Appendix A

CITY OF CAPITOLA
GREEN BUILDING PROGRAM

Standards for Compliance

April 2008
Version 1

I. OVERVIEW:

The City of Capitola Green Building program distinguishes between two types of building projects: (a) non-residential projects, and (b) residential projects.

The non-residential component is based on the U.S. Green Building Council Leadership in Energy and Environmental Design (LEED®) standard, which awards points based on building performance. LEED calculations of performance are typically performed by design professionals using specialized knowledge and forms. Thus the LEED system is typically used for larger projects in the non-residential (commercial) sector, where specialized professionals will typically be involved already.

The residential component is based on the Alameda County Waste Management Authority (ACWMA) Green Building Guidelines and awards points for specific measures rather than performance. The identification of the measures being utilized does not require specialized knowledge. Thus the ACWMA system is suitable for both small and large projects, not necessarily employing specialized professionals.

The basis for compliance consists of the checklists from these two programs, which set out the number of points earned for any one of the measures on the checklist. Compliance is measured in terms of the total number of points for the items to which the applicant commits at the time of building permit application. However, the program is flexible enough to permit some modifications as projects progress.

Projects are required to implement items for which points have been awarded. Typically this will be enforced at intermediate or final building inspections. If for some reason beyond the applicant's control a measure cannot be implemented, then other green item(s) with an equivalent point total must be substituted, with prior approval from the Building Department.

The point systems are used to award the following actions:

(1) Receipt of the building permit (mandatory)

A minimum number of points (as described below) are required to receive the building permit. This element of the program is mandatory. The only exceptions are relatively small projects; the threshold sizes for these exceptions are given below along with the point requirements.

(2) Project Recognition and Green Building Award (optional)

Projects achieving a still larger number of points (as described below) will be recognized publicly through the education and outreach program and will receive Green Building Awards.

II. STANDARDS FOR COMPLIANCE FOR NON-RESIDENTIAL PROJECTS:

LEED© Model

The LEED system was used as a model to develop the non-residential aspect of the program. The system recognizes six major categories of opportunities and uses the checklist similar to Appendix B. Points are awarded for performance that meets or exceeds defined metrics in each category. As a performance-based system, LEED provides the flexibility to accommodate a variety of designs and

materials. Design teams can develop their own solutions to achieve a given point, or build upon elements of previously successful projects. After completion, the USGBC awards certification levels, ranging from basic Certification to Platinum recognition, according to the total number of points earned for green elements incorporated into the final project.

The six categories addressed by LEED are:

1. Sustainable Sites

- Site selection affects energy consumption, commuting choices, local ecosystems, and infrastructure needs. Considerations include proximity to downtown, urban redevelopment, rehabilitation of adversely affected lands, minimizing building footprint, preserving natural ecosystems and agricultural lands, building orientation, landscaping, storm water flow, and erosion control.

2. Materials and Resources

- Maximize use of reused/reusable and recycled-content/recyclable materials. Minimize use of scarce resources and materials that create environmental or health problems during mining, production, transportation, building, use, or at the end of their useful life.

3. Energy and Atmosphere

- Maximize use of renewable energy sources, energy efficiency and passive solar design measures. Minimize fossil fuel and other non-renewable resource use.

4. Water Conservation and Management

- Maximize water conservation and water quality.

5. Indoor Air Quality

- Maximize indoor air quality. Minimize or eliminate toxic emissions generated by chemical off-gassing from synthetic and treated materials or from mold, including chemicals in furniture, rugs, and prefabricated materials.

6. Innovation and Design

- Encourage innovative approaches not specified in the other five categories that enhance LEED objectives and City policies.

The Capitola Green Building Program uses the same guidelines for compliance, and while it does not recognize the various LEED levels of compliance, a project eligible for award recognition is essentially equivalent to a LEED Gold certification (39-51 points). If a development team opts for full LEED certification through the USGBC system, they may substitute like for like compliance with the Capitola program.

Non-Residential Green Building Actions

A total of 75 points (Appendix B) are available to earn actions at the building permit stage. (Projects in the Capitola Green Building Program are awarded points for each of the measures considered 'prerequisites' in the original LEED rating system that did not provide for points in this category.) The point totals required to receive these actions, whether for new construction, additions, or interior remodels, are summarized in Table 1 below.

The non-residential system is performance based, so the point threshold for each of the actions is independent of project size.

TABLE 1: NON-RESIDENTIAL (COMMERCIAL) ACTIONS AND POINT REQUIREMENTS

Total points possible	75
Action	***Points required to receive action:***
C-1. Receipt of Building Permit*	7
C-2. Green Building Award	40

*Exceptions: These points are not required for non-residential additions and remodels totaling less than 1000 square feet, or interior-only non-residential remodels of any size.

III. STANDARDS FOR COMPLIANCE FOR RESIDENTIAL PROJECTS

Alameda County Waste Management Authority Model

The Green Building Program for residential projects is based on the Residential Green Building Guidelines provided by the Alameda County Waste Management Association (ACWMA). It utilizes a checklist (Appendix C) derived from the ACWMA checklists for new construction and additions/remodels. ACWMA defines residential construction as single-family or multi-family residences, less than or equal to three stories (above grade) in height.

Earning Residential Green Building Rating System Points

The ACWMA-based checklist awards points for specific measures. Where no explicit quantitative measure for receiving credit under a specific point item is given, the following guideline shall apply: If a point credit is claimed, that item shall be applied wherever the specific building element mentioned appears in the project, except where physical factors prevent its use. For example, if credit is awarded for recycled low-VOC carpets (Item N.6) then wherever carpets are installed as part of the project, recycled low-VOC carpets shall be used. This would not preclude use of other types of flooring elsewhere. As a second example, if credit is awarded for "Use Wood I-joists for floors and ceilings" (Item C.3) but solid sawn lumber needs to be used for deck framing in order to taper the joists to create proper coping for drainage, then credit C.3 applies if Wood I-joists are used for all of the interior (non-deck) floors and ceilings.

Residential Green Building Sub-Categories and Size Dependence

The residential system distinguishes between new construction and additions/remodels. The two columns in Appendix C, covering new homes and additions/remodels, respectively, differ slightly because certain elements are practical only for new construction, while certain other elements are important mainly for additions/remodels which may not be subject to other standards that apply to new construction.

Construction of a detached unit on property with existing dwellings is considered new construction.

Larger projects have more opportunities to incorporate specific measures than small projects. Therefore, larger buildings require more points than smaller buildings, to receive the same building permit action. For the purpose of determining the required points, the size of the project is defined as heated square footage per dwelling unit.

New Residential Construction

For new residential construction, there are 460 points available for building permit actions. No project will ever earn all 460 points, inasmuch as some measures are mutually exclusive.

For multi-unit properties, points are calculated per dwelling unit. When many of these units are identical to each other, the points do not need to be reported separately for each unit, but all units of a type must incorporate the sustainable measures in order for the project to receive an action. The point requirements to earn each of the actions are summarized below in Table 2.

TABLE 2: RESIDENTIAL NEW CONSTRUCTION ACTIONS AND POINT REQUIREMENTS

Total Points Available	460	
Action	***Points required to receive action:***	
	First 350 Square Feet	***Each Additional 100 Square Feet***
R-N-1. Receipt of building permit	10	1.5
R-N-2. Green Building Award	60	3.5

Residential Remodeling or Additions

For residential remodeling or additions, 464 points are available. For multi-unit properties, points are calculated per dwelling unit. The point requirements to earn each of the actions are summarized below in Table 3.

TABLE 3: RESIDENTIAL REMODEL AND ADDITION ACTION POINT REQUIREMENTS

Total Points Available	464	
Action	***Points required to receive action:***	
	First 350 Square Feet	***Each Additional 100 Square Feet***
R-A/R-1. Receipt of building permit*	5	1.1
R-A/R –2. Green Building Award	35	2.5

*Exception: These points are not required for additions and/or remodels of less than 350 square feet.

IV. PROGRAM IMPLEMENTATION

All projects first applying for a building permit within this period are required to complete the checklist for their category (residential or non-residential) indicating which measures are being implemented. There are mandatory point requirements for a Building Permit. Both higher-level actions are available to participants. Outreach and Education Program activities begin.

APPENDIX B
Non-Residential Construction Green Building Checklist
(Based on LEED-NC 2.1)

A. Sustainable Sites		Points Available for Building Dept Incentives (All points on the LEED checklist)
1.	Erosion & Sedimentation Control -	1
2.	Site Selection	1
3.	Urban Redevelopment/Development Density	1
4.	Brownfield Redevelopment	1
5.	Alternative Transportation - Public Transportation Access	1
6.	Alternative Transportation - Bicycle Storage and Changing Rooms	1
7.	Alternative Transportation - Alternative Fuel Vehicles	1
8.	Alternative Transportation - Parking Capacity	1
9.	Reduce Site Disturbance - Protect or Restore Open Space	1
10.	Reduce Site Disturbance - Development Footprint	1
11.	Stormwater Management - Rate and Quantity	1
12.	Stormwater Management - Treatment	1
13.	Heat Island Effect - Non-Roof	1
14.	Heat Island Effect - Roof	1
15.	Light Pollution Reduction	1
16.	Site-related innovation comparable in scope to the above	0
	Available Points	**15**

B. Water Efficiency		Points Available for Building Dept Incentives
1.	Water Efficient Landscaping - Reduce by 50%	1
2.	Water Efficient Landscaping - No Potable Use or No Irrigation	1
3.	Innovative Wastewater Technologies	1
4.	Water Use Reduction - 20% Reduction	1
5.	Water Use Reduction - 30% Reduction	1
	Available Points	**5**

C. Energy & Atmosphere	Points Available for Building Dept Incentives

1.	Fundamental Building System Commissioning	1
2.	Minimum Energy Performance (already required in Title 24)	0
3.	CFC Reduction in HVAC&R Equipments	1
4.	Optimize Energy Performance	10
5.	Renewable Energy - 5%	1
6.	Renewable Energy - 10%	1
7.	Renewable Energy - 20%	1
8.	Additional Commissioning	1
9.	Ozone Depletion	1
10.	Measurement & Verification	1
11.	Green Power	1
	Available Points for Energy	**19**

D.	**Materials & Resources**	**Points Available for Building Dept Incentives**
1.	Storage and Collection of Recyclables	1
2.	Building Reuse - Maintain 75% of Existing Shell	1
3.	Building Reuse - Maintain 100% of Existing Shell	1
4.	Building Reuse - Maintain 100% Shell and 50% Non-Shell	1
5.	Construction Waste Management - Divert 50%	1
6.	Construction Waste Management - Divert 100%	1
7.	Resource Reuse - Specify 5%	1
8.	Resource Reuse - Specify 10%	1
9.	Recycled Content - Specify 5%	1
10.	Recycled Content - Specify 10%	1
11.	Local/Regional Materials - 20% Manufactured Locally	1
12.	Local/Regional Materials - 20% Manufactured Locally + 50% Harvested Locally	1
11.	Rapidly Renewable Materials	1
13.	Certified Wood	1
	Available Points	**14**

E.	**Indoor Environmental Quality**	**Points Available for Building Dept Incentives**
1.	Minimum IAQ Performance	1
2.	Environmental Tobacco Smoke Control	1
3.	Carbon Dioxide Monitoring	1
4.	Ventilation Effectiveness	1
5.	Construction IAQ Management Plan - During Construction	1

E. Indoor Environmental Quality, Continued		Points Available for Building Dept Incentives
6.	Construction IAQ Management Plan - Before Occupancy	1
7.	Low-Emitting Materials - Adhesives and Sealants	1
8.	Low-Emitting Materials - Paints	1
9.	Low-Emitting Materials - Carpet	1
10.	Low-Emitting Materials - Composite Wood	1
11.	Indoor Chemical & Pollutant Source Control	1
12.	Controllability of Systems - Perimeter	1
13.	Controllability of Systems - Non-Perimeter	1
14.	Thermal Comfort - Comply with ASHRAE 55-1992	1
15.	Thermal Comfort - Permanent Monitoring System	1
16.	Daylight & Views - Daylight 75% of Spaces	1
17.	Daylight & Views - Views for 90% of Spaces	1
	Available Points	**17**

F. Innovation & Design Process		Points Available for Building Dept Incentives
1.	Innovation in Design	1
2.	Another Innovation in Design	1
3.	Another Innovation in Design	1
4.	Another Innovation in Design	1
5.	LEED Accredited Professional	1
	Available Points	**5**
	Total Available Points	**75**

APPENDIX C
Residential Construction Green Building Checklist
(Based on Alameda County Waste Management Authority (ACWMA) Green Building Guideline)

		Points Available for Building Department Incentives	
A.	**Community Design Issues**	New Homes	Additions & Remodels
1.	Orient Homes on E/W Axis for Solar Access	0	0
2.	Orient Living Rooms and Porches to Streets and Public Spaces	0	0
3.	Build Mixed Use, Residential/Commercial	0	0
4.	Design for Diverse Family Sizes	0	0
5.	Provide “Granny Flats” Above Garages	0	0
6.	Build within 1/4 Mile of Public Transit Stop	0	0
7.	Minimize Street Widths	0	0
8.	Locate Buildings to Preserve Open Space and Wildlife Habitat	0	0
	Available Points	**0**	**0**
B.	**Site**		
1.	Recycle Job Site Construction & Demolition Waste 50% Recycling Rate is Required; 65% = 1 point;75% = 2 points; 80% = 4 points	4	4
2.	Donate Unused Materials	4	4
3.	Protect Native Soil	2	0
4.	Minimize Disruption of Existing Plants & Trees	1	1
5.	Implement Construction Site Stormwater Practices	2	2
6.	Protect Water Quality with Landscape Design	2	0
7.	Design Resource and water-Efficient Landscapes	4	4
8.	Reuse Materials/Use Recycled Content Materials for Landscape Areas	2	2
9.	Install High-Efficiency Irrigation Systems	2	2
10.	Provide for On-Site Water Catchment / Retention	2	2
11.	Utilize Permeable Paving for 50% of Nonstructural Site paved area	2	2
	Available Points	**27**	**23**
C.	**Foundation**		
1.	Incorporate Recycled Flyash in Concrete up to15% Recycled Flyash = 2 points; Add 1 point for every 10% increase of flyash, up to 5 points	5	5
2.	Reuse Form Boards	1	1
3.	Re-usable metal Forms	3	3
4.	Use Recycled Content Aggregate	2	2
5.	Insulate Foundation/Slab before backfill	3	3
6.	Install Rigid Foam, Insulated Concrete Forms (ICFs)	3	3
7.	Rammed earth foundation	5	5
8.	Use non-toxic release agents on concrete forms	1	1
	Available Points	**23**	**23**

D.	Structural Frame	Points Available for Building Department Incentives	
		New Homes	Additions & Remodels
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 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 Floors and Ceilings	2	2
4.	Use Steel Interior Web Trusses	2	2
5.	Design Energy Heels on Trusses	2	2
6.	Use OSB		
	a. Subfloors	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
9.	Use Recycled Content Steel Studs for Interior Framing	2	2
10.	Reduce lumber framing and improve thermal performance* with alternative wall construction such as: - Insulated concrete forms - including Rastra -Structural Insulated Panels (SIP) - Rammed-earth and pressed earthen block - Straw bale - Structural Bamboo 2 points for every 10% reduction in framing compared to standard framing *Steel framing is not eligible for this point due to thermal performance	20	20
11.	Design with 8 foot high plate: 2 points for each floor where used	6	6
12.	Apply Advanced Framing Techniques	4	4
13.	Use Reclaimed Lumber for Non-Structural Applications	3	3
	Available Points	**60**	**60**

E.	Exterior Finish		
1.	Use Sustainable Decking Materials		
	a. Recycled content	3	3
	b. FSC Certified Wood	3	3
2.	Use Non-CCA Treated Wood	1	1
3.	Install House Wrap under Siding	1	1
4.	Use Alternative Siding Materials		
	a. Recycled content	1	1
	b. Fiber-cement	3	3
	c. Earth and/or plaster	3	3
5.	Use low/no VOC exterior paint such as silicate	2	2
	Available Points	**17**	**17**

F.	Plumbing	Points Available for Building Department Incentives	
		New Homes	Additions & Remodels
1.	Insulate all Hot Water Pipes	2	2
2.	Install Flow Reducers to reduce flow to less than code requirement		
	a. Faucets (1 point each, up to 2 points)	2	2
	b. Showerheads (1 point each, up to 2 points)	2	2
3.	Install Dual Flush Toilets (1 point each, up to 4 points)	4	4
4.	Install Chlorine Filter on Showerhead	4	4
5.	Install Tankless Water Heater	2	2
6.	Pre-plumb for Graywater Conversion	4	4
7.	Install Graywater System	8	8
8.	Install Water Filtration Units at Faucets (2 points each, up to 4 points)	4	4
9.	Install On-Demand Hot Water Circulation Pump	4	4
10.	Install zero-waters urinals (1 point each to max of 2)	2	2
11.	Install rain water 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	**56**	**56**
	F. Electrical		
	1. Install Compact Fluorescent Light Bulbs – CFLs. (6 bulbs=2 points, 12=4 points, up to 4 points)	4	4
	2. Install Air-Tight Insulation-Compatible Recessed Fixtures for CFLs (1 point each, up to 5 points) (T24 REQ)	0	5
	3. Install Lighting Controls (1 point per fixture, up to 4 points)	4	4
	4. Install High Efficiency Ceiling Fans with CFLs (1 point each, up to 4 points)	4	4
	Available Points	12	17
G.	**Appliances**		
1.	Offer Energy Star Dishwasher	1	1
2.	Offer Horizontal Axis Washing Machine	1	1
3.	Offer Energy Star Refrigerator	1	1
4.	Install Built-In Recycling Center	1	1
	Available Points	**4**	**4**

H.	Insulation	Points Available for Building Department Incentives	
		New Homes	Additions & Remodels
1.	Upgrade Insulation to Exceed Title 24 Requirements by 20%		
	a. Walls	2	2
	b. Ceilings	2	2
2.	Install Recycled-Content, Formaldehyde-Free Fiberglass Insulation	3	3
3.	Use Advanced Infiltration Reduction Practices	2	2
4.	Use environmentally preferable insulation materials (Cellulose, recycled cotton, wool, foamed concrete, soy-based polyurethane)		
	a. Walls	4	4
	b. Ceilings	4	4
5.	Install Straw Bale Insulation at least 18" thick	6	6
	Available Points	**23**	**23**

I.	Windows		
1.	1. Install Energy-Efficient Windows		
	a. Double-Paned		1
	b. Triple-Paned	1	1
	c. Low-Emissivity (Low-E)	2	2
	d. Low. Conductivity Frames	2	2
	Available Points	**5**	**6**

J.	Heating Ventilation and Air Conditioning		
1.	Use Duct Mastic on All Duct Joints		1
2.	Install Ductwork Within Conditioned Space	3	3
3.	Vent Range Hood to the Outside		1
4.	Clean all Ducts Before Occupancy	2	2
5.	Install Attic Ventilation Systems	1	1
6.	Install Whole House Fan	4	4
7.	Install Sealed Combustion Units		
	a. Furnaces	3	3
	b. Water Heaters	3	3
8.	Install 13 SEER/11EER or higher AC with a TXV	3	3
9.	Install AC with Non-HCFC Refrigerants	2	2
10.	Install 90% Annual Fuel Utilization Efficiency (AFUE) Furnace	2	2
11.	Eliminate Wood Burning Fireplaces	1	1
12.	Install Zoned, Hydronic Radiant Heating	3	3
13.	Install High Efficiency Particulate Air (HEPA) filter	4	4
14.	Install Heat Recovery Ventilation Unit (HRV)	5	5
15.	Install Separate Garage Exhaust Fan	3	3
	Available Points	**39**	**41**

K.	Renewable Energy and Roofing	Points Available for Building Department Incentives	
		New Homes	Additions & Remodels
1.	Pre-Plumb for Solar Water Heating	4	4
2.	Install Solar Water Heating System	10	10
3.	Pre-Wire for Future Photovoltaic (PV) Installation	4	4
4.	Install Photovoltaic (PV) Panels (1.2 kw = 6 points, 2.4 kw = 12 points, 3.6 kw = 18 points)	18	18
5.	Install Solar (PV) Walkway Lights	4	4
6.	Select Safe and Durable Roofing Materials	3	3
7.	Install Radiant Barrier Roof Sheathing	3	3
8.	Select EPA Energy Star Cool Roofing material	3	3
9.	Use roofing materials with at least 33% recycled content	3	3
10.	Install a green roof (sod or other living roof)	12	12
11.	Install photovoltaic walkway lights (same as 5.)	0	0
	Available Points	**64**	**64**
L.	**Natural Heating and Cooling**		
1.	Incorporate Passive Solar Heating	5	5
2.	Overhangs or Awnings on South Facing Windows	3	3
3.	Plant Deciduous Trees on the West and South Sides	3	3
	Available Points	**11**	**11**
M.	**Indoor Air Quality and Finishes**		
1.	Install Whole House Vacuum System	3	3
2.	Use Low/No-VOC Paint	1	1
3.	Use Low VOC, Water-Based Wood Finishes	2	2
4.	Use Solvent-Free Adhesives	3	3
5.	Formaldehyde-Free Particleboard	6	6
6.	Use Exterior Grade Plywood for Interior Uses	1	1
7.	Use Formaldehyde-Free MDF and Materials	4	4
8.	Seal all Exposed Particleboard or MDF	4	4
9.	Use FSC Certified Materials for Interior Finish	4	4
10.	Use Finger-Jointed or Recycled Content Trim	1	1
	Available Points	**29**	**29**
N.	**Flooring**		
1.	Select FSC Certified Wood Flooring	8	8
2.	Use Rapidly Renewable Flooring Materials	4	4
3.	Use Salvaged or at least 20%-Recycled Content Ceramic Tiles	4	4
4.	Install Natural Linoleum in Place of Vinyl	5	5
5.	Use Exposed Concrete as Finished Floor	4	4
6.	Install Recycled Content Carpet with Low VOCs	4	4
7.	Use finished concrete for 50% or more of floor area on the ground floor	8	8
8.	Use earthen flooring for 50% of more of floor area on the ground floor	10	10
	Available Points	**47**	**47**

O.	Other	Points Available for Building Department Incentives	
		New Homes	Additions & Remodels
1.	1. Incorporate Listing of Green Features into Cover of Blueprints	1	1
2.	2. Develop Homeowner Manual of Green Features/Benefits	1	1
3.	3. Offer Coupons for Compost Bins to Homeowners	1	1
4.	4. Energy Ratings: Every % reduction in whole house energy beyond Title 24 Code - 1 point (up to 30 points). Use energy software such as EnergyPro or MicroPas, to show improvement over California Residential Energy Standards (Title 24)	30	30
5.	5. Innovation Points These points are given for innovative approaches, including model zero net energy homes, new materials and methodologies, currently not identified above. These approaches must meet environmental goals identified in the Residential Green Building Guidelines.	10	10
	Available Points	**43**	**43**
	Total Points Available	**460**	**464**