homes	Additions over 500 s.f.
1. Install Compact Fluorescent Light (CFL) or Light Emitting Diode (LED) 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 CFL or LED Light Bulbs (1 point each up to 4 points)	4	4
Available Points	4	12

* Only CFL and LED bulbs located in the remodeled and existing portions of the project are counted. Those located in the addition will not be counted, as low wattage light fixtures are already required by the State Building Code.

H. Appliances

	Maximum Possible Points	
	New Homes	Additions over 500 s.f.
1. Install ENERGY STAR dishwasher	Required	Required*
2. Install ENERGY STAR Horizontal Axis Washing Machine	1	1
3. Install ENERGY STAR clothes dryer	Required	Required*
4. Install ENERGY STAR refrigerator	Required	Required*
5. Install ENERGY STAR range	Required	Required*
6. Install ENERGY STAR oven	Required	Required*
7. Install ENERGY STAR forced air units	Required	Required*
8. Install ENERGY STAR air conditioner	Required*	Required*
9. Install ENERGY STAR storage water heater	Required	Required*
10. Provide a readily accessible built-in recycling area for depositing, storage and collection of recyclable items	Required**	Required*
Available Points	1	1

* As applicable – if said appliance is being installed as part of project
 ** Required as part of Calif. Green Building Code as of August 1, 2009

I. Insulation

Maximum Possible Points

	New Homes	Additions over 500 s.f.
1. Install minimum R-13 wall insulation in new walls or when either interior or exterior finishes of the exterior (weather) walls are removed (insulation needs to be installed only in wall area exposed)	Required	Required
2. Install minimum R-19 floor insulation under the new floors or if project includes any floor reframing or removal of the sub-floor (insulation needs to be installed only in floor area exposed).	Required	Required
3. Install R-19 (or better) ceiling insulation in new ceilings or if ceiling coverage is exposed (insulation needs to be installed only in ceiling area exposed).	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	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

J. Windows

Maximum Possible Points

	New Homes	Additions over 500 s.f.
1. Install Extra Energy-Efficient Windows		
A. Triple-Paned	1	1
B. Low-Emissivity (Low-E)*	0	2*
C. Low Conductivity Frames*	0	2*
Available Points	1	5

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

K. Heating, Ventilation and Air Conditioning

Maximum Possible Points

	New Homes	Additions over 500 s.f.
1. Use Duct Mastic on All Duct Joints*	0	1*
2. Install Ductwork Within Conditioned Space	3	3
3. Vent Range Hood to the Outside*	0	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 90% Annual Fuel Utilization efficiency (AFUE) Furnace	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
Available Points	34	36

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

L. Renewable Energy and Roofing

Maximum Possible Points

	New Homes	Additions over 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 Safe and 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

M. Natural Heating and Cooling

Maximum Possible Points

	New Homes	Additions over 500 s.f.
1. Incorporate Passive Solar Heating/Cooling	5	5
2. Install Subterranean Cooling Tubes (Ground Coupled Heat Exchangers)	3	3
3. Overhangs or Awnings on South Facing Walls and Windows Sized to Minimize Summer Solar Heat Gain for Building	3	3
4. Oversized Overhangs Around Entire Structure for Summer Shading and Increased Weather Proofing: 16" = 1 point 24" = 2 points	3	3
5. Plant Only Deciduous Trees on the West and South Sides (greater than 3-ft. from building)	3	3
Available Points	17	17

N. Indoor Air Quality and Finishes

Maximum Possible Points

	New Homes	Additions over 500 s.f.
1. Formaldehyde limits for wood products shall meet Table 804.4.4 of the California Green Building Code	Required*	Required*
2. Cover and seal duct openings during construction for all new and existing ductwork in proximity of the construction	Required**	Required**
3. Use only interior paints/wood finishes and adhesives that contain low, or no volatile organic compounds (VOCs)	Required**	Required**
4. Install Whole House Vacuum System	3	3
5. Use Solvent-Free Adhesives	3	3
6. 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	29	29

* Required as part of Calif. Green Building Code as of August 1, 2009

** Required as part of Calif. Green Building Code as of July 1, 2011

O. Flooring

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

	New Homes	Additions over 500 s.f.
1. Select Forest Stewardship Council (FSC) Certified Wood Flooring	6	6
2. Use Rapidly Renewable Flooring Materials	4	4
3. Use Salvaged or at least 20% Recycled Content Ceramic Tiles	3	3
4. Install Natural Linoleum in Place of Vinyl	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	28	28

P. Other

	Maximum Possible Points	
	New Homes	Additions over 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	Required	Required
2. Where landscape irrigation is proposed, a water budget 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		
Available Points	55	55

* Required as part of Calif. Green Building Code as of August 1, 2009

Tables:

TABLE 2: RESIDENTIAL NEW CONSTRUCTION ACTIONS AND POINT REQUIREMENTS

Total Points Available	464	
<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 that require a building permit.

TABLE 3: RESIDENTIAL ADDITION ACTION POINT REQUIREMENTS

Total Points Available	475	
<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 that require a building permit.

To Calculate Project Square Footage Add The Following:

New Construction:

- Building Gross Floor Area + Covered Porches

Addition:

- Gross Floor Area of Addition + All new covered porches

Residential Buildings

Unless exempted from the County Green Building Program (in County Code Chapter 13.38), your project must comply with the minimum number of points to obtain a building permit for your new or remodeled building or addition.

To figure out the points required for your project, enter the square footage of your project in line (A). Proceed through the equation, from (A) to (B) to (C). Multiply by the appropriate multiplier for the desired level of action, permit issuance or Green Building Award, to calculate (D). Add the appropriate number for the desired level of action, permit issuance or accelerated processing or Green Building Award, to calculate the total required points.

NEW CONSTRUCTION:

(A) _____ (Sq. Ft.) – 500 (Sq. Ft.) = (B) _____ (Sq. Ft.)
 (B) _____ (Sq. Ft.) / 100 = (C) _____ (points per 100 Sq. Ft.)
 (C) _____ X 1.5 (Permit issuance multiplier) = (D) _____ (additionally required points)

or

X 3.5 (Green Building Award)

(D) _____ + 40 (Permit issuance) = _____ (**required points**)

or

+ 95 (Green Building Award)

Enter the square footage of the project on line (A), subtract 500, divide by 100, multiply by the chosen multiplier (Permit Issuance or Award) and then add the corresponding points to figure out how many points are required for your project

ADDITIONS (over 500 sq. ft.):

(A) _____ (Sq. Ft.) – 500 (Sq. Ft.) = (B) _____ (Sq. Ft.)
 (B) _____ (Sq. Ft.) / 100 = (C) _____ (points per 100 Sq. Ft.)
 (C) _____ X 1.1 (Permit issuance multiplier) = (D) _____ (additionally required points)

or

X 2.5 (Green Building Award)

(D) _____ + 30 (Permit issuance) = _____ (**required points**)

or

+ 60 (Green Building Award)

Enter the square footage of the project on line (A), subtract 500, divide by 100, multiply by the chosen multiplier (Permit Issuance or Award) and then add the corresponding points to figure out how many points are required for your project

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: _____